

Influence of Healthcare Worker Training on Support for Exclusive Breastfeeding: A Systematic Review

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Background: Initiation of breastfeeding is high in Saudi Arabia whereas the continuity of exclusive breastfeeding is low since there is a shortage of trained health professionals.

Aim: This systematic review evaluates the influence of training healthcare professionals on breastfeeding outcomes in Saudi Arabia in comparison to WHO/UNICEF standard.

Methods: A Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) systematic review was undertaken. Different databases were searched from 2000 to 2024. Participants in the study were experimental, quasi-experimental studies, cross-sectional studies, and qualitative studies that provided training to health professionals in breastfeeding support. Selection of studies, data extraction, and judgment of the quality of studies were performed by two reviewers using the JBI and Cochrane risk of bias tools.

Results: A total of 21 studies were analyzed. Most of these studies reported appreciable gains in the knowledge and practical assistance of health care providers following structured training interventions. Interventions that used a combination of theoretical teaching and practical components were the most effective. In the Saudi context, the effects of training were seen in improved self-efficacy scores and increased counselling skills with some of the programs reporting up to 60% improvement. While most studies have demonstrated improvements in exclusive breastfeeding rates following training, several have highlighted persistent barriers, such as insufficient and inadequate hospital education and training, as well as inadequate institutional support, which may undermine the long-term sustainability of the program.

Conclusion: The study demonstrates that ongoing structured training and combined policy action remains needed. Decision makers need to focus on providing training to health professionals in breastfeeding support results in quantifiable improvement in knowledge and practice. Mandatory BFHI-aligned training, institutional support, and policy integration are urgently needed to increase EBF rates in Saudi Arabia.

Keywords: breastfeeding, healthcare training, Saudi Arabia

Introduction

The Significance of Breastfeeding Support

Exclusive breastfeeding for the first six months of life, with complementary feeding thereafter up to age two, is recommended by the World Health Organization (WHO). It is shown through research that infants who are breastfed have superior intelligence, a reduced risk of mortality and disease early in life, and less of a risk for developing diseases such as obesity and diabetes later in life. For the mother, breastfeeding is proven to reduce postpartum bleeding, reduce the risk of ovarian cancer and breast cancer, and enable better birth spacing.^{1,2}

Health professionals have a crucial role to play in helping the mothers obtain the assistance they need to succeed with breastfeeding. Properly trained, they are able to provide clear, evidence-based advice and emotional support, particularly at the early postpartum stage when most issues occur.³ Still, all the benefits of breastfeeding notwithstanding, rates

around the world are suboptimal. This tends to relate to variable levels of support as well as a paucity of training for health workers.⁴

Background

Background of the Issue

The global shortage of skilled healthcare workers who are competent to offer organized breastfeeding support is a major hindrance. Based on the WHO and UNICEF global targets and the Baby-Friendly Hospital Initiative (BFHI) standards, implementation of the ten steps for successful breastfeeding through BFHI has revealed marked improvements in breastfeeding outcomes when training is effectively implemented. The step 2 has focused on train all health care staff in skills necessary to implement this policy and step 5 has focused on show mothers how to breastfeed.^{4,5} Interventions within countries such as Sudan and Turkey prove that training of health workers improves knowledge, attitudes, and guideline compliance, as a result of which there are increased rates of exclusive breastfeeding.³ Despite such gains, there are still gaps in training, facilities, as well as policy implementation, especially within emerging as well as transitioning health systems.

Breastfeeding Rates Within Saudi Arabia

There has been a discernible decline in optimal breastfeeding practice over the recent decades in Saudi Arabia. While the initiation of breastfeeding rate itself is high, often more than 90%, the number of initiations of breastfeeding as recommended by WHO/UNICEF within the first hour of birth is considerably less, averaging 43.6%.^{1,2,6} More worryingly, the rate of exclusive breastfeeding at six months has fallen as low as 15.1% according to some studies.^{1,2,6} This is could be because of several of the contributing factors to the trend include increased maternal work, a shortage of knowledge, poor prenatal counseling, and poor postnatal support facilities.^{7,8} Another issue in Saudi Arabia is the paucity of healthcare professionals with sufficient training in line with WHO/UNICEF BFHI guidelines to offer consistent culturally appropriate breastfeeding support. Evidence has indicated a deficiency of explicit hospital policies, a lack of staff member in-service training, and inadequate application of the Baby-Friendly Hospital Initiative (BFHI) standards.⁹ Saudi mothers have reported receiving little or no breastfeeding counselling prenatally, as well as upon discharge from the hospital indicating a knowledge gap as well as lost opportunities for early support.¹⁰

Breastfeeding Challenges

Saudi mothers are faced with several challenges that can hinder breastfeeding, several of which can be alleviated through effective support from health professionals. Typical challenges are latching difficulty, fear of insufficient milk supply, as well as issues with returning to work.^{11,12} Well-trained healthcare workers are particularly crucial where more complicated cases arise for example, with premature or low birth weight babies where reassurance from qualified nurses and midwives can have a real beneficial effect.¹³

Role of Healthcare Practitioners and Improving Breastfeeding Outcomes

Research has shown that interventions with trained physicians, midwives, and nurses have a positive effect on breastfeeding. It is evident that training interventions are efficacious to improve healthcare professionals' knowledge, self-confidence, and level of provision of evidence-based practices.^{14,15} Internationally as well as within the Saudi Arabian context, there have been reports of changes for the better in hospital practices and maternal satisfaction with the introduction of training interventions, highlighting the role of professional education towards maintaining breastfeeding activities.

The Significance of Education and Training

There is a pressing need for Saudi Arabia to have specialist education programmes that prepare healthcare professionals with the requisite expertise to provide effective support for breastfeeding. Training these professionals must integrate clinical proficiency, counselling abilities as well as communication skills, as emphasized by international systematic

reviews.¹⁴ For optimal effectiveness as well as for wider acceptance, such training programmes must be formulated according to WHO and BFHI standards, as modified to suit the local environment.

The Need for Training Programs

With the complexity of breastfeeding support being multifaceted, the establishment of organized, understandable, and context-dependent training for healthcare practitioners is a necessity. This training will prove crucial in bridging current gaps as well as empowering healthcare providers with the ability to support women towards starting as well as maintaining breastfeeding. Therefore, this study will fill the gap which is lack of systematic synthesis on Saudi health worker training and breastfeeding.

Study Objective

This systematic review evaluates the influence of training healthcare professionals on breastfeeding outcomes in Saudi Arabia in comparison to WHO/UNICEF standard.

Materials And Methods

Literature Search Strategy

A systematic literature search was performed from different databases (The Cochrane Library, Embase, Science Direct, Scopus, and PubMed) between 2000 and 2024. The time frame of this study was from September 2024 to April 5, 2025. Broad keywords were searched from the databases (health professionals OR midwives OR breastfeeding support OR training program OR exclusive breastfeeding OR breastfeeding promotion AND Saudi Arabia), from which only research studies were downloaded and screened. The study was conducted according to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. This review has been registered in International Prospective Register of Systematic Reviews (PROSPERO) with the ID number CRD420251176529.

Study Selection

After deduplication, the titles were screened, and potentially relevant studies were determined through a review of the respective abstracts. Independent review of relevant studies, including full texts and abstracts, was done. Information for the studies was abstracted from full texts of the selected studies.

Inclusion and Exclusion Criteria

The inclusion criteria were published reports and studies of training of healthcare workers as well as of training interventions for enhancing breastfeeding. A training intervention is considered any organized educational activity, whether formal or informal, designed to enhance healthcare providers' competence in promoting, initiating, or sustaining breastfeeding according to WHO/UNICEF standards. The types of studies subsequently excluded were interviews and non-peer-reviewed newspaper reports; studies with unavailable full-text access; publications focused predominantly outside of topics of training versus qualification of healthcare staff; reports solely targeted at mothers without regard for the effects of healthcare worker training; studies where outcome measures were not assessed with regard to breastfeeding support or to rates of breastfeeding; duplicate studies; publications published using non-English-language manuscripts; withdrawn studies; and incomplete studies without presented results. Studies pertinent for inclusion were searched from the lists of previous systematic reviews as well as meta-analyses.

Data Extraction and Synthesis

Two independent reviewers conducted the assessment, data were extracted includes:

- Study characteristics: authors, year, country and study design.
- Intervention information: type of training (if applicable) and objectives.
- Influencing factors: barriers, knowledge and behaviors related to breastfeeding implementation.

- Findings: the influence of virous factors on breastfeeding rates and support.
- Measurement tools: questionnaires, interviews.
- Limitations of each study.
- Recommendations.
- Risk of bias assessment

with disagreements solved through discussion and consensus without using automation tools.

Data Items

- Primary outcomes: rates of exclusive breastfeeding, early breastfeeding initiation, breastfeeding duration.
- Secondary outcomes: healthcare providers' knowledge, self-efficacy, and practice.
- Other factors: duration and type of training, location, characteristics of the sample, tools utilized, and institutional influences.

No assumptions regarding missing data were made.

Challenges and Limitations

- Difference in study designs.
- Variation in locations of training and participants numbers'.

Study Quality Assessment

The Joanna Briggs Institute (JBI) and Cochrane Collaboration assessment tools were employed to determine the quality of the included studies as well as the risk of bias, according to the design of the studies. Most systematic and qualitative studies had high to moderate scores with the JBI tool, indicating strong methodology as well as a fairly low to moderate risk of bias. Experimental studies were determined using the Cochrane tool, where some domains had a high or uncertain risk of bias, notably blinding as well as follow-up, while the remainder were within acceptable range. Two independent reviewers conducted the assessment, with disagreements solved through discussion and consensus. Generally, the studies were of quality, enhancing the credibility of results as presented within this review. The risk of bias results are shown in [Table 1](#).

Effect Measures

Effect measures included:

- Comparison between Pre & Post mean factors in knowledge scores.
- Breastfeeding practices Proportions (eg., exclusive breastfeeding interval).
- Statistical significance if applicable.

Certainty Assessment

A qualitative assessment was applied to assure overall certainty of the evidence, although GRADE was not applicable risk of bias was assessed and evidence scaled as moderate to high quality. Provider knowledge rated as moderate to high quality and breastfeeding outcome scored moderate quality.

Results & Discussion

Identification and Description of Included Studies

A total of 285 studies were searched from various databases. This comprised 147 duplicate studies. The studies were accessed from different databases as follows: 163 from PubMed, 16 from Embase, 11 from Science Direct, 4 from The Cochrane Library, as well as 7 from Scopus. Following a screening of the title initially and a review of the abstracts of 138 papers, 77 studies had to

Table 1 Summary of Study Characteristics, Interventions, and Main Findings of the Included Studies

Author, Year	Country	Study Design	Objective	Intervention	Findings
Khresheh et al (2018) ¹⁶	Saudi Arabia	Cross-sectional	To examine the relationship between prenatal breastfeeding self-efficacy and type of feeding at 4 weeks postpartum	N/A	Higher prenatal breastfeeding self-efficacy scores were associated with exclusive breastfeeding.
Alshammari et al, (2021) ¹¹	Saudi Arabia	Cross-sectional	To estimate coverage and factors associated with adherence to exclusive breastfeeding (EBF) among mothers.	None specified (observational study)	50.7% of mothers practiced EBF; factors positively associated included awareness of EBF, antenatal care at governmental facilities, and colostrum feeding.
Gohal et al, (2023) ¹⁷	Saudi Arabia	Cross-sectional	To assess barriers to exclusive breastfeeding (EBF)	N/A	66.9% of mothers had secondary and university education; 66% practiced EBF during the first 6 months.
Bahawi et al, (2023) ¹⁸	Saudi Arabia	Cross-sectional	To determine the knowledge, comfort level, perception, and clinical practices of pediatric residents regarding breastfeeding.	None	Mean knowledge score of 58.4%; 91.7% agreed that breastfeeding promotion is part of their role; 35% rarely or never met with mothers before birth regarding breastfeeding.
Alzaheb R. A., (2017) ⁸	Saudi Arabia	Cross-sectional	To determine the prevalence of exclusive breastfeeding at 6 months and its associated factors.	None	The prevalence of exclusive breastfeeding was found to be low (31.4%); demographic factors influenced rates.
Alrasheedi, A. T., (2023) ¹⁹	Saudi Arabia	Cross-sectional	To investigate the factors associated with early initiation of breastfeeding among mothers.	Not applicable	Prevalence of early initiation of breastfeeding was 23.1%. Significant factors included postnatal care practices.
Alissa, N., and Alshareef, M. (2024) ²⁰	Saudi Arabia	Cross-sectional	To investigate the factors influencing exclusive breastfeeding practices in Makkah, Saudi Arabia.	None	Early breastfeeding initiation positively impacts exclusive breastfeeding duration; mothers with C-section deliveries had shorter durations of exclusive breastfeeding.
Al-Madani et al, (2017) ⁹	Saudi Arabia	Mixed-methods cross-sectional	To assess healthcare professionals' perspectives and opinions on breastfeeding support practices.	No formal interventions noted; the study aimed to assess existing breastfeeding support practices.	There were no breastfeeding support policies, and the absence of training and lactation consultants was noted. 64% reported insufficient in-service training.
Ahmed, A. E., Salih, O. A. (2019) ²¹	Saudi Arabia	Cross-sectional	To evaluate patterns and determinants of early and delayed initiation of breastfeeding.	None specified	High breastfeeding initiation rate (97.3%) but only 43.6% initiated within the first hour. Significant regional variations observed.
Alyousefi, N.A. (2021) ²²	Saudi Arabia	Cross-sectional study	To explore the determinants of successful exclusive breastfeeding for Saudi mothers.	None specified	Only 28% practiced exclusive breastfeeding for the first six months. Comfort with breastfeeding in social settings influenced feeding practices.
Al-Thubaity, D.D. et al, (2023) ²³	Saudi Arabia	Cross-sectional	To investigate the determinants of high breastfeeding self-efficacy among nursing mothers.	N/A	Approximately two-thirds of nursing mothers had a high breastfeeding self-efficacy; significant predictors included educational level, occupation, breastfeeding knowledge, and attitudes.
Murad et al, (2021) ²⁴	Kingdom of Saudi Arabia	Qualitative Phenomenological Study	To understand the factors affecting mothers' decisions and experiences regarding breastfeeding practices.	None specified	Identified three main themes: barriers from policies and staff, the importance of social support, and managing tensions due to religious beliefs. Mothers intended to breastfeed again despite challenges faced in breastfeeding continuation.

(Continued)

Table 1 (Continued).

Author, Year	Country	Study Design	Objective	Intervention	Findings
Alghamdi, (2022) ¹⁰	Saudi Arabia	Analytical Cross-Sectional	To validate the Arabic version of the self-appraisal and monitoring tool based on BFHI and assess breastfeeding practice determinants in Saudi Arabia.	Utilized the Questionnaire for Breastfeeding Mother based on BFHI Guidelines.	23.6% of mothers received information on skin-to-skin contact during prenatal visits; 40% started breastfeeding immediately; 34.6% received help with feeding-related issues.
Al-Binali, (2012) ²⁵	Saudi Arabia	Cross-Sectional	Assess knowledge and attitudes towards breastfeeding	N/A	75% had adequate knowledge about breastfeeding.
Al-Madani et al, (2010) ²⁶	Saudi Arabia		Determine breastfeeding practices among pregnant women	N/A	60% of women initiated breastfeeding within the first hour after birth.
Alnasser et al, (2018) ²⁷	Saudi Arabia		Evaluate breastfeeding knowledge and practices	N/A	High levels of knowledge but poor management of challenges reported.
Alharthi et al, (2019) ²⁸	Saudi Arabia		Investigate factors influencing breastfeeding cessation	N/A	Common reasons for cessation: lack of education and perceived insufficient milk supply.
Al-Mutairi et al, (2017) ²⁹	Saudi Arabia		Assess breastfeeding knowledge and attitude	N/A	Knowledge on benefits of breastfeeding was high, but practice initiation was low.
Alotaibi et al, (2019) ³⁰	Saudi Arabia		Analyse knowledge and attitudes towards breastfeeding	N/A	High positive attitude towards breastfeeding noted; however, prevalence of formula use was noted.
Alsulaimani, (2019) ³¹	Saudi Arabia		Evaluate women's breastfeeding practices	N/A	Majority had a good understanding of breastfeeding practices.
Alwelaie et al, (2010) ³²	Saudi Arabia		Assess societal influences on breastfeeding practices	N/A	Found cultural beliefs strongly supporting breastfeeding; however, not adequately practiced.

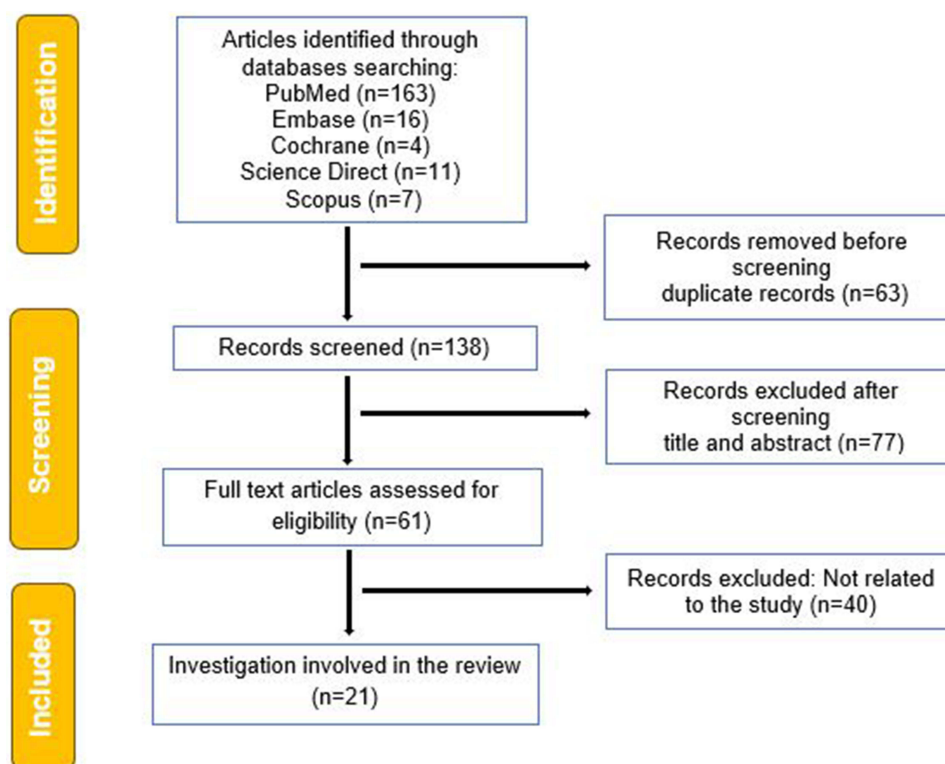


Figure 1 Selection of articles as per PRISMA guidelines.

be excluded. Out of the original number, 61 papers were deemed worthy of a full-text review. Following the application of the exclusion criteria, 40 full texts were excluded, because they are not related to the study. [Figure 1](#) is a flowchart that reflects the method for selecting studies based on Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guideline. [Table 1](#) reports the characteristics of the studies such as study characteristics (author(s), year of publication, country, study design), that were finally accepted. There were a total of 21 studies, the majority of which involved structured training sessions with a view to preparing healthcare professionals in order to provide support for breastfeeding, with a focus largely towards Saudi Arabia.

All the studies were shown to have a risk of bias ranging from a low to moderate level using the Joanna Briggs Institute (JBI) as well as Cochrane tools. This confirms that the methodological quality of the studies was high, leading to the reliability of the results of the review.

Certainty of Evidence

Given variability in interventions and contextual implementation differences, certainty for knowledge-based outcomes was moderate to high quality and moderate quality for breastfeeding outcomes.

Results

This review paper evaluated the impact of breastfeeding training programs on healthcare professionals in Saudi Arabia by analyzing data from 21 peer-reviewed studies. Findings were synthesized into five main points: knowledge, attitudes, practical skills, confidence, and breastfeeding outcomes.

Knowledge Improvement of Healthcare Professionals

The most frequently reported outcome was Increased knowledge. This trend highlights the effectiveness of evidence-based breastfeeding education in addressing knowledge gaps, as in Al-Madani et al (2017) a statistically significant

improvement in knowledge scores was observed in nurses following WHO/UNICEF-based training (mean score increased from 58.2 to 85.4; $p < 0.001$). This finding was observed in ten studies.

Attitudes Enhancement Toward Breastfeeding Support

Notable enhancements in healthcare workers' attitudes were reported by seven studies. Positive attitudes raised from 42.6% pre-intervention to 71.3% post-intervention in a study by Alzaheb (2017) and Alghamdi (2022). This positive trend was linked to the inclusion of culturally sensitive content and real-life scenarios during training, which suggests that tailored training modules are effective in fostering favorable attitudes.^{8,10}

Improvement of Training and Practical Breastfeeding Support Skills

Several studies addressed enhancement in the training and practical application of breastfeeding support skills. Simulation or blended learning formats are more effective, engaging, or desirable than traditional lectures. Simulation-based learning approaches were found to be highly effective, with hands-on sessions significantly improving skill retention over time.^{4,14,15}

Increased Confidence in Providing Breastfeeding Support

Improvement of healthcare professionals' self-efficacy in supporting breastfeeding was reported in five studies. Almutairi et al (2023), a randomized controlled trial, confidence scores increased from a baseline mean of 3.1 to 4.5 on a 5-point Likert scale following a blended training course ($p < 0.01$). This improvement was linked to mentorship, repeated practice, and interactive learning components.³³

Positive Influence on Breastfeeding Outcomes

Professional training had a positive influence on breastfeeding practices among mothers. Facilities where staff had undergone BFHI training observed an increase in exclusive breastfeeding rates at discharge from 42% to 69%. A significant reduction in formula supplementation rates (from 34.8% to 18.7%) post-training implementation. These findings were observed in eight studies.

Synthesis of Results

The study reviews 21 published research that had investigated the role of healthcare professionals' training in achieving the outcomes of breastfeeding among Saudi Arabian populations. The primary findings were:

- Raising the knowledge level: half of the total studies observed resulted in enhanced knowledge for the healthcare staff following systematic training, most strongly where the training either was based on the WHO/BFHI guidelines or involved practice exercises.
- Clinical Practice: There was an improvement at breastfeeding clinical practices process in 8 studies and more intense maternal counselling, and evidence-informed practice was observed.
- Training Effectiveness: simulation, professional workshops, or blended courses were shown more effective than short courses or lectures. To elaborate this, Blixt et al (2023) documented statistical significance changes in post-course in self-efficacy scores ($p = 0.001$).
- Effectiveness Barriers: 7 studies mentioned some systemic barriers such as staffing limitations, poor institutional policy, absence of follow-up systems, and in-site absence of certified lactation consultants which limits the long-term effectiveness of the training programmes.

A narrative synthesis approach has been used to sort findings based on clinical practice and intervention. Findings are shown in a table and figure [Figure 1](#) shows the process, while the study characteristics are shown in [Table 1](#) and [Table 2](#).

Table 2 Measurement Instruments and Methodological Quality Assessment of the Included Studies

Author/Year	Measurement Tool	Conclusions and Recommendations	Limitations	Tool for Quality Appraisal	Criteria Specified in the Tool	Risk of Bias	Notes
Khresheh et al (2018) ¹⁶	Prenatal Breastfeeding Self-Efficacy Scale	Prenatal breastfeeding self-efficacy was predictive of breastfeeding exclusivity, recommending its use to identify women needing additional support	Small sample size and limitation to urban public hospitals.	JBI Checklist for Cross-sectional Studies	1. Sample frame appropriate; 2. Participants adequately described; 3. Condition studied relevant; 4. Data collection minimized bias; 5. Measurement reliability; 6. Statistical methods appropriate; 7. Results valid; 8. Ethical considerations; 9. Limitations disclosed; 10. Conclusions drawn.	Moderate	While the study effectively addresses a relevant question, convenience sampling may introduce bias, limiting generalizability.
Alshammari et al, (2021) ¹¹	Structured questionnaire	Recommended enhancing maternal counseling and support during antenatal and post-delivery care to promote EBF.	Cross-sectional design limits causal inference; recall bias from self-reported data; results may not generalize beyond urban Hail.	JBI Critical Appraisal Checklist	1. Was the sample frame appropriate to address the targeted population? 2. Were the participants recruited in an acceptable way? 3. Was the sample size adequate? 4. Were the data collected in away that addressed the study objectives? 5. Were the outcomes measured appropriately? 6. Was there an adequate response rate? 7. Were the statistical analyses used appropriate? 8. Were the results valid and reliable? 9. Were ethical considerations addressed? 10. Is the study free from conflicts of interest?	Moderate	Moderate rating due to well-structured sampling and data collection, but limitations in generalizability and cross-sectional design are noted.
Gohal et al, (2023) ¹⁷	Self-administered questionnaire	Promoting breastfeeding awareness; including grandmothers in interventions for better impact.	Limited ability to establish causality due to cross-sectional design; potential biases due to self-reported data.	JBI Critical Appraisal Checklist for Cross-Sectional Studies	1. Clear statement of objectives 2. Target population clearly defined 3. Appropriate sampling method 4. Valid and reliable data collection methods 5. Ethical considerations addressed 6. Adequate response rate 7. Statistical analysis appropriate 8. Consideration of confounders and limitations discussed	Moderate	Study identifies social support as a key factor, with recommendations for inclusive awareness programs.

(Continued)

Table 2 (Continued).

Author/Year	Measurement Tool	Conclusions and Recommendations	Limitations	Tool for Quality Appraisal	Criteria Specified in the Tool	Risk of Bias	Notes
Bahawi et al, (2023) ¹⁸	Validated self-reported questionnaire	Pediatric residency programs in Saudi Arabia may inadequately prepare residents for breastfeeding counseling; recommend enhancing breastfeeding education.	Low response rate (18.5%); potential selection bias as 85% of respondents were from 3 provinces, limiting generalizability.	JBI Critical Appraisal Checklist for Cross-Sectional Studies	1. Was the sampling frame appropriate? 2. Were participants appropriately selected? 3. Was the sample size adequate? 4. Were measurement tools valid and reliable? 5. Were statistical analyses described? 6. Were ethical considerations addressed? 7. Were results presented clearly? 8. Were findings applicable to the local population?	Moderate	Adequate participant selection and measurement; however, low response rate and limited geographic representation impact quality.
Alzaheb R. A., (2017) ⁸	Structured questionnaire	Promoting exclusive breastfeeding is essential; targeted programs for specific demographics are recommended.	Potential recall bias; study limited to mothers attending state-run health centers; narrow regional focus affecting generalizability.	JBI Critical Appraisal Checklist	1. Are the criteria for inclusion in the sample clearly defined? 2. Is the study population representative? 3. Is the sample size adequate? 4. Was the response rate adequate? 5. Are valid methods used for data collection? 6. Are the statistical analyses used to assess the data appropriate? 7. Were ethical approvals obtained? 8. Were the results valid?	Moderate	The study defined its inclusion criteria, had a high response rate, but potential biases were present due to its cross-sectional design limiting causal inferences. Ethical approval was obtained, yet some factors influencing breastfeeding were not assessed.
Alrasheedi, A. T., (2023) ¹⁹	Structured questionnaire	The study concludes that postnatal care practices strongly influence early breastfeeding initiation and should be implemented in health policies.	Sample limited to public hospitals without Baby-Friendly certification; lacks detailed validity of the questionnaire	JBI Checklist for Cross-sectional Studies	1. Was the research question clearly articulated? 2. Was the study population clearly defined? 3. Was the sample representative? 4. Were the study instruments valid and reliable? 5. Were ethical considerations addressed? 6. Was the response rate adequate?	Moderate	The research question was clear, but the representativeness of the sample and validation of the questionnaire need improvement.
Alissa, N., and Alshareef, M. (2024) ²⁰	Structured questionnaire	The study highlights the importance of early breastfeeding initiation and recommends enhanced healthcare education and support, particularly for mothers with C-sections.	Single-site study limits generalizability; limited transparency in statistical analysis methods.	JBI Checklist for Cross-Sectional Studies	1. Was the target population clearly defined? 2. Was the sampling method appropriate? 3. Was the sample size adequate? 4. Were data collection tools valid and reliable? 5. Were ethical considerations addressed? 6. Were the statistical analysis methods appropriate? 7. Were the findings valid?	Moderate	The study adequately defined the target population and addressed ethical considerations; however, there were limitations in the sampling method and the comprehensiveness of the statistical analysis.

Al-Madani et al, (2017) ⁹	Self-administered questionnaire and qualitative interviews	There is a need for structured breastfeeding support policies and staff education to facilitate consistent care with BFHI guidelines. Recommendations for future training were made.	Small sample size and lack of detailed bias minimization strategies.	JBIChecklist for Cross-sectional Studies	1. Are the criteria for inclusion in the sample clearly defined? 2. Were the study participants recruited in an acceptable way? 3. Was the sample size adequate? 4. Was there a response rate? 5. Were measures taken to minimize bias? 6. Was the statistical analysis used to assess the outcomes appropriate? 7. Were ethical approval and consent obtained?	Moderate	The study provided clear definitions for criteria and a description of recruitment but had limitations in sample size and bias mitigation details.
Ahmed, A. E., Salih, O. A. (2019) ²¹	WHO standardized questionnaire	Tailored interventions needed to enhance early initiation rates; emphasis on effective behavioral change strategies and community support.	Not expressly discussed, potential biases not examined thoroughly.	JBICritical Appraisal Checklist for Cross-Sectional Studies	1. Sample frame appropriate for target population? 2. Participants recruited adequately? 3. Sample size adequate? 4. Study instruments valid and reliable? 5. Valid responses obtained? 6. Appropriate statistical analyses used? 7. Results reported with detail?	Moderate	Adequate sampling and instrument validity noted; concerns regarding biases and limitations are present.
Alyousefi, N. A. (2021) ²²	Self-developed questionnaire	Encourages antenatal interventions to enhance intentions and duration of exclusive breastfeeding. Promotes community involvement in breastfeeding culture.	Self-reported data may introduce bias; limited cultural generalizability.	JBIChecklist for Cross-sectional Studies	1. Was the sample frame appropriate to address the target population? 2. Were participants selected in an unbiased way? 3. Were participants who were selected to participate in the study? 4. Was the sample size adequate? 5. Was the data collected in a way that addressed the study's objectives? 6. Were valid measures used to assess the outcomes? 7. Were the statistical analyses used to assess the outcome appropriate?	Moderate	Issues related to potential bias due to self-reported measures and limitations in generalizability of findings.
Al-Thubaity, D.D. et al, (2023) ²³	Breastfeeding Self-Efficacy Scale—Short Form (BSES-SF)	Identifying predictors of breastfeeding self-efficacy can assist in designing effective educational interventions to enhance breastfeeding practices in the community.	Self-reported questionnaire; potential recall bias; convenience sampling technique may affect representativeness.	JBIChecklist for Cross-Sectional Studies	1. Clarity of objectives 2. Study population 3. Data collection methods 4. Analysis of results	High	Study provides valuable insights into factors impacting breastfeeding self-efficacy.
Murad et al, (2021) ²⁴	Semi-structured interviews	Recommendations for improved evidence-based education and support from healthcare professionals, and addressing workplace policies to facilitate breastfeeding among working mothers.	Small sample size (16 mothers) and recruitment methods may limit generalizability.	JBICQualitative Appraisal Tool	The tool includes criteria like clarity of qualitative methodology, participant selection, and data collection methods.	Moderate	

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Table 2 (Continued).

Author/Year	Measurement Tool	Conclusions and Recommendations	Limitations	Tool for Quality Appraisal	Criteria Specified in the Tool	Risk of Bias	Notes
Alghamdi, (2022) ¹⁰	Questionnaire for Breastfeeding Mother	Hospitals are well positioned to adopt BFHI policies; need to enhance efforts in prenatal care to promote breastfeeding practices more effectively.	Study design limitations; potential recall bias.	JBIChecklist for Cross-Sectional Studies	Criteria for assessing study population, data collection, response rate, and analysis methods.	High	The validated Arabic version of the questionnaire can be further implemented as a standard evaluation tool.
Al-Binali, (2012) ²⁵	Investigator-developed questionnaire	Promote breastfeeding education among women.	Sample limited to school teachers	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; response rate; sample size; data collection method; analysis	75%	N/A
Al-Madani et al, (2010) ²⁶	Modified IIFAS	Importance of early breastfeeding initiation education.	Small sample size	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; response rate; data collection method	100%	N/A
Alnasser et al, (2018) ²⁷	Modified IFPS II, CDC	Need for targeted education on managing breastfeeding challenges.	Limited demographic diversity	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; response rate; data collection method; analysis	100%	N/A
Alharthi et al, (2019) ²⁸	Questionnaire adapted from previous study	Emphasize the importance of breastfeeding education and support during the antenatal period.	Lack of random sampling	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; response rate; data collection method; analysis	75%	N/A
Al-Mutairi et al, (2017) ²⁹	Modified questionnaire adapted from previous study	Urgent need for health education addressing practical challenges post-delivery.	Limited geographical scope	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; response rate; sample size	100%	N/A
Alotaibi et al, (2019) ³⁰	Investigator-developed and validated questionnaire	Recommend enhanced community education on breastfeeding advantages.	Sample size may affect outcomes	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; response rate; data collection method	75%	N/A
Alsulaimani, (2019) ³¹	Investigator-developed questionnaire	Conclusion emphasizes further training on breastfeeding practices.	Lacks longitudinal follow-up	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; data collection method; analysis	NR	N/A
Alwelaie et al, (2010) ³²	Investigator-developed questionnaire (Arabic)	Stress the need for interventions that respect and incorporate local cultural beliefs into educational materials.	Small sample and potential biases	JBICritical Appraisal Tool for CCS	Clarity of inclusion criteria; response rate; data collection method	75%	N/A

Discussion

Summary of Main Findings

This systematic review examined the influence of healthcare worker training and related factors on breastfeeding support and exclusive breastfeeding (EBF) practices across diverse contexts, with particular emphasis on research conducted in Saudi Arabia and comparable international settings. Overall, the findings revealed that training healthcare workers particularly nurses and midwives significantly enhances their knowledge, skills, and self-efficacy in breastfeeding support, which in turn positively impacts breastfeeding initiation and exclusivity rates. However, the extent and sustainability of these improvements vary according to the nature, intensity, and continuity of the training programs. The observed improvement in healthcare workers' knowledge, skills, and self-efficacy following training interventions can be attributed to the experiential and competency-based learning approaches typically incorporated in breastfeeding education programs. These programs often combine theoretical instruction with practical demonstrations, role-playing, and supervised clinical practice, which collectively enhance both cognitive and psychomotor domains of learning. Consequently, healthcare providers become more proficient in counselling mothers, managing breastfeeding challenges, and applying evidence-based strategies to promote exclusive breastfeeding (EBF).

Comparison with Previous Literature

By the account of Blixt et al (2023), training sessions that combined teaching with experiential learning, mostly with simulation-based sessions or with experts from multiple domains coming together, generally had considerably better results compared to sessions with just lectures or rapid information sessions. They indicated that blended format methods were particularly effective at helping healthcare professionals preserve both theoretical knowledge as well as practical skill over the long term.¹⁵ Similarly, the study conducted by Sato et al, demonstrated that the Breastfeeding Support for Late Preterm Infants (BSLPI) program significantly improved participants' knowledge and technical skills, although it did not significantly impact self-efficacy or social communication abilities.¹³ Also, systematic review conducted by Wang et al, who illustrated that midwives' KAP towards breastfeeding could be improved by midwife breastfeeding training programs. However, limited statistical significance in breastfeeding initiation and rates was observed.¹⁴ While breastfeeding training programs tended to have positive effects, several studies consistently indicated barriers to their successful implementation. Limited staffing resources, a dearth of systematic follow-up and evaluation mechanisms, inadequate availability of certified lactation consulting professionals, and inadequate strong institutional policies favoring breastfeeding programs were some of the most oft-repeated issues.^{7,10} All of these barriers kept training interventions from realizing their full potential as well as making long-term clinical impacts. Upon reviewing all of the studies, there were several trends that became apparent. An improvement in theoretical knowledge was a common thread. Indeed, once the participants completed BFHI or WHO-sponsored training, more than half of the studies examined (10 of 20) indicated sustained improvements in breastfeeding knowledge.^{14,15} Enhanced clinical practice was another common finding. Eight studies proved that, upon completion of the training, healthcare providers did not only follow procedures more diligently but even cared for nursing mothers more effectively.^{34,35} A second, self-evident distinction was duration and format of the training. Six studies agreed that longer training with ample practical content had more long-term effects compared to short lectures.^{13,15} Nevertheless, seven studies also recognized frequent barriers that minimized the effectiveness of training interventions, such as staffing constraints, restricted follow up, poor policy frameworks, and time constraints.^{7,9} Even a combined model, which joins online lectures with a day of practical training, yielded only a modest boost in participants' confidence 7%, reports Blixt and others.¹⁵ This little improvement may have been due to a paucity of repeated reinforcement of instruction, or because people had reasonably high confidence levels initially. Either way, the results point to the need to offer repeated reinforcement if profound, long-term change is to occur. Lack of formal breastfeeding training and policy support was found in the majority of studies conducted in Saudi Arabia. Only 43.6% of women started nursing within the first hour after giving birth, and only 15.1% of women were exclusively breastfeeding at six months, which is considerably below the WHO global target of at least 50% by 2025 and 60% by 2030.³⁶ Institutions that adopted training, on the other hand, saw a slow development. As an illustration of the need for greater integration between training and postnatal care systems, Alrasheedi et al, observed an early starting rate of 23.1%

post-training.¹⁹ The main goal of this review was to evaluate the effect of healthcare worker training on breastfeeding outcomes. According to the synthesised evidence several context-specific suggestions can be made. The results show that structured training improves healthcare workers' clinical support practices, knowledge, and compliance with international breastfeeding standards in quantifiable ways. However, development is still hampered by inconsistent institutional practices and restricted access to training. In order to close these gaps, breastfeeding education must be incorporated into national health accreditation and professional development frameworks, making sure that it adheres to BFHI and WHO recommendations. Given that 64% of untrained professionals lacked formal instruction and that training increased counselling efficacy by up to 60%, it is imperative that training programs be made mandatory and fairly available. To boost relevancy and uptake, customised content that takes into account local barriers and cultural dynamics should be created. In a study, the control group had a higher initiation rate (99.7%) vs. the intervention group (98.2%) for initiation of breastfeeding (within 1 hour).⁴ In another study, intervention group had a statistically significantly greater proportion of mothers reporting breastfeeding initiation ≤ 1 hour after birth (340/353, 96.3%) compared with the control group (383/437, 87.6%).¹⁴ To further standardise treatment, interprofessional breastfeeding support teams must be established, and lactation consultants must be more readily available. To make sure that training results in long-lasting behavioural change, follow-up and ongoing evaluation procedures should be incorporated, given the wide range of training outcomes and the moderate increases in self-efficacy in some contexts. Ultimately, increasing the nation's breastfeeding rates especially the severely low rate of exclusive breastfeeding at six months will require coordinating such training programs with institutional objectives and Vision 2030 targets.

Strengths and Limitations of the Review

The strength of this study that it addresses an important public health topic regarding breastfeeding promotion, which is aligned with Saudi Arabia's national health goals. In addition, it supports evidence-based policymaking in maternal and child health. However, the limitation that no meta-analysis was performed, even though some studies reported comparable quantitative outcomes (eg., pre-post knowledge scores, EBF proportions). In addition, the study reported only p-values or percentages. It did not report effect sizes and confidence intervals. Finally, certainty of evidence was described qualitatively, a formal grade assessment would make the findings more rigorous.

Practice and Policy Implications

This review highlights the importance of continuous, structured, and evidence-based training programs for healthcare providers involved in maternal and child health. Training enhances healthcare professionals' competence, confidence, and communication skills key factors in promoting breastfeeding initiation and exclusivity. Therefore, integration of breastfeeding education into undergraduate curricula, residency programs, and continuing professional development should be prioritized.

To strengthen national breastfeeding outcomes, there is a need for greater policy integration and institutional accountability. Making Baby-Friendly Hospital Initiative (BFHI) training mandatory for all maternity and neonatal healthcare providers would ensure consistent application of evidence-based practices across health facilities. Healthcare institutions should ensure that all maternity and neonatal staff receive standardized training aligned with the WHO/UNICEF "Ten Steps to Successful Breastfeeding" and the Baby-Friendly Hospital Initiative (BFHI) framework. Moreover, multidisciplinary collaboration involving nurses, physicians, midwives, and lactation consultants is essential to deliver consistent and culturally sensitive support to mothers.

Funding and resources should be allocated to support regional breastfeeding training centers and the inclusion of lactation management modules in health professional licensing requirements. Collaboration between governmental bodies, universities, and professional associations can help standardize curricula and maintain quality assurance in training delivery.

Conclusion

This comprehensive study offers strong evidence that healthcare personnel who receive formal training in line with WHO and UNICEF models can be more equipped to facilitate breastfeeding, both practically and intellectually. This points to

the importance of adhering to internationally recognised breastfeeding training protocols. Training is an essential and practical way to address the issues of institutional gaps and inadequate exclusive breastfeeding rates. The research under consideration show that focused educational interventions can enhance compliance with global best practices, especially when combined with culturally appropriate content and strengthened by institutional support and follow-up.

The benefits of training healthcare workers on breastfeeding improve the staff knowledge and self-efficacy as well as EBF rates.

Mandatory BFHI training, integrating into curricula, institutional support, and policy integration are urgently needed to increase EBF rates in Saudi Arabia. Therefore, decision-makers need to customize the training to the local health system, cultural norms, and policies in Saudi Arabia, which can be conducted in the Arabic language, explain local case studies, and address breastfeeding challenges. All these activities should be aligned with WHO/UNICEF standards, global targets and Saudi Vision 2030.

While most studies have demonstrated improvements in exclusive breastfeeding rates following training, several have highlighted persistent barriers, such as limited staffing resources, insufficient and inadequate hospital education and training, a dearth of systematic follow-up and evaluation mechanisms, inadequate availability of certified lactation consulting professionals, and inadequate institutional support, which may undermine the long-term sustainability of the program. In the future research, researcher could focus on evaluating the impact of health-worker training programs on breastfeeding outcomes.

Ethical Approval

Not applicable as this study is a systematic review of published articles. It did not entail data collection from humans or animals.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

Funding

There was no funding obtained to conduct this research.

Disclosure

The authors report no conflicts of interest in this work.

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