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Development of a breastfeeding co-parenting intervention program for couples with primiparas: a program development process study

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Abstract

Background The exclusive breastfeeding rates is low in some countries. Low breastfeeding rates results in higher healthcare expenses and adverse health outcomes for individuals and society. Co-parenting is effective in promoting breastfeeding as it involves shared responsibility and collaboration between parents in raising children. However, the current breastfeeding co-parenting intervention programs exhibits significant variations in components, timing, and duration across studies. An evidence-based breastfeeding co-parenting intervention program is essential for enhancing breastfeeding-related outcomes.

Objective To develop an evidence-based breastfeeding co-parenting intervention program for healthcare providers to guide parents with primiparas on breastfeeding.

Method To form an initial version of the intervention program, a systematic literature review was conducted to consolidate information on current intervention programs. Two rounds of Delphi method were followed to gather expert comments for the program modification to establish the formal version.

Results Fourteen articles published between 1995 and 2022 were screened. Details of these researches, including starting and ending time, duration and specific contents, were integrated to developed the initial program. Then, six experts completed the two rounds consultation with a positive coefficient of 85.71%, coefficient judgment basis of 0.93, familiarity coefficient of 0.87, authority coefficient of 0.90 and the Kendall's W of 0.62. Finally, an evidence-based breastfeeding co-parenting intervention program was constructed in this study, consisting of breastfeeding co-parenting courses, individual counselling and a father's support group.

Conclusion This research developed a breastfeeding co-parenting intervention program for healthcare providers to guide primiparous parents to improve breastfeeding rates. Through a systematic literature review and Delphi method with good reliability, the program integrates breastfeeding courses, individual counseling, and a father's

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support group. Future research will focus on evaluating its impact and scalability to benefit maternal and infant health globally.

Trial registration ChiCTR.org.cn (ChiCTR2300069648). **Registration date**: 2023-03-22.

Keywords Breastfeeding, Co-parenting, Delphi method, Intervention, Literature review

Introduction

Breastfeeding offers numerous benefits to infants and mothers, recommended by the World Health Organization (WHO) for the first 6 months and up to 2 years [1]. Breast milk contains immune substances that prevent infants' respiratory infections, diarrhea, and otitis media [2–4], while promoting maternal uterine contraction and reducing the risk of cancer, hemorrhage, and obesity [5–7]. Additionally, it enhances parent-child communication and reduces autism and behavior problems [8, 9]. However, the global exclusive breastfeeding (EBF) rates are below the WHO's target (50%), with 34.10% in China, 25.80% in the United States, and 28.63% in Algeria [10]. Low EBF rates result in higher healthcare expenses and adverse health outcomes, costing the US $13 billion annually [11]. Promoting breastfeeding could save 820,000 infant lives each year, with 87% under six months old [12].

A major contributing factor to this concerning situation is the lack of family support, especially from spouses [13]. Traditionally, breastfeeding has been viewed as solely the mother's duty, with gender expectations restricting fathers' involvement [14, 15]. Encouraging, supporting, and safeguarding breastfeeding is a global imperative, as it embodies a collective responsibility within families. Co-parenting involves parents jointly managing responsibilities and communicating while raising a child [16]. Breastfeeding co-parenting entails parents collaborating to achieve their breastfeeding objectives [17].

Breastfeeding co-parenting interventions are crucial to promote breastfeeding. Abbass et al' s implementation of an eHealth website resulted in heightened breastfeeding co-parenting behaviors among intervention couples [18]. Similarly, Rempel et al conducted prenatal group sessions and a fathers' club, resulting in improved father support, longer EBF duration and enhanced relationship quality among intervention participants [19]. However, there is a lack of standardization in breastfeeding co-parenting interventions across different studies, with significant discrepancies in components, timing, and duration. The heterogeneity among studies introduces instability in research findings [18, 20, 21].

Developed by Abbass et al., the Breastfeeding Co-parenting Framework consists of five components, including joint setting of breastfeeding goal, shared breastfeeding responsibilities, proactive breast-feeding support, paternal/ parental-child interactions and productive communication and problem solving [17]. This study aimed to develop an evidence-based breastfeeding co-parenting intervention program for healthcare providers to guide parents with primiparas on breastfeeding.

Methods

The program development process consisted of two phases: (1) A literature review was conducted to consolidate descriptive data on current intervention programs, forming the initial version of the intervention program. This information included the starting and ending times, durations, specific contents, and place of interventions. (2) A two-round online modified Delphi consensus process was employed to assess the inclusion or exclusion of items based on their points to importance and suitability in the initial version, and to collect feedback for potential program modifications in order to establish the formal version.

Literature review

Search strategy

To conduct the literature review, the "6S" Evidence Pyramid was followed, starting with the highest level of evidence and working downwards. Multiple databases were used to search for relevant studies, including UpToDate, BMJ Best Practice, The Cochrane Library, NICE (National Institute for Health and Clinical Excellence), PubMed, Web of Science, Embase, Medline, CINAHL, PsycINFO, and Scopus. The search encompassed literature from the inception of each database up until March 2022, without any language restrictions. Additionally, backward citation searching was employed to identify relevant studies. Comprehensive search keywords were utilized to ensure the inclusion of all pertinent literature in the review. Search keywords were:

(1) breast feeding OR breastfe* OR breastfeeding, exclusive OR exclusive breast feeding OR infant feeding OR lactation OR lactating.
(2) co-parenting OR coparenting OR parenting OR coparent*.
(3) randomized OR intervention OR program OR randomized controlled trial OR RCT.
(4) AND (2) AND (3).

Inclusion and exclusion criteria

The following inclusion criteria were applied: (1) guidelines, expert consensus, systematic review or meta-analysis about coparenting interventions; (2) randomized controlled studies or quasi-experimental studies (a) focus on co-parenting interventions; (b) both partners involved over the age of 18; (c) routine general care given to the control group (CG); (d) studies using EBF rate as the outcome measure.

The following exclusion criteria were used: literature (1) on case report or experience sharing; (2) target on drug-abusing parents; (3) focus on intergenerational coparenting interventions.

Literature selection

Two researchers separately read the literatures. The initial screening involved reviewing the title and abstract of each article. Subsequently, the full text of articles that met the inclusion criteria was evaluated. For experimental studies, the researchers used the "PICOS" (Participants, Intervention, Comparison, Outcomes, Study design) concept to select relevant studies. The EndNote X9 program was used to identify and eliminate duplicate articles. The inclusion and exclusion of studies were independently categorized by the two researchers, with any discrepancies resolved through negotiation or consultation with an expert group. This rigorous selection process aimed to ensure that the final set of studies included in the review met the criteria for quality and relevance.

Delphi method

Developed by Dalkey and Helmer in 1967 [22], Delphi method is validated as a research method for obtaining expert opinions and achieving group consensus when identifying healthcare quality indicators or developing a intervention program [23, 24]. It encompasses several essential steps: defining the research problem, creating a preliminary questionnaire, assembling an expert panel, distributing the questionnaire, analyzing data and providing feedback to experts, and reporting the findings [25] (Fig. 1).

Creation of the questionnaire

Integrated findings of the literature review, the questionnaire consisted of three sections: (a) Introduction to the study; (b) Contents for expert consultation including timing, frequency, components, and specific content of the intervention (see Supplementary file 1). (c) Sociodemographic information of experts.

Selection of experts

Experts for consultation were recruited using purposive selection. Inclusion criteria were: experts who (a) possessed a bachelor degree or higher; (b) specialized in maternal and infant health or were employed in obstetrics and gynecology department; and (c) had served as a master's/doctoral tutor at least 5 years or had worked in obstetrics and gynecology department of tertiary

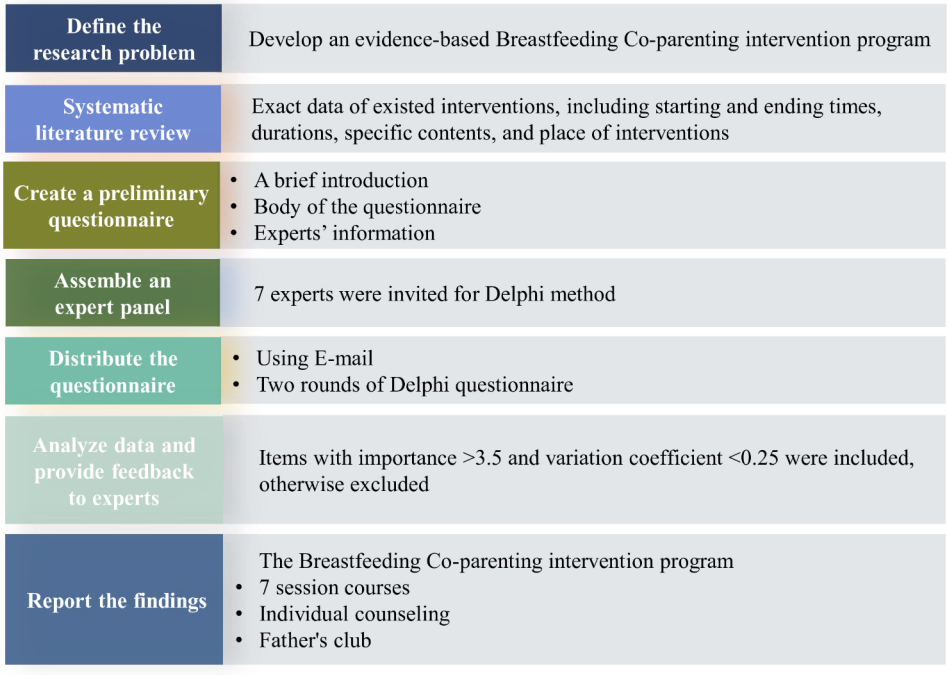

Fig. 1 Flow diagram of the Delphi method

hospitals for at least 10 years. Experts unable to participate in the whole consultation process were excluded.

Expert panel

Experts were sent a questionnaire via email and given a two-week deadline to respond. Experts were requested to assess each item using a five-point Likert scale to gauge its importance and suitability, with higher scores indicating greater levels of importance/ suitability (supplementary file 1). At the bottom of each item, an additional column for comments was included to gather expert opinions or suggestions, including the removal of nonsignificant items, amendment of inappropriate items, and addition of missing items. The cut-off value method was adopted for item screening, with items with importance > 3.5 and coefficient of variation < 0.25 were included, otherwise excluded [26]. After the first round, the research team promptly organized, updated, added, or removed the items for the next round. Any revised items recommended by the experts were discussed by the research team.

Expert positive coefficient was utilized to gauge the interest level among experts, while expert authority coefficient was used to demonstrate the expert's authority level on study subject and the dependability of the outcomes. The degree of coordination among the experts' opinions was represented using Kendall's W and the coefficient of variation, with a lower coefficient of variation indicating a less divergence and greater degree of coordination. The concentration of expert opinions was depicted by the mean value of each item and the selection rate of suitability, with higher mean values and greater suitability rates indicating better concentration of expert opinions.

Data analysis

The SPSS 26.0 was used for data analysis. Socio-demographic data of experts were expressed as mean ± standard deviation or constituent ratio when appropriate. Experts' positive coefficient was expressed by response rate. Experts' authority coefficient was computed based on the arithmetic mean of expert judgment coefficient and familiarity coefficient. Median range of expert's opinion was expressed by mean value of the index weight and the coefficient of variation.

Results

Literature review

Studies included

No guide about co-parenting was retrieved. Fourteen studies, conducted in nine different countries between 1995 and February 2022, were included [27]. A total of 1,917 articles were identified. 1,339 articles remained after removing duplicates. Following the screening of titles and abstracts, 1,257 publications were excluded. After conducting eligibility checks on the remaining 82 articles by thoroughly reading their full text, 62 more articles were excluded. Six additional articles were excluded after careful reading, resulting in a total of 14 articles included in this review.

The contents and format of interventions

The included studies were conducted in hospitals, communities or online platforms. Notably, the eHealth resource (websites or smartphone applications) focus on breastfeeding was found to be particularly useful and engaging [18, 28]. Specifically, internet-based interventions that offer early interactive antenatal breastfeeding education combined with postnatal web-based discussion support can enhance breastfeeding outcomes during hospitalization and improve EBF rate for up to six months [29].

The interventions detailed in Table 1 of the included studies adopted a range of strategies, including: (a) Provision of breastfeeding education through printed brochures and videos distributed or played during pregnancy or prenatal period. (b) Access to an electronic health resource, available through mobile applications, a web page, or online conferences. (c) Private or group counseling sessions held at healthcare facilities or in participants' homes. (d) Promotion of peer support and facilitation of breastfeeding group discussions. (e) Provision of practical demonstrations using dolls, milk collecting bags, feeding vessels, and breast pump devices.

Information regarding the benefits of breastfeeding, proper breastfeeding techniques, common issues like latching difficulties and nipple problems, and the importance of co-parental support emerged as highly beneficial [18, 30, 31]. Moreover, fathers played a supportive role by caring for the infant, assisting with household chores, and offering emotional assistance [18, 30]. Addressing postnatal depression among parents is crucial [32], with the provision of mental health resources being notably beneficial [30]. Fathers' club for ongoing support and sharing among fathers in the community was encouraged [19]. Perinatal counseling and postpartum home visits were the essential part of the interventions [33, 34]. Moreover, the research assistant was helpful, email and telephone reminders were valued [18, 35].

Based on these effective components, we outlined the necessary sections of the intervention program, including breastfeeding co-parenting courses, fathers' support group, and counselling (see the supplementary file 1).

The time of interventions

The starting time, ending time and durations of interventions differed across the studies included. Administration occurred between the 12th and 39th week of gestation

Table 1 Breastfeeding co-parenting intervention details

Author (year) country	Participants	Control group	Contents and Intervention method	Effectiveness of intervention	Initiation	Duration
Scott et al. 2021 Vietnam	Couples	Usual care,	FFABC + Milk Man (Breastfeeding smartphone app)	No statistical difference	Not clear	32 weeks' gestation to 6 months postpartum
Abbass et al. 2020 Canada	Primiparas couples or hadn't breastfed; > 25 weeks' gestation	Generally available resources	Generally available resources+ online e-health resource (Virtual meeting)	Enhanced breastfeeding partner support and breastfeeding co-parenting behaviors	After 25 weeks gestation	Throughout perinatal period
Rempel et al. 2020 Vietnam	Couples 12 to 27 weeks' gestation	Five-session childbirth curriculum	Prenatal group session; brief session by a midwife or health worker; Fathers' Club	Greater father support, longer EBF duration	After 12 to 27 weeks gestation	10-month
Bich et al. 2016 Vietnam	Fathers having wives at 7 to 30 weeks' gestation	Prenatal services in commune health centers	Mass media communication, counseling and home visits, game show-style community events	More positive breastfeeding attitudes	After 7 to 30 weeks gestation	1-year; 2 times/ week; for a total of 49 group counseling sessions
Min Su et al. 2016 China	Couples ≥ 39 weeks' gestation	Mothers participated alone, booklet	Educational intervention: "The father support model", lecture, skills training, discussion and feedback	Higher EBF rates at 4, 6 months postpartum	39 weeks gestation after recruitment	60–90 min
Abbass et al. 2015 Canada	Primiparous couples in the first 2 days postpartum; ≥ 37 weeks' gestation	Usual care	Usual care and breastfeeding information package; workbook, video and website	More breastfeeding help and breastfeeding involvement	First 2 days postpartum	15 min-hospital discussion, at 1 and 3 weeks postpartum
ÖZLÜSES et al.2014 Turkey	Couples	Education manual	Education manuals; technical processes demonstrated by breast pump, milk collection bags, feeding cup, chairs and stools, pillow, massage oil, training booklet	Higher EBF rates at 6 months postpartum	Mother's hospital room on delivery day	20 min/d breastfeeding education of mothers until discharge (3days); fathers (during visiting)
Bich et al. 2013 Vietnam	Couples, 7 to 30 weeks' gestation	Mothers: services on antenatal and postpartum care;	Breastfeeding education materials; mass media communication; counseling; a social public event entitled "Fathers Contest"	Higher EBF rates at 4, 6 months postpartum	Antenatal period	During antenatal 1 year postpartum, counseling session 30–45 min /time
Susiloretni et al. 2013 Indonesia	Couples > 28 weeks' gestation	Standard health services	Multidisciplinary partnerships intervention (public health center, district, sub-district, village, family, maternal): advocacy, training, media, counseling	Higher EBF rates at 1, 8, 16, 24 weeks postpartum	During antenatal community check	330-min training session; about 24 weeks
Tohotoa et al. 2010 Australia	Couples > 18 years of age	Not clear	Perinatal education and support program, education session, new father's guide, pamphlet/brochure, a mother's information booklet	Not reported	Prenatal at recruitment	1 h duration in third or fourth week of antenatal programs
Salonen et al. 2008 Finland	Couples	Not clear	Information database, online peer discussion forum and question/answer service, online answering service by nurses and midwives	Greater social support from personnel	1 day before discharge	At hospital after childbirth and through to 1-year postpartum
Susin et al. 2008 Brazil	Couples: Infants' birth weight ≥ 2500 g	Without intervention	18-minute video about breastfeeding; open discussion; explanatory handout distribution	Higher EBF rates at 6 months postpartum	Not mentioned	18-minute video

Table 1 (continued)

Author (year) country	Participants	Control group	Contents and Intervention method	Effectiveness of intervention	Initiation	Duration
Susin et al.1999 Brazil	Couples Infants' birth weight ≥ 2500 g	Without intervention	Video film about breastfeeding, explanatory leaflet, open discussion after viewing video	Higher EBF rates at 6 months postpartum	Second day after delivery	Not mentioned
Sciacca et al.1995 United States	Primiparous, low-income couples	Usual WIC breast-feeding education	Breastfeeding incentive program, expectant couple breastfeeding class (2 h), prenatal childbirth preparation series peer counselor (Bosom Buddy Program)	Higher EBF rates at 2, 6 weeks, 3 months postpartum	About prenatal	2-hour breastfeeding class; 5 sessions

Abbreviations: Exclusive breastfeeding, EBF; FFABC, face-to-face father-focused antenatal breastfeeding class; IG: intervention group; CG: control group; g, gram; WIC: Women, Infants and Children Program

Table 2 Socio-demographic characteristics of experts

Categories	Round 1 (*N* = 7)	Round 2 (*N* = 6)
Age (years)	45.43 ± 7.76	44.17 ± 7.70
Education background (n, %)		
Bachelor's degree	1 (14.29)	1 (16.67)
Master's degree	6 (85.71)	5 (83.33)
Current work position (n, %)		
Clinical nurse specialist	2 (28.57)	2 (33.33)
Nurse student tutor	5 (71.43)	4 (66.67)
Years of working in nursing field (years)	21.14 ± 8.53	19.33 ± 7.74
Professional title (n, %)		
Intermediate	1(14.29)	1 (16.67)
Superior	6 (85.71)	5 (83.33)

or within second day post-birth [35, 36]. The frequency of interventions varied from one to 24 times (M = 12.8 times), typically lasting between 15 min and two hours each. Overall, interventions lasted from three weeks to a year (16 ± 15.5 weeks), with follow-up periods ranging from immediately following the intervention to 12 months.

Delphi method

Characteristics of experts

Seven experts were invited in the experts' panel from 21 April to 23 June [37], 2022 through email, six of whom finished the second round of consultation. They were either clinical nurse specialist working in the gynecology and obstetrics department or university professors specialized in maternal and child health care, who came from different regions (Hubei, Hebei, Henan, Gansu). Socio-demographic information of experts was displayed in Table 2.

Evaluation indicators of expert panel

Enthusiasm level of experts: In the first round, seven experts completed the questionnaire with a positive coefficient of 100%. Five of them gave their professional suggestion. In the second round, six questionnaires were returned, yielding a positive coefficient of 85.71%. Four experts offered their advice.

Authority coefficient: The coefficient of judgment basis was 0.93, the familiarity coefficient was 0.87, and the authority coefficient was 0.90 in second round, indicating that the results of expert consultation were reliable. Most experts based their comments and advice on practical experience or theoretical foundations.

Coordination coefficient and degree of experts' opinion concentration: The Kendall's W for the two rounds of consultation was 0.29 and 0.62, respectively. The consensus among experts tended to increase after the initial round of deletions, additions, and modifications. The concentration of expert opinions (mean value of importance and suitability selection rate for each item) and experts' suggestions for modification are presented in Supplementary file 2 (the second round).

Results of two Delphi rounds

Round 1. In the first Delphi round, Experts have different opinions on the initiation time, frequency, duration and timing of the intervention. Items were modified with six items added, eight items modified and one item deleted. Regarding the timing and frequency, experts recommend initiating intervention from the first day after delivery or during late pregnancy, and continuing until a year postpartum. Frequency varies, with some suggested bimonthly sessions, while others proposed different schedules such as daily during hospitalization, weekly during the newborn period, and monthly thereafter. In terms of content, experts suggested include topics "Disadvantages of bottle feeding", "Newborn care routines (bath, skin care, touch)", "Healthy diet for breastfeeding mothers", "Breastfeeding under special cases (cracked nipple, jaundice due to breast milk, breastfeeding during separation, breastfeeding while on medication)", and "Mental health of breastfeeding women". Experts also recommended providing consultation during postnatal visits or offering online consultations as needed. The item "Distribute education Manuals in the Community" was removed due to its low feasibility.

Round 2. In the second round, six questionnaires were returned. Four items were modified included the initiation time, intervention time, duration, and frequency.

Experts held the view that too early and too frequent increases in workload may not necessarily yield optimal results, and starting the intervention during late pregnancy or one week postpartum was recommended. For the ending time and intervention frequency, experts advised to continue the intervention until six-month postpartum. The intervention frequency should be flexible with once during the third trimester of pregnancy, once or twice during the hospitalization, at14 days, 28 days, three months, and six months postpartum.

Following modifications, the evaluation indicators reached a relative high level, indicating a significant enhancement in the overall quality of the Delphi results. Consequently, the definitive version of the breastfeeding co-parenting intervention program was established. This program's components, detail in Table 3, encompasses seven breastfeeding co-parenting courses, individual counseling, and a father's support group (Fig. 2), aligning with the five components of Breastfeeding Co-parenting Framework [17].

During the third trimester of pregnancy for antenatal examination, pregnant women and their spouses will be enrolled in the obstetrics and gynecology outpatient (Number 1). To facilitate the joint setting of breastfeeding goals, importance and methods of breastfeeding, and preparation for the upcoming newborn will be included (Number 2～4). Shared breastfeeding responsibilities entail both parents assuming breastfeeding duties and working together to overcome obstacles in reaching breastfeeding objectives. The intervention provided guidance and strategies for addressing breastfeeding challenges (Number 5–6). Paternal/parental-child interactions involve supporting fathers in bonding with their breastfed infants and understanding newborn growth characteristics (Number 7). Proactive breast-feeding support involves fathers offering informational, instrumental, emotional, and appraisal support, and alongside

Table 3 Components of the breastfeeding co-parenting intervention program

Number	Time	Contents	Components
1	28 weeks gestation (Prenatal examination)	Inclusion of participants: Sign informed consent and complete socio-demographic questionnaire	
2	30 weeks gestation	Why breastfeed? 1. The benefits of breastfeeding 2. Disadvantages of formula feeding	
3	32 weeks gestation	How to breastfeed? 1. Proper time 2. Correct breastfeeding posture 3. Judgment of the starvation and satiety 4. Breast care during breastfeeding 5. Nutritional care for lactating mothers	Joint breastfeeding goal setting
4	34 weeks gestation	Preparation for childbirth: Essential items for newborns	
5	36 weeks gestation	Breastfeeding under special cases: Breast tenderness, chapped nipples, mastitis, insufficient lactation	
6	After birth	1. Breast milk jaundice 2. Infantile diarrhea 3. Breastfeeding during the COVID-19 4. Breastfeeding when mother-infant separation 5. Breastfeeding while mother on medication	Shared breastfeeding responsibility
7	2 weeks postpartum	Growth characteristics of newborns 1. Sleep characteristics of newborn 2. Daily nursing of newborn (Bath, skin care, touch) 3. Neonatal vaccination 4. Guide to common neonatal diseases	Parental-child interaction
8	4 weeks postpartum	1. Postpartum recovery of mothers 2. Mental health of breastfeeding women 3. Paternal mental health after childbirth 4. Mental health before childbirth (1 week before delivery) 5. Healthy diet after childbirth (1 week before delivery)	Proactive breastfeeding support
9	1～6 months postpartum	1. Fathers' support group 2. Individual counseling	Productive communication and problem solving

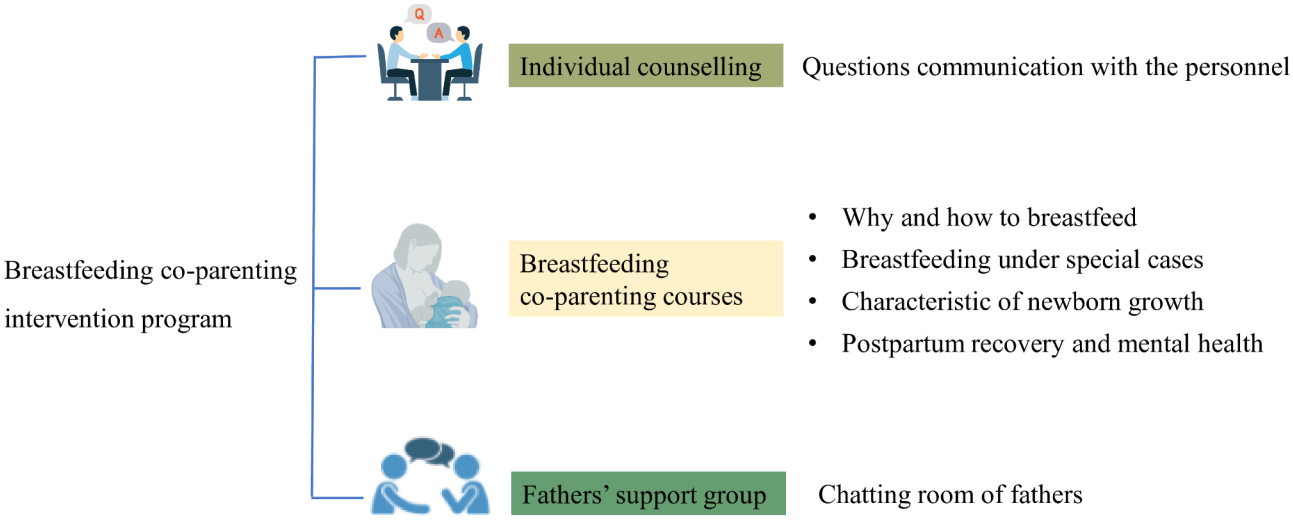

Fig. 2 Components of the breastfeeding co-parenting intervention program

sharing household chores. Information on maternal postpartum recovery, mental health, and a healthy diet empowers fathers to support their spouses (Number 8). Productive communication and problem-solving skills are crucial for addressing breastfeeding challenges, facilitated through fathers' support groups for emotional communication and experience sharing (Number 9). Individual counseling provides personalized support and guidance tailored to the specific needs of participants.

Discussion

Findings of the study

In this study, we conducted a systematic review to integrate information on breastfeeding co-parenting intervention programs, and employed the Delphi method to gather expert comments. The coefficient of judgment basis, familiarity coefficient, and authority coefficient was 0.93, 0.87 and 0.90 in this study respectively, which were higher than that in the study of Zhao et al [38], but fell short of the reported data in He et al' s study [39]. Liao utilized Delphi Method to construct a Quality Evaluation Index System for E-Consultation Doctor-Patient Communication, observing Kendall's W values ranging from 0.133 to 0.37. Contrastingly, the Kendall' W was 0.62 in the current study, indicating a strong agreement among experts regarding the intervention program [40]. These data underscore the robustness and acceptability of the intervention strategy proposed in this research.

Comparison with other studies

Few studies have explored the development of breastfeeding co-parenting programs. Some research methods, including cross-sectional surveys or qualitative studies, can also be used as a method to construct intervention programs. Abbass et al. conducted a needs assessment with couples to ascertain the topics of interest and preferred learning methods, utilizing online surveys to explore the effectiveness of resources and gauge user satisfaction [41]. Their findings revealed heightened breastfeeding partner support and co-parenting behaviors [18].

Tohotoa conducted a previous study outlining a perinatal education and support program for fathers, consisting of 45 antenatal sessions focusing on their role, communication, and breastfeeding benefits [31]. Extending this approach, our study intervenes up to 6 months postpartum, emphasizing the importance of improving adherence over this extended period. Considering the extended timeframe of the study, it is vital to improve adherence. Previous research has highlighted the importance of employing strategies such as telephone coaching and utilizing reminders through text messages or emails. Furthermore, incentive measures like offering newborn supplies or incorporating captivating games have also been recognized as essential factors [18, 35].

In the study of Almohanna et al. and McFadden et al., it was reported that the most effective components of interventions to enhance breastfeeding outcomes encompass face-to-face meetings with healthcare professionals, online discussion forums and web-based counseling [29, 42]. These components were integrated into the current breastfeeding co-parenting intervention program. Within this study, the fathers' support group serves as an online forum for sharing feelings and discussing queries. Recognizing the fathers' busy schedules, a blend of face-to-face interactions and online meetings was adopted to accommodate their commitments and facilitate effective communication. Consequently, the ongoing study offers individual counseling and fathers' support group sessions.

Strengths and limitations

Integrated views of clinical experiments, experts, and patients, this program integrates diverse perspectives, embodying the principles of evidence-based medicine. This program distinguishes itself by extending its duration from the third trimester through 6 months postpartum, allowing for tailored interventions that cater to the evolving needs of new parents during different stages of early parenthood. This comprehensive approach not only enhances breastfeeding practices but also addresses broader aspects of infant development and maternal mental health, ensuring a holistic support framework. Health care providers can utilize this program to guide primiparous couples through the breastfeeding journey, offering tailored support and fostering positive health outcomes for both mother and child.

Nevertheless, this study has some limitations. Seven experts were both from China, and the number of experts should be enriched. To increase the generalizability and representativeness of the research, more experts from worldwide should be invited to participate in the expert consultation.

Conclusion

This study developed an evidence-based breastfeeding co-parenting intervention program for healthcare providers to guide primiparous parents to improve breastfeeding rates. Through a systematic review and Delphi method, the program integrates breastfeeding courses, individual counseling, and a father's support group. These components are designed to enhance collaborative parenting and support breastfeeding outcomes effectively. Future research will focus on evaluating its impact and scalability to benefit maternal and infant health globally.

Abbreviations

CG	Control group
EBF	Exclusive breastfeeding
IG	Intervention group
WHO	World Health Organization

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12884-024-06750-2.

Supplementary Material 1

Supplementary Material 2

Author contributions

T.X and Y.Y.H co-wrote the original draft of the manuscript, and contributed to the conception and development of the study; W. P.H reviewed and edited the manuscript. All the authors approved the final manuscript.

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None.

Data availability

The datasets generated and/or analyzed during the current study are not publicly available because it involves participants' personal information, but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The study was approved by the Ethics Committee of the Department of Medicine, Wuhan university (IRB2022015) and was registered at ChiCTR.org.cn (ChiCTR2300069648). Informed consent will be obtained before the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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