

Promoting the Practice of Exclusive Breastfeeding: A Philosophic Scoping Review

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Abstract

Background

The World Health Organization recommends exclusive breastfeeding for the first 6 months of an infant's life and continued breastfeeding for 2 years. The global rate of exclusive breastfeeding is low at 33%. Thus, it is important to identify philosophical and theory-based strategies that can promote exclusive breastfeeding. The aim of the study is to identify philosophical schools of thought and theories used in research on promoting the practice of exclusive breastfeeding.

Methods

A scoping review using Arksey and O'Malley's framework explored the phenomenon of exclusive breastfeeding practice promotion. Searches were conducted using CINAHL Plus full-text, PubMed, APA PsycInfo and Academic Search Premier. Search terms included theory, philosophy, framework, model, exclusive breastfeeding, promotion, support, English, and publication between 2000 - 2020.

Results

The online search yielded 877 articles, however, only 40 met the inclusion criteria for the scoping review. The articles promoting exclusive breastfeeding used pragmatism (n=1) or phenomenology (n = 2) philosophies and theories of self-efficacy (n = 10), theory of planned behaviour (n = 10) and social cognitive theories (n = 17). Theories of self-efficacy and planned behaviour were the most effective theories that increased exclusive breastfeeding rates.

Conclusions

Theory-based exclusive breastfeeding promotion strategies are effective to increase the rates of exclusive breastfeeding. Theory of planned behaviour is better compared with theories of self-efficacy for program content development and implementation in Randomized Controlled Trial studies. Future breastfeeding interventions should be based on relevant philosophies and guided by theories of self-efficacy and planned behaviours.

Background

Breastfeeding is beneficial for the infant, woman's lifelong health and is cost-effective for families and society (1,2), and exclusively breastfeeding infants for 6 months is the global public health gold standard (3,4). Benefits for infants include protection against morbidity in gastrointestinal and respiratory diseases, decreased lifelong risk for obesity and diabetes and an increase in cognitive developmental scores at 1 year and throughout early childhood (5–7). Maternal benefits include maintenance of healthy weight, longer duration of lactational amenorrhoea and breast cancer risk reduction (8,9). Finally, society benefits from infants' receiving exclusive breastfeeding through decreased cost of health care and health programs, decreased burden of formula cans disposal in environment, and decreased parental absenteeism from work (10). If all infants were breastfed, a total lifetime cost savings to the National Health Service would be £46.7million and a total lifetime Quality Adjusted Life Year (QALY) gain of 10,594 (11). Despite these benefits, there has been little improvement in the global practice of exclusive breastfeeding in two decades, as only 1 out of 3 children received exclusive breastfeeding for 6 months (3).

Exclusive breastfeeding (EBF) rates differ across the globe. Findings from the 2018 Nigeria Demographic and Health Survey revealed that only 29% of children younger than 2 years in Nigeria were exclusively breastfed for the first 6 months of life (12). In 2018, only 11% of infants aged 0-6 months in China received EBF for 6 months (13). In 2019, only 26% of children under 2 years of age were exclusively breastfed for 6 months in United States (14). Further in 2010, only 1% of infants were exclusively breastfed at 6 months in the last UK-wide infant feeding survey (15). In contrast in 2018, more than half of children (58%) aged 4-24 months were exclusively breastfed for 6 months in Australia (16), 69% of children younger than 6 months received EBF in Peru (17). In an attempt to provide an explanation for the disparity in EBF rates across continents and increase EBF rates, previous studies reported barriers to EBF practice including lack of support from husbands, fear of infants becoming addicted to breast milk (18), non-approval from family members and maternal or infant lack of strength due to inadequate nutrition (19), lack of capacity to store human milk (20), lack of institutional and family support (21), and unfavourable work conditions (22). Previous studies also highlighted different interventions to promote EBF practice (23,24). To complement these findings, it would be important to identify the theoretical and/or philosophy-basis of the effective breastfeeding interventions through a scoping review (25).

Scoping reviews are ideal to determine the breadth of a body of literature on a topic of interest, identify and analyse knowledge gaps, clarify key concepts in literature, map features of primary research, and act as a precursor to focused systematic reviews (26,27). Previous scoping reviews have identified breastfeeding social support models using Arksey and O'Malley's framework (28,29). However, these studies focused on any breastfeeding (Table 1) and did not provide the philosophical schools of thought or theories underlying those models. No study has investigated theories and/or philosophies used to support interventions to promote EBF. Therefore, this scoping review will fill the knowledge gap. The primary aim of this study is to identify and evaluate the philosophies and theories used in research to promote exclusive breastfeeding practice, to inform clinical practice and improve knowledge. The review will identify the schools of thought and theories underlying interventions that result in sustainable breastfeeding which may be used in future research.

Methods

A scoping review following Arksey and O'Malley's framework explored the phenomenon of exclusive breastfeeding practice promotion. This framework has five stages: Identifying the research objectives, identifying relevant studies, study selection, charting the data, and collating, summarizing, and reporting the

results (26). Relevant studies were selected using 11 databases. A systematic literature search was conducted across four databases, PubMed, CINAHL Plus with full-text, APA PsycINFO, and Academic Search Premier. The search was conducted using Medical Subject Heading (MeSH) terms and text words in various combinations relating to promotion of exclusive breastfeeding. The key search terms were exclusive breastfeeding, promotion, philosophy, support, theories, and framework, see Table 2 for search strategy.

Study selection criteria

Articles of interest were those that focused on the promotion of exclusive breastfeeding, not just promotion of breastfeeding. Four inclusion criteria were used to select relevant articles including (1) focused on exclusive breastfeeding: The phenomenon of interest is exclusive breastfeeding, not any breastfeeding (2) used philosophy/ framework to address phenomenon: The research question is concerned with identifying philosophies/ frameworks used in addressing the phenomenon of exclusive breastfeeding promotion (3) published in English: Researcher prefers articles written in English for easy comprehension (4) published between 2002-2020: World Health Organization recommended exclusive breastfeeding for 6 months in 2001. Inclusion and exclusion criteria are shown in Table 3.

Quality appraisal

Corresponding author assessed the quality of included studies using an adapted Critical Appraisal Skills Programme [CASP] checklist for randomised controlled trials (RCT) and qualitative studies. CASP RCT checklist consists of 4 sections containing 11 questions (Table 4) (30). Other quantitative studies were evaluated using Holland and Rees' (2010) framework for critiquing quantitative research articles (Table 5) (31). CASP checklist for qualitative studies consists of 3 sections containing 10 questions that researchers need to ask when evaluating evidence from qualitative studies (Table 6) (32). Section A examines result validity, section B examines the entire results, and section C examines applicability of results. In this review, question 10 in the CASP qualitative checklist 'How valuable is the research?' was adapted as 'Is the research valuable?' for scoring to be completed. Similarly, question 11 in the CASP RCT checklist was adapted as 'Would the experimental intervention provide value to the people in your care? Ten relevant questions from Holland and Rees' (2010) framework for critiquing quantitative research articles were used to appraise other quantitative studies. Response to each question was given a score of 1. Studies with overall score of 7 or above were eligible for inclusion.

Data extraction and analysis

The first author reviewed paper titles and abstracts were screened for eligibility. Data from articles included in the scoping review were extracted manually using two templates developed by the first author. The first template contained general characteristics of the study, and the second template contained the philosophies and theories. Extracted information included study purpose, design, population characteristics, methods, philosophy or theoretical basis, and results. Articles not related to exclusive breastfeeding promotion were excluded.

Extraction of the data continued until all the philosophy/framework and theory were identified. A table was then created to fit the extracted data. For this scoping review, studies were grouped based on similarities in philosophies and theoretical frameworks used to promote exclusive breastfeeding. A summary of the findings from the articles were presented and data were analysed using narrative synthesis. Narrative synthesis is the preferred method of data analysis in reviews of quantitative studies when it is not possible to conduct a statistical analysis (33). The summaries in this scoping review illustrate the scope of evidence, rather than describing the quality of the studies. Ethical approval was not required for this scoping review.

Results

Search outcomes

The search identified 877 titles. After removal of duplicates, 452 articles underwent title/abstract screening, and 312 articles were excluded as they did not address exclusive breastfeeding promotion. Thus, 140 full-text articles were assessed for eligibility, and 44 articles were eligible for inclusion. The matching full-text articles were acquired for review. Four articles could not be accessed and were not included in the review. Therefore, 40 articles were selected and included for analysis in the scoping review. Figure 1 (PRISMA flowchart) showed the process of article selection.

Characteristics of the studies: The articles selected for this review varied in the study design and the setting in which the studies were conducted (Table 7). Most of the studies were conducted in United States (n=10), followed by China (n=8), Indonesia (n=4), Iran (n=3), Vietnam (n=3), Australia (n=2), Netherlands (n=2), Egypt (n=1), New Zealand (n=1), Norway (n=1), Turkey (n=1), Malaysia (n=1), Niger (n=1), Thailand (n=1) and Taiwan (n=1). Six studies were published after 2020, 29 studies were published from 2010 – 2019, and five from 2002 - 2009. Study designs included, randomized control trials (RCT; n = 20), quasi-experimental (n = 5), correlational (n = 2), descriptive (n = 5), and mixed methods (n=3).

Almost 9000 mother-child pairs and family pairs participated in the 39 studies. The sociodemographic characteristics were reported in 35 studies. Participants ranged from only mothers (n = 34), mother-infant pairs (n = 3), family (n = 1), and hospitals (n = 2). No study included fathers only or extended family. The setting of the articles ranged widely from the hospital (2), prenatal/maternity clinics (n =29) primary health clinics (6), Local Implementing Agencies (LIAs) (ID-05) (n = 1) and communities (2). Thirty-one studies assessed the prevalence of postpartum exclusive breastfeeding at different time intervals while nine studies suggested measures to promote exclusive breastfeeding. Most studies reported exclusive breastfeeding at the individual level, only three studies reported at the family and hospital levels.

Overview of Theories, Frameworks, and Philosophies

Eighteen theories, six frameworks and two philosophies were extracted. Ajzen's *theory of planned behaviour*, Bandura's *theory of self-efficacy* and Dennis' *breastfeeding self-efficacy theory* were the most used theories in the studies. These theories were also the most effective at increasing exclusive breastfeeding rates. Bandura's self-efficacy theory and Dennis' breastfeeding self-efficacy theory increased EBF rates in these studies- 11% vs. 6% (intervention vs. control) (45), 25% vs. 2% (intervention vs. control) (53), 80% vs. 75% (intervention vs. control) (55), 67% vs. 59% (intervention vs. control) (71), 56% vs. 37% (intervention vs. control) (72). Ajzen's theory of planned behaviour increased EBF rates in these studies- 42% vs. 10% (intervention vs. control) (50), 88% vs. 77% (intervention vs. control) (76). Exclusive breastfeeding rates also increased in other studies that used Tittle's *Iowa's model of evidence-based practice*-36% (43), *Kotter's change theory*-65% (51) and intervention mapping-48% vs. 27% (intervention vs. control) (57). Most studies used self-efficacy theory for data collection whereas, studies using theory of planned behaviour was used for program content development and implementation.

Self-efficacy and Planned Behaviour Theories

Bandura's *theory of self-efficacy* (10,15,26,28) and Dennis' *breastfeeding self-efficacy theory* (10,15,26-28) were the most common theories. Self-efficacy is defined as the belief in a person's ability to organize and accomplish actions required to manage prospective situations (77). Self-efficacy influences thinking and decision-making, effort and persistence, and choice. Thus, breastfeeding self-efficacy is the mother's perceived ability to breastfeed her infant (42). One of the sources of self-efficacy is information received through verbal persuasion (78). Dennis' breastfeeding self-efficacy questionnaire in its short form (79) measured breastfeeding self-efficacy in women during pre-partum and/or postpartum and/or assessed the effect of an intervention (usually breastfeeding education) on breastfeeding self-efficacy. *Social cognitive theory* was used to select suitable educational strategies in breastfeeding program (80). Hence, utilizing the breastfeeding self-efficacy theory, health professionals may be able to influence the practice of breastfeeding by modifying this information (81). In her *model of infant feeding behaviours*, Lutter recognized the importance of self-efficacy in the achievement of a behaviour. The model posited that infant feeding depends on two factors - the interaction between a woman's choice to breastfeed and her ability to act upon the choice (self-efficacy). Lutter further described that these factors are influenced by three determinants including proximate, intermediate, and underlying determinants (82). Moussa Abba et al (2010) used the *model of infant feeding behaviours* to identify determinants of breastfeeding (56).

Theory of planned behaviour (TPB) was used in previous studies to successfully predict dishonest actions (83), leisure behaviours (84), and implement interventions that will be effective to change behaviours (85). The goal of TPB is to predict and explain breastfeeding behaviour. TPB guided the design of study interventions and to predict breastfeeding outcomes (70,74). Whereas other studies used the theory to design questionnaires and explain exclusive breastfeeding behaviour (65). TPB and *Reasoned Action Approach (RAA)* developed by Fishbein and Ajzen (2010) originated from the theory of reasoned action (TRA). RAA posited that attitude towards behaviour, perceived norm, and perceived behavioural control, determine intention, which predicts behaviour (86). This approach was used to design impact pathway of interpersonal counselling and mass media on breastfeeding practices in Vietnam (59). The *Attitude-social influence-self-efficacy model*, influenced by TPB, TRA and Bandura's theory of self-efficacy was used to develop an educational programme (intervention) which increased EBF at 6 months (48). The model, developed by de Vries et al (1988) suggests that attitude, social influence, and self-efficacy determine behavioural intention which in turn predicts behaviour (87,88). Similarly, *Information-Motivation-Behavioural-Skills (IMB) model* suggested that health-related information, motivation, and behavioural skills are primary determinants of performance of health behaviours (89). It was used to design counselling sessions that focused on enhancing IMB breastfeeding determinants among HIV-infected women to exclusive breastfeeding utilizing motivational interviewing techniques (68).

Mann's Adolescent decision-making competence theory was used to design developmentally sensitive, education and counselling intervention (69). ADM competence theory suggests that competent decision-making has nine elements including choice, comprehension, creativity, compromise, consequentiality, correctness, credibility, consistency, and commitment (90). The four stages of cognitive development are: sensorimotor, pre-operational, sensory operational, and formal operational.

Breastfeeding self-efficacy theory is limited by the interaction between self-efficacy and previous breastfeeding experience, which may have biased the actual effectiveness of the theory on EBF. McCarter-Spaulling and Gore (2009) reported that breastfeeding self-efficacy scores were higher among mothers who had previous breastfeeding experience (54). Further, in cultures where breast pumps are not accepted or settings where breast pumps are not easily accessed, use of breastfeeding self-efficacy questionnaire may not be appropriate, as it contains an item about using breast pumps. Theory of Planned Behaviour has no standard questionnaire (91), thus there were no unified variables to test the theories in the included studies.

Social Theory

Alianmoghaddam and colleagues used *Granovetter's strength of weak ties theory* and *Milligan and Wiles' theory of landscapes of care* to explain importance of social relationships, social interactions and social support within virtual communities that are associated with breastfeeding (92). Granovetter posited that individuals' personal experiences is embedded within the larger social structure beyond the control of some individuals (93). Whereas Milligan and Wiles described landscapes of care as the result of interaction between socio-structural processes and structures that shape experiences and practices of care (94). In addition, Mercer affirmed the significance of social support in her *Theory of Maternal Role Attainment*. The theory suggested that maternal role attainment is influenced by maternal age, socioeconomic status, perception of birth experience, early mother-infant separation, social stress, social support, personality traits, self-concept, child-rearing attitudes, perception of infant, role strain, and health status (95). Rahayu (2017) used this theory to identify support systems that account for exclusive breastfeeding success (62).

Social Franchise Model was used to design breastfeeding intervention - infant and young child feeding (IYCF) counselling services (58). Social franchise model for IYCF suggested that a franchise facility must provide these services - exclusive breastfeeding promotion, support and management, and complementary feeding education and management (96).

The social theories constructs of *strength of weak ties*, *landscapes of care*, and *social franchise model* cannot be tested using empirical indicators, this restricts their use in quantitative studies with correlational and experimental designs.

Theory for Systems Interventions

Breakthrough Series (BTS) collaborative model was developed by Institute of Healthcare Improvement with the goal to bring large number of hospital teams together to seek improvement in a specific topic or field (97). Arbour et al (2019) used this model to plan a programme - Home Visiting Collaborative Improvement and Innovation Network (HV CoIIN) - which increased breastfeeding initiation and exclusive breastfeeding duration (37). Moreover, Titler's *Iowa's model of evidence-based practice* was developed to empower health professionals to translate research findings into practice to provide quality care (98). Brockman used this model to guide the implementation of a new in-patient model of nursing care - mother-child couplet care - which effectively increased exclusive breastfeeding rates (43). Brockman also used *Lewin's change management model* which posits that change occurs in three stages including unfreeze, move/transition, and refreeze (99). Brockman applied Lewin's model to manage the complex change processes in the transition from the traditional model of obstetric nursing to mother-child couplet care. Further, the primary role of health professionals is to promote health. Thus, the *Health Promotion Model*, developed by Pender (1982) will assist professionals to understand health behaviour determinants and empower them to provide quality behavioural counselling (100). Health promotion model was used in included studies to design an intervention - breastfeeding motivation program (44) and explain research findings (73).

Kotter's change theory was used to initiate culture change for a successful adoption of Baby Friendly Hospital Initiative. This in turn led to an increase in exclusive breastfeeding rates (51). Kotter posited that there are eight steps in the process of change including creating a sense of urgency, forming guiding coalitions, vision development, communicating the vision, removing obstacles and employee empowerment, creating short-term wins, consolidating gains, and strengthening change by anchoring change in the culture (101).

A common weakness of the system intervention theories is their unsuitability to design or evaluate individual-focused interventions.

Frameworks

Green's Proceed-Precede model was first published as an evaluation framework in 1974 (102), as Precede in 1980 (103) and as a full framework in 1991 (104). Precede-Proceed framework comprises eight phases to guide professionals to develop, implement and evaluate health promotion programmes (105), using socio-ecological model to assess individual characteristics and socio-political conditions (106). Ahmed (2014) used the Precede model to design a five-session breastfeeding educational program which increased exclusive breastfeeding rates (80). The Proceed-Precede model was also used to explain family support factors that promoted exclusive breastfeeding rates (64). The *Belief, Attitudes, Subjective Norms and Enabling factors (BASNEF) model*, developed by Hubley (1988) originated from Precede model and TRA. It posited that belief, attitude and subjective norms determine behavioural intention, which supports enabling factors for a behaviour (107). The BASNEF model has been used to positively influence nutritional behaviours to reduce risk factors for cardiovascular diseases (108). Ahmadi et al (2016) used BASNEF and GATHER (Greet, ask, tell, help, explain and return) models to guide breastfeeding consultation sessions for the intervention group. The intervention group reported higher rates of exclusive breastfeeding (36).

Nicholson (1990) developed an analytical framework to facilitate adaptation - *transition cycle*. The cycle consisted of four stages including preparation, encounter, adjustment, and stabilization (109). The stages are useful to enhance readiness, reduce negative emotions, support personal change and role development, and maintain successful adaptation outcomes (110). Transition cycle was used to illustrate and explain mothers' transition to breastfeeding (46).

Concept maps are tools for organizing and representing knowledge. They illustrate specific label for a concept in a box with lines showing linking words that create a meaningful statement (111). Thepha et al (2019) used *concept mapping* during all three intervention meetings to provide information and findings regarding identifying and prioritising facilitators and barriers to 6-month exclusive breastfeeding (66). Bartholomew et al (1998) designed intervention mapping as a framework for the development of health education intervention. The framework has five steps: matrix creation, intervention methods selection, program design, identifying adoption and implementation plans, and program evaluation plan generation (112). *Intervention mapping* was used as a logic model to guide development of educational program which increased exclusive breastfeeding rates (57).

The use of a framework to guide a study is limited as the included frameworks have several stages, but most studies need to implement only a few stages to meet their goals. Thus, limiting the generalizability of the frameworks across studies.

Philosophies

Pragmatism and *Phenomenology* were the two philosophies used in included studies. Pragmatism is an American philosophy first developed by Charles Pierce. It is a way of doing philosophy, it is concerned with actions (113). Pragmatism evaluates the truth of the meaning of theories in terms of the successful application of those theories. That is, theories are meaningful only if they are practically applicable. Pragmatists subscribe to the notion of instrumentalism because they view theories as instruments for problem solving. Baerug et al (2016) used pragmatism as the basis for their quasi-randomized control trial study (38). In pragmatism, the whole of a concept or phenomenon is found in the consequences of the concept or phenomenon (114). Therefore, Baerug and colleagues applied this in their study as they were interested in the effect (consequence) of baby-friendly community health services on exclusive breastfeeding. The intervention increased exclusive breastfeeding at 6 months. Further, phenomenology is a philosophy developed by Husserl which involves description of lived experience, free from preconceived ideas about the phenomenon. Phenomenology attempts to describe experience from the perspective of the person who had the experience first-hand. Lestari et al (2019) used this philosophy to describe participants' involvement in exclusive breastfeeding promotion activities (52). In addition, Froehlich and colleagues also used it to qualitatively analyse data collected from participants and to formulate essence descriptors of their breastfeeding experiences and daily routine (46).

Discussion

The objective of this scoping review was to identify philosophical schools of thoughts and theories that guide research on promoting exclusive breastfeeding practice. The scoping review clearly established that a wide range of different interventions based on philosophies and theories are effective to promote exclusive breastfeeding practice. Theories of self-efficacy and planned behaviour were the most common theories that increased EBF rates (45,50,53). Philosophies provided the basis to explore different methods that may promote the practice of exclusive breastfeeding (38,46,52). Whilst self-efficacy theories were used for intervention implementation and evaluation at individual levels (55,60), theories for systems intervention provided a larger context to examine effect of interventions on breastfeeding exclusivity (37,43). Thus, researchers may choose theories from either category depending on the scope of their studies. The theory of planned behaviour was used primarily to implement interventions (50,69,70). Whereas, frameworks provided step-by-step instructions for program development and implementation (36,46,80), to ensure accurate implementation of interventions and provision of a foundation for evaluation of the interventions. Further, social theories provided opportunity to modify variables in the environment and test the modification's influences exclusive breastfeeding rates (58,62).

Overall, the theory of planned behaviour was the most effective at increasing exclusive breastfeeding rates (47,50,65). This may be attributed to its effectiveness at predicting behaviours and its philosophical underpinnings. TPB posited that perceived behavioural control and behavioural intention can be used directly to predict behavioural achievement (115). Behavioural intention has three conceptually different determinants including *attitude towards the behaviour* the extent to which a person has favourable or unfavourable evaluation of a specific behaviour-, *subjective norm*- perceived social pressure to perform a behaviour or not-, and *perceived behavioural control* – perceived ease or difficulty of performing a behaviour (116). Perceived behavioural control on the other hand is assumed to reflect past experiences and anticipated challenges regarding performing a behaviour (115). Scientific prediction attempts to determine the effect of the initial conditions, otherwise referred to as antecedents (116). Hempel posited that a prediction is valid if it has logical and empirical adequacy (117). That is, the explanans (premises) must contain at least one law of nature and the statements constituting the explanans must be true (empirically verified). Empiricists believe in verifiability, the only valid source of knowledge for them is empirical experience- what is perceived through the senses (118). Therefore, they posited that a statement is meaningful only if it has been proven true or false through means of experience (experiment). Empirical verification can be achieved through scientific method, experimentation, or laboratory science.

Strength And Limitations

Scoping reviews allow for more quality result than systematic review, because unlike the latter, it allows for identification of relevant studies irrespective of study designs (26). To our knowledge, this is the first scoping review to map evidence specific to philosophies and/or frameworks used to address exclusive breastfeeding promotion. The review used rigorous and transparent methods throughout the study. Theories identified in this review are similar with those identified in previous studies (119–121). Notwithstanding, this review included additional frameworks and theories that used decision-making and developmental models. Compared with other scoping reviews, this study included relatively large number of articles accessed from different databases. Hence, results of this scoping review have enabled development of specific search strategies for future reviews. However, our review may not have identified all studies in the literature, particularly studies that applied philosophical schools of thought to exclusive breastfeeding promotion, as most included articles were theory-based. Additionally, the culture of included studies should be considered when selecting a theory/philosophy for future studies, as it may influence the effectiveness of the theory/philosophy. Hence, future studies may test theories and/or instruments developed from these theories to achieve effective cross-cultural adaptation.

Conclusions

This study established that strategies supported by philosophies and theories are useful to increase exclusive breastfeeding rates, especially in interventions involving breastfeeding education, empowerment, and counselling. Theories of planned behaviour and self-efficacy are useful to design and implement these interventions. We recommend that future studies aimed at promoting exclusive breastfeeding practice adopt planned behaviour and self-efficacy theories as they are the most effective at increasing exclusive breastfeeding rates. Future scoping reviews should include comprehensive search of more databases to access and include more studies that use philosophical schools of thought to promote exclusive breastfeeding practice.

Abbreviations

ADM: Adolescent decision-making; BASNEF: Belief, Attitudes, Subjective Norms and Enabling factors; GATHER: Greet, Ask, Tell, Help, Explain and Return; WHO: World Health Organization; TPB: Theory of Planned Behaviour; TRA: Theory of Reasoned Action.

Declarations

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Availability of data and material

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

Authors' contributions

TBA was responsible for research design, literature review, data collection, data analysis and writing of first draft of paper, all authors contributed to edits and agreed on the final version of the paper before submission. All authors read and approved the final manuscript.

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Competing interests

The authors declare that they have no competing interests.

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Tables

Table 1
Definitions of any breastfeeding and exclusive breastfeeding

Type of breastfeeding	Mandates infant to receive	Allows infant to receive
Any breastfeeding	Breastmilk, either directly from the breast or expressed breast milk.	Any food or liquid, including non-human milk or breast milk through a bottle.
Exclusive breastfeeding	Breast milk, including milk expressed from a wet nurse.	Drops, syrups including vitamins, and minerals and medicines only.
Adopted from Tarrant and Kearney (2008) (34); Labbok and Starling (2012) (35)		

Table 2
Search strategy

Database	Search strategy
CINAHL Plus with full text	<ul style="list-style-type: none"> • Theory OR Philosophy AND Exclusive breastfeeding AND promotion (<i>n</i>=35) • Theory OR Philosophy AND Exclusive breastfeeding AND support (<i>n</i>=52) • Framework AND exclusive breastfeeding AND promotion (<i>n</i>=39) • Framework AND exclusive breastfeeding AND support (<i>n</i>=42)
PubMed	<ul style="list-style-type: none"> • Exclusive breastfeeding AND theory (<i>n</i>=406)
APA PsycINFO	<ul style="list-style-type: none"> • Theory OR model OR framework AND exclusive breastfeeding AND promotion (<i>n</i>=59) • Theory OR model OR framework AND exclusive breastfeeding AND promotion (<i>n</i>=67)
Academic Search Premier	<ul style="list-style-type: none"> • Theory OR Philosophy AND Exclusive breastfeeding AND promotion (<i>n</i>=56) • Theory OR Philosophy AND Exclusive breastfeeding AND support (<i>n</i>=71) • Framework AND exclusive breastfeeding AND promotion (<i>n</i>=19) • Framework AND exclusive breastfeeding AND support (<i>n</i>=31)

Table 3
Inclusion and exclusion criteria

Inclusion	Exclusion
Focuses on promotion of exclusive breastfeeding.	Focuses on promotion of any breastfeeding.
Used either philosophy or theory or framework to address the phenomenon of EBF promotion.	No philosophy or theoretical framework was used.
Published in English.	Published in other languages.
Published between 2002- 2020.	Published before 2002.

Table 4
CASP Randomised Controlled Trial Standard Checklist

Study	Did the study address a clearly focused research question?	Was the assignment of participants to interventions randomised?	Were all participants who entered the study accounted for at its conclusion?	Were participants/investigation/people assessing outcome(s) blinded?	Were the study groups similar at the start of the randomised controlled trial?	Apart from the experimental intervention, did each study group receive the same level of care?	Were the effects of intervention reported comprehensively?	Was the precise estimate of the intervention or treatment effect reported?
Ahmadi et al (2016) [(36)]	✓	✓	✓	✓	✓	?	✓	✓
Ahmed (2014) [35]	✓	✓	✓	?	✓	?	✓	✓
Arbour et al (2019) [(37)]	✓	?	✓	?	?	?	✓	✓
Baerug et al (2016) [(38)]	✓	?	✓	?	✓	?	✓	✓
Bich et al (2019) [(41)]	✓	?	✓	?	✓	✓	✓	✓
Cangol & Sahin (2017) [(44)]	✓	✓	✓	?	✓	✓	✓	✓
Chan et al (2016) [(45)]	✓	✓	✓	?	✓	?	✓	✓
Ghaffari et al (2019) [(47)]	✓	✓	✓	✓	✓	?	✓	?
Gijsbers et al (2006) [(48)]	✓	✓	✓	?	✓	✓	✓	?
Gu et al (2016) [(49)]	✓	✓	✓	✓	✓	✓	✓	?
Liu et al (2017) [(53)]	✓	?	✓	✓	✓	?	✓	?
Mcqueen et al (2011) [(54)]	✓	✓	✓	✓	✓	?	✓	?
Mestsers et al (2018) [(57)]	✓	✓	✓	✓	✓	✓	✓	?
Nguyen et al (2014) [(57)]	✓	✓	✓	✓	✓	✓	✓	?
Nguyen et al (2016) [(58)]	✓	✓	✓	✓	✓	?	✓	✓
Nichols et al (2009) [(59)]	✓	✓	✓	✓	✓	✓	✓	?
Pollard (2011) [(60)]	✓	✓	✓	?	✓	✓	✓	?

Study	Did the study address a clearly focused research question?	Was the assignment of participants to interventions randomised?	Were all participants who entered the study accounted for at its conclusion?	Were participants/investigation/people assessing outcome(s) blinded?	Were the study groups similar at the start of the randomised controlled trial?	Apart from the experimental intervention, did each study group receive the same level of care?	Were the effects of intervention reported comprehensively?	Was the precision of the estimate of the intervention or treatment effect reported?
Rasoli et al (2020) [(62)]	✓	?	✓	?	✓	✓	✓	?
Tseng et al (2020) [(66)]	✓	✓	✓	✓	✓	✓	✓	?
Tuthill et al (2017) [(68)]	✓	✓	✓	✓	✓	✓	✓	?
Wambach et al (2011) [(69)]	✓	✓	✓	✓	✓	✓	✓	✓
Wan et al (2016) [(69)]	✓	✓	✓	✓	✓	✓	✓	?
Wan et al (2016) [(69)]	✓	✓	✓	✓	✓	✓	✓	?
Wu et al (2014) [(70)]	✓	✓	✓	✓	✓	✓	✓	?
You et al (2020) [(71)]	✓	✓	✓	✓	✓	✓	✓	?
Zhu et al (2017) [(73)]	✓	✓	✓	?	✓	✓	✓	?

Table 5
Appraisal table for other quantitative studies

Study	What is the statement of the aim of the data collection?	Does method seem suitable given the aim of the study?	What was the method used to collect the data?	Is the method of processing and analysing the results described in the methods section?	On how many people are the results based?	Did an ethics committee approve the study?	What were the large results that relate to the aim of the study?	Did they give a clear answer to their aim?	What were the strengths and limitations?	How do the results relate to practice?	Score (out of 10)
Bai et al (2011) [(40)]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
Blyth et al (2002) [(42)]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
Mccarter-spaulding & Gore (2009) [(54)]	✓	✓	✓	✓	✓	✓	✓	?	✓	✓	9
Rahayu (2017) [(62)]	✓	✓	✓	✓	✓	?	✓	?	✓	✓	8
Seran et al (2020) [(64)]	✓	✓	✓	✓	✓	✓	✓	✓	?	✓	9
Tengku Ismail et al (2016) [(65)]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10
Yunitasari et al (2020) [(73)]	✓	✓	✓	✓	✓	✓	✓	?	?	✓	8

Table 6
CASP checklist assessment table for qualitative studies

Study	Was there a clear statement of the aims of the research?	Is a qualitative methodology appropriate?	Was the research design appropriate to address the aims of the research?	Was the recruitment appropriate to the aims of the research?	Was the data collected in a way that addressed the research issue?	Has the relationship between researcher and participants been adequately considered?	Have ethical issues been taken into consideration?	Was the data analysis sufficiently rigorous?	Is there a clear statement of findings?
Alianmoghaddam et al (2019) [36]	✓	✓	✓	✓	✓	?	✓	✓	✓
Bai et al (2007) [(39)]	✓	✓	✓	✓	✓	?	✓	✓	✓
Brockman (2015) [(43)]	✓	✓	✓	✓	?	?	✓	✓	✓
Froehlich et al (2020) [(46)]	✓	✓	✓	✓	✓	?	✓	✓	✓
Henry et al (2014) [(50)]	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lestari et al (2019) [(51)]	✓	✓	✓	✓	✓	✓	✓	✓	✓
Moussa Abba et al (2010) [(55)]	✓	✓	✓	✓	✓	✓	✓	✓	✓
Thepha et al (2019) [(65)]	✓	✓	✓	✓	✓	?	✓	✓	✓

Table 7
Characteristics of included studies

ID	Authors (Year) Country	Design Sample size	Philosophy/ framework	Use of philosophy	EBF assessed
01	Ahmadi et al (2016) [(36)] Iran.	RCT (n=124)	-Hubley's Belief, Attitudes, Subjective Norms and Enabling factors (BASNEF) model. -GATHER steps.	Program implementation.	Yes
02	Ahmed (2014) [35] Egypt.	RCT (n=60)	-Bandura's social cognitive theory. -Green's PRECEDE model.	Program implementation.	Yes
03	Alianmoghaddam et al (2019) [36] New Zealand.	Qualitative (n=30)	-Granovetter's strength of weak ties theory. -Milligan and Wiles' theory of landscapes of care.	Description of findings from thematic analysis.	No
04	Arbour et al (2019) [(37)] USA.	Quasi-experimental (n=16)	-Institute of Healthcare Improvement's Breakthrough Series (BTS) collaborative model.	Program implementation.	Yes
05	Baerug et al (2016) [(38)] Norway.	Quasi-experimental (n=2032)	-Pragmatism. -Baby-Friendly Initiative.	-Study design. -Program implementation.	Yes
06	Bai et al (2007) [(39)] USA.	Qualitative (n=25)	-Ajzen's theory of planned behaviour.	Data collection.	No
07	Bai et al (2011) [(40)] USA.	Cross-sectional survey (n=236)	-Ajzen's theory of planned behaviour.	Data collection.	No
08	Bich et al (2019) [(41)] Vietnam.	Quasi-experimental (n=802)	-Bandura's social cognitive theory. -Ajzen's theory of planned behaviour.	-Program implementation.	Yes
09	Blyth et al (2002) [(42)] Australia.	Prospective survey (n=300)	-Bandura's self-efficacy theory. -Dennis' breastfeeding self-efficacy theory.	-Program content development. -Program implementation. -Program evaluation: selection of measurements.	Yes
10	Brockman (2015) [(43)] USA.	Grounded theory	-Titler's IOWA model of evidence-based practice. -Lewin's change management model.	-Program implementation. -Breastfeeding transition monitoring.	Yes
11	Cangol & Sahin (2017) [(44)] Turkey.	RCT (n=100)	-Pender's Health Promotion Model.	-Program content. development. -Program implementation. -Program evaluation: selection of measurements.	Yes
12	Chan et al (2016) [(45)] China	RCT (n=71)	-Bandura's self-efficacy theory. -Dennis' breastfeeding self-efficacy theory.	-Program content development. -Program implementation -Program evaluation: selection of measurements.	Yes
13	Froehlich et al (2020) [(46)] USA.	Mixed methods (n=11)	-Husserl's Phenomenology. -Nicholson's transition cycle.	-Data analysis. -Explanation of findings.	Yes
14	Ghaffari et al (2019) [(47)] Iran.	RCT (n=101)	-Ajzen's theory of planned behaviour.	Program implementation.	Yes
15	Gijsbers et al (2006) [(48)](48) Netherlands.	RCT (n=113)	-De Vries' Attitude-social influence-self-efficacy-model (ASE model).	Program implementation.	Yes

ID	Authors (Year) Country	Design Sample size	Philosophy/ framework	Use of philosophy	EBF assessed
16	Gu et al (2016) [(49)] China.	Longitudinal RCT (n=285)	-Ajzen's Theory of planned behaviour.	-Program content development. -Program implementation.	Yes
17	Henry et al (2014) [(50)] USA.	Mixed methods (n=not stated)	-Kotter's theory of change.	-Initiation of culture change. -Addressing knowledge-practice gap.	Yes
18	Lestari et al (2019) [(51)] Indonesia.	Qualitative (n=11)	-Husserl's Phenomenology.	Description of EBF promotion activities.	No
19	Liu et al (2017) [(53)] China.	Quasi-experimental (n=150)	-Bandura's self-efficacy theory. -Dennis' breastfeeding self-efficacy theory.	-Program content development. -Program implementation. -Program evaluation: selection of measurements.	Yes
20	Mccarter-spaulding & Gore (2009) [(53)] USA.	Descriptive longitudinal (n=155)	-Bandura's social cognitive theory. -Dennis' breastfeeding self-efficacy theory.	Measurement breastfeeding self-efficacy.	Yes
21	Mcqueen et al (2011) [(54)] China.	RCT (n=150)	-Bandura's self-efficacy theory. -Dennis' breastfeeding self-efficacy theory.	-Program content development. -Program implementation. -Program evaluation: selection of measurements.	Yes
22	Moussa Abba et al (2010) [(55)] Niger.	Exploratory qualitative (n=31)	-Lutter's model of infant feeding behaviour.	Basis for observation of dimensions.	No
23	Mestsers et al (2018) [(57)] Netherlands.	RCT (n=113)	-Bartholomew's Intervention mapping. -Bandura's social cognitive theory.	-Program design, implementation and evaluation. -Practical application for inducing change.	Yes
24	Nguyen et al (2014) [(57)] Vietnam.	RCT (n=2045)	-Alive and Thrive Vietnam's Social Franchise Model.	Program implementation.	Yes
25	Nguyen et al (2016) [(58)] Vietnam.	RCT (n=2045)	-Fishbein's Reasoned Action Approach Framework.	Program implementation.	Yes
26	Nichols et al (2009) [(59)] Australia.	RCT (n=90)	-Bandura's self-efficacy theory. -Dennis' breastfeeding self-efficacy theory.	-Program content development. -Program implementation. -Program evaluation: selection of measurements.	Yes
27	Pollard (2011) [(60)] USA.	RCT (n=86)	-Bandura's social cognitive theory.	-Program implementation.	Yes
28	Rahayu (2017) [(61)] Indonesia.	Descriptive correlational (n=30)	-Mercer's Theory of Maternal Role Attainment.	Explanation of findings.	No
29	Rasoli et al (2020) [(62)] Iran.	Quasi-experimental (n=168)	-Extended Ajzen's theory of planned behaviour.	Program implementation.	Yes
30	Seran et al (2020) [(63)] Indonesia.	Cross-sectional (n=26)	-Green's Precede-Proceed Model.	Explanation of findings.	No

ID	Authors (Year) Country	Design Sample size	Philosophy/ framework	Use of philosophy	EBF assessed
31	Tengku Ismail et al (2016) [(64)] Malaysia.	Prospective cohort (n=200)	-Ajzen' theory of planned behaviour.	Data collection.	Yes
32	Thepha et al (2019) [(65)] Thailand.	Mixed methods (n=22)	-Novak's concept mapping.	-Study design. -Data collection.	No
33	Tseng et al (2020) [(66)] Taiwan.	RCT (n=93)	-Bandura's self-efficacy theory. -Dennis' breastfeeding self-efficacy theory.	-Program content development. -Program implementation. -Program evaluation: selection of measurements.	Yes
34	Tuthill et al (2017) [(68)] USA.	RCT (n=68)	-Fisher and Fisher's Information-Motivation-Behavioural-Skills model. -Dennis' breastfeeding self-efficacy theory.	-Program implementation. -Program evaluation: selection of measurements.	Yes
35	Wambach et al (2011) [(69)] USA.	RCT (n=287)	-Ajzen's Theory of planned behaviour. -Mann's adolescent decision-making (ADM) competence theory.	Treatment group received breastfeeding education intervention based on TPB and ADM.	Yes
36	Wan et al (2016) [(69)] China.	Longitudinal RCT (n=285)	-Ajzen's Theory of planned behaviour.	Program implementation.	Yes
37	Wu et al (2014) [(70)] China.	RCT (n=74)	-Bandura's self-efficacy theory. -Dennis' Breastfeeding self-efficacy theory.	Treatment group received breastfeeding self-efficacy intervention.	Yes
38	You et al (2020) [(71)] China.	RCT (n=226)	-Bandura's self-efficacy theory. -Dennis' breastfeeding self-efficacy theory.	-Program content development. -Program implementation. -Program evaluation: selection of measurements.	Yes
39	Yunitasari et al (2020) [(72)] Indonesia.	Descriptive correlational (n=221)	-Pender's Health promotion model.	Explanation of findings.	No
40	Zhu et al (2017) [(73)] China.	RCT (n=285)	-Ajzen's theory of planned behaviour.	Program content development and implementation.	Yes

Figures

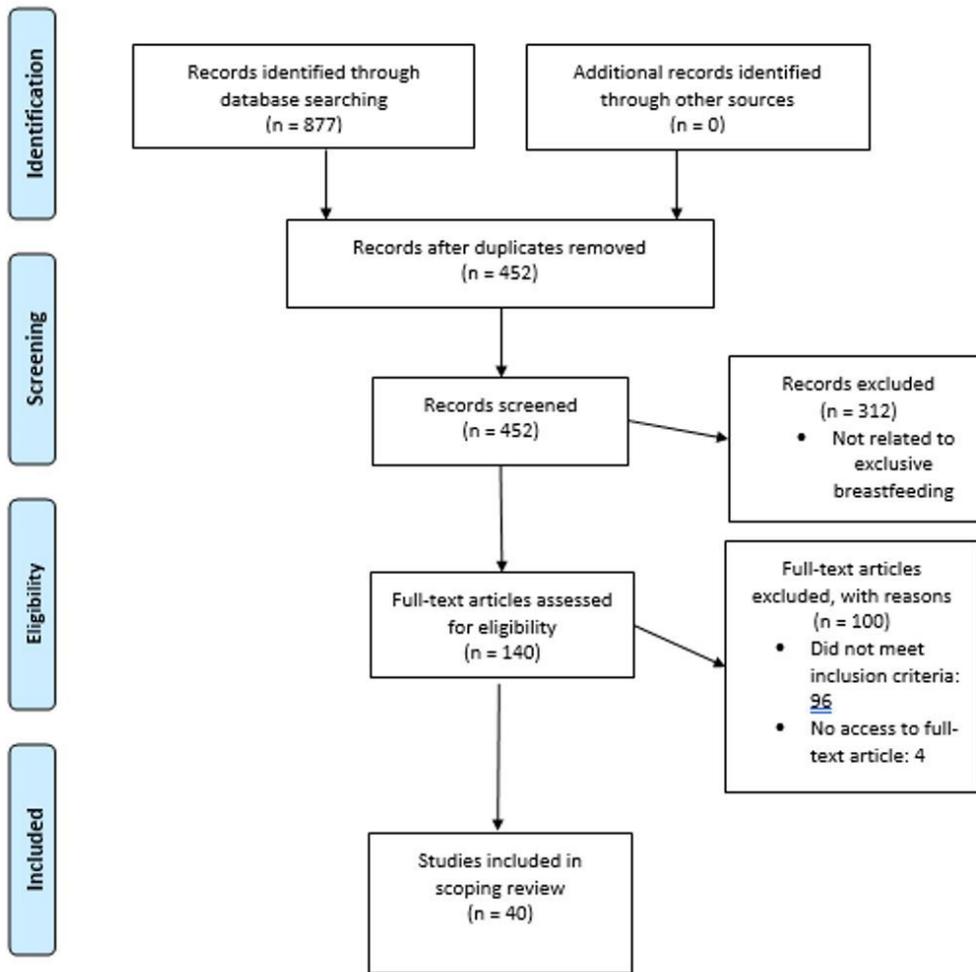


Figure 1

PRISMA flowchart of study selection process Adapted from Moher et al (2019) (75)