REVIEW ARTICLE

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Effective interventions for the promotion of breastfeeding and healthy complementary feeding in the context of Primary Health Care

Intervenções efetivas para a promoção da amamentação e da alimentação complementar saudável no contexto da Atenção Primária à Saúde

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ABSTRACT

Objective: To develop a rapid review on effective actions for the promotion of breastfeeding and healthy complementary feeding in primary health care and to summarize a list of actions and their elements for implementation.

Data source: The review included systematic reviews on the effectiveness of interventions to promote breastfeeding and/or healthy complementary feeding for mothers and other caregivers, and/or professionals who work with this population, in comparison with any usual approach or none.

Data synthesis: A total of 32 systematic reviews were included in the evidence synthesis. Ten types of interventions were evaluated in systematic reviews on promotion of breastfeeding and four types of interventions on promotion of healthy complementary feeding. The synthesis allowed six aspects to be discussed, and these must be considered to increase the chances of interventions' impact: type of intervention, target audience, timing of intervention, actors that can implement it, strategies and methods of intervention, and intensity of intervention.

Conclusions: It was possible to assemble a list of actions whose effectiveness has already been demonstrated, providing elements for local adaptations. Evidence is expected to support and

RESUMO

Objetivo: Desenvolver uma revisão rápida sobre intervenções efetivas para a promoção do aleitamento materno e da alimentação complementar saudável na Atenção Primária à Saúde e sintetizar um cardápio de ações e seus elementos para implementação.

Fontes de dados: Foram incluídas revisões sistemáticas que avaliaram a efetividade de intervenções para promoção do aleitamento materno e/ou alimentação complementar saudável com mães e outros cuidadores e/ou profissionais que atuam com essa população em comparação com qualquer abordagem usual ou nenhuma.

Síntese dos dados: Na síntese das evidências, foram incluídas 32 revisões sistemáticas. Nas revisões sistemáticas, foram avaliados dez tipos de intervenções no tema "promoção do aleitamento materno" e quatro tipos de intervenções no tema "promoção da alimentação complementar saudável". A síntese dos resultados permitiu discutir seis aspectos da implementação que devem ser considerados para aumentar as chances de impacto das intervenções: tipo de intervenção, público-alvo, momento da intervenção, atores que podem implementar, estratégias e métodos para conduzir a intervenção, e intensidade da intervenção.

Conclusões: Os resultados permitiram apresentar um cardápio de ações cuja efetividade já foi demonstrada, fornecendo

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strengthen the implementation of programs aimed at promoting breastfeeding and complementary feeding in primary health care.
Keywords: Breast feeding; Complementary feeding; Primary health care; Rapid review; Evidence synthesis; Healthcare decisions.

elementos para adaptações locais. Espera-se que as evidências apresentadas possam apoiar e fortalecer a implementação de programas de promoção do aleitamento materno e da alimentação complementar saudável na Atenção Primária à Saúde.
Palavras-chave: Aleitamento materno; Alimentação complementar; Atenção primária à saúde; Revisão rápida; Síntese de evidências; Decisões de saúde.

INTRODUCTION

Adequate nutrition in the first years of life can impact children's development and health. Increasing breastfeeding (BF) practices could save the lives of more than 800,000 children. It is recommended to breastfeed in the first hour of life, offer exclusive breastfeeding (EBF) for the first six months and continue to breastfeed the child until two years of age or more.[1,2] From six months onwards, children should receive healthy complementary feeding (CF) to meet the nutritional needs for their development, which could prevent 100,000 deaths of children under five years old annually.[1,2]

We are still far from reaching infant feeding targets of the Global Agenda and its 2030 Sustainable Development Goals.[1,2] In Brazil, several actions to promote healthy BF and CF are proposed;[3] within the scope of Primary Health Care (PHC), the implementation of the Brazilian Breastfeeding and Feeding Strategy (EAAB, acronym in Portuguese) is recommended for the promotion, protection and support of BF and healthy CF. Using critical-reflection methodology, the EAAB trains tutors to support Basic Health Units' (BHU) teams in organizing the work process to implement interventions aimed at promoting BF and healthy CF according to the local context.[4]

By 2019, more than 48 thousand PHC professionals were involved in EAAB workshops. However, EAAB monitoring data do not inform whether interventions being developed in BHUs are supported by evidence of positive impact on BF and healthy CF indicators.[5,6]

In 2019, the General Coordination of Food and Nutrition (CGAN, acronym in Portuguese) and the Coordination of Child Health and Breastfeeding (COCAM, acronym in Portuguese) of the Ministry of Health started a project to strengthen the implementation of EAAB based on Evidence-Informed Policies for health decisions.[7] So, the objectives of this study were to develop a rapid review on effective interventions for the promotion of BF and healthy CF in PHC and to synthesize a list of actions and their elements for implementation, in order to support BHU teams.

METHOD

A rapid review was prepared based on a previous protocol, using methodological shortcuts to recommended steps for the elaboration of systematic reviews (SR). This type of review has the advantage of shortening time of evidence delivery for decision-making in health, maintaining the transparency, systematic process and reproducibility of the SR model.[8]

In this study, the system PICOS—Population; Intervention; Comparison; Outcomes; and Study Design[9]—(Table 1) was used as inclusion criteria and in the construction of the research question: "Which interventions are effective for the promotion of BF and healthy CF in PHC?". Publications in English, Spanish and Portuguese were included with no restriction regarding the year of publication. Interventions offering food supplements or whose sole outcome was the child's growth were not included. Scoping reviews, integrative reviews, synthesis of evidence for policies, health technology assessments, economic evaluations and primary studies were excluded.

The indexed databases MEDLINE (via PubMed), Regional Portal of the Virtual Health Library (VHL), Epistemonikos, Embase and Health Evidence were searched. The search strategies

Table 1. Systematic review inclusion criteria.

Indicator	Criterion
Population	Mothers and other caregivers of children under two years of age and/or professionals who work with this population.
Intervention	Interventions to promote breastfeeding and/or healthy complementary feeding.
Comparator	Any usual approach or none.
Outcomes	Improvement in prevalence and/or duration of breastfeeding and exclusive breastfeeding and healthy complementary feeding practices.
Study design	Systematic reviews and overviews, with or without meta-analysis.

included structured keywords based on the acronym PICOS, using MeSH and DeCS terms. The terms and synonyms used were: "Primary Health Care", "Breastfeeding" and "Physiological Phenomena of Infant Nutrition", and their translations into Portuguese and Spanish. A resource of filters available in the databases was used to select SR or Overview studies.

Exclusion of duplicates and study selection were based on titles and abstracts, by means of an application for bibliographic management, Rayyan QCRI.[10] Eligible studies were selected for full reading and data was input to an Excel® spreadsheet. As this is a rapid review, data selection and extraction were not performed by peers, but individually by researchers experienced in conducting review studies and evidence syntheses. The country in which the intervention was carried out was considered in the analysis and interpretation of data of all articles. The methodological quality of the included studies was evaluated by peer review using AMSTAR-2—A Measurement Tool to Assess Systematic Reviews.[11]

RESULTS

The search, carried out in October 2019, identified 700 references, of which 596 were screened considering title and abstract after the exclusion of duplicates. Sixty-four articles were selected for full reading, of which 32 were excluded[12-44]; the justifications are presented in Table 2. Thirty-two SR-type studies were included in the qualitative synthesis, of which 26 evaluated interventions to promote BF;[45-70] four assessed interventions to promote healthy CF;[71-74] and two[75,76] addressed interventions for both (Figure 1).

The synthesis of findings was presented in grouped interventions according to their nature, resulting in ten categories of interventions to promote BF and four to promote healthy CF.

Interventions to promote breastfeeding

1. **Multifaceted interventions:** nine SRs evaluated interventions that included a combination of support by health professionals or lay people (peer support), individual and/or group educational actions, digital media and technologies, telephone resources, home visits, specialized medical care, among others. Interventions took place in the prenatal and/or postnatal periods in community groups, mothers' homes, and PHC services.[56,61,64-70] Positive results were identified for the combination of trained professionals and lay people,[63,64,66,68,69] while an SR[64] reported that interventions by health professionals were more effective than when only by laypersons. Training to promote exclusive breastfeeding (EBF) and BF was important in low-income countries.[68,69] Positive effects were seen for

Table 2. List of references of excluded studies and reasons for exclusions.

Reason for exclusion	Authors/year
Not systematic reviews	Beake et al.[12] 2012
	Bhutta et al.[13] 2008
	Bonilla et al.[14] 2017
	Marques et al.[15] 2010
	Oliveira e Camacho[16] 2002
	Sangalli et al.[17] 2010
	Watkins e Dodgson[18] 2010
Do not present results of effectiveness for practices of breastfeeding or complementary feeding (outcome for the growth of the child).	Dewey et al.[19] 2008
	Imdad et al.[20] 2011
	Lassi et al.[21] 2013
	Majamanda et al.[22] 2014
	Panjwani et al.[23] 2017
	Park et al.[24] 2019
	Sguassero et al.[25] 2007
Not found for full reading	Kim et al.[26] 2017
	Mushtaq et al.[27] 2008
	Renfrew et al.[28] 2005
	Witten et al.[29] 2017
Did not address interventions	Blaney et al.[30,31] 2015
	Garcia et al.[32] 2016
Interventions only in hospital environment	Carfoot et al.[33] 2003
	Spiby et al.[34] 2009
Not related to breastfeeding or complementary feeding	Hesketh e Campbell[35] 2010
	McNeill et al.[36] 2012
Results on the effectiveness of breastfeeding practices not reported	Anderson et al.[37] 2019
Interventions in specific contexts	Prudhon et al.[38] 2018
	Whitford et al.[39] 2017
	Sipsma et al.[40] 2015
Interventions not focused on changing dietary practices	Zhang[41] 2011
All interventions combined with dietary supplements	Arikpo et al.[42] 2018
New version of systematic review included	Sikorski et al.[43] 2003
Qualitative systematic review	Sousa et al.[44] 2013

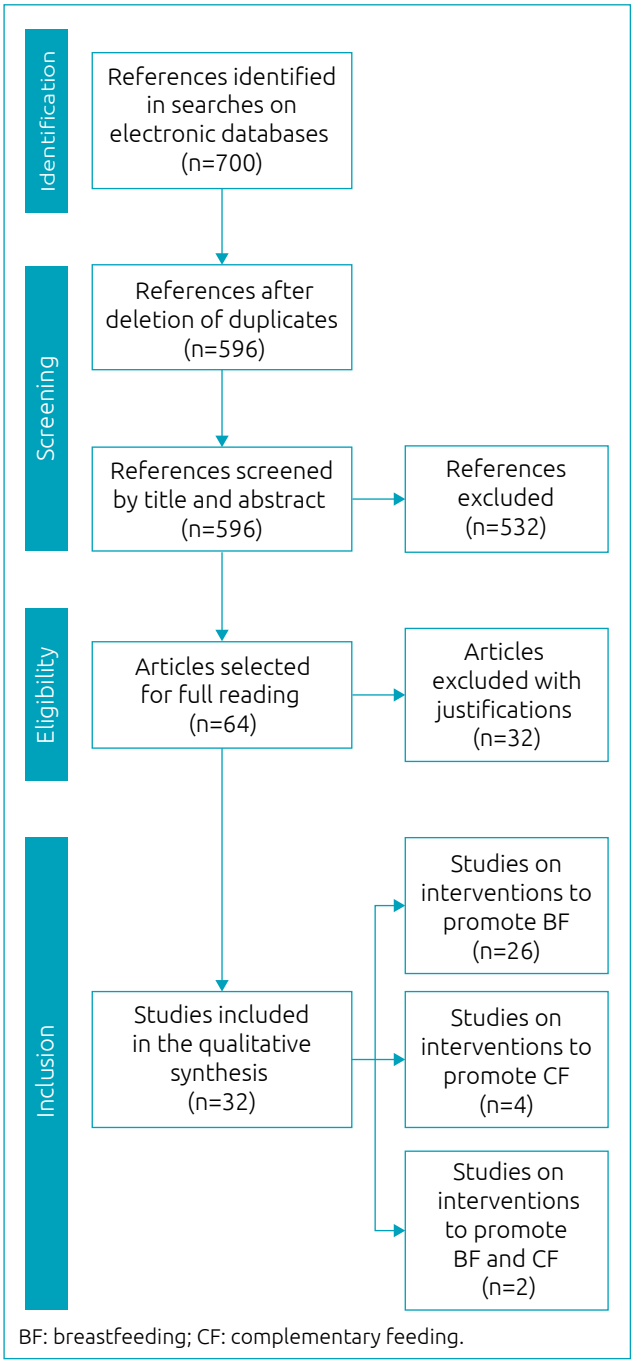


Figure 1. Study selection flowchart.

the combination of interventions carried out at hospitals, in community groups, and households,[64,67,69] as well as in actions taken during prenatal and postnatal care.[56,63-65,68] Isolated offer of printed material, without counseling, or strategies with no or brief face-to-face interaction (e.g. leaflets delivered to mothers, telephone support, and non-continuous actions) had no results. Therefore, interventions in health systems and communities by trained professionals and lactation counselors are effective to promote EBF and BF.

2. **Support by health professionals, laypersons or peers, including counseling:** these interventions were identified in eight SRs and had positive effects when the actions were adapted to local needs, conducted by trained people (professionals, lay people and mothers), provided face-to-face and routinely, during pregnancy or in the postpartum period.[46,48,52,53] Support in home visits was effective; the authors recommend performing at least one prenatal visit, one postpartum visit (days 1-3), and continuing visits beyond the first month of postpartum. Higher frequency of visits increased success, although a threshold appears to be reached with seven visits.[49,51,75] In contrast, when peer support was provided at low intensity (fewer than five planned contacts), actions to promote BF were ineffective.[50,51,75]
3. **Individual and group educational actions:** six SRs listed educational interventions in the prenatal and postnatal periods, which included consulting on BF, classes on BF management with specialists, use of booklets, group guidelines, and others.[45-50] Prenatal interventions significantly increased the rate of short-term BF, while the combination of pre- and postnatal interventions increased the rates of medium- and long-term BF.[48] Although there is little evidence for effectiveness of group activities, these actions seem to increase the rates of initiation and duration of BF in developed countries.[47] The effectiveness of interventions was limited when methods were not combined, when they were based on a single contact between the postpartum woman and a professional, and in the absence of an interactive method, i.e., providing only literature on BF.[45,46,50]
4. **Interventions based on theories of maternal self-efficacy and behavior change:** three SRs synthesized interventions focused on individual behavior change and adult learning principles.[54-56] There was a significant effect on increasing breastfeeding confidence when strategies combined individual and group actions, face-to-face and over-the-phone sessions, in the pre- and postnatal periods.[55] A program based on Bandura's social cognitive theory and adult learning principles increased self-confidence in BF within four weeks of delivery.[56] In one SR, the interventions had no effect in the medium and long term.[54]
5. **Distribution of written materials:** two SRs depicted interventions using materials such as a list of key points, pamphlets and leaflets with or without personal prenatal support. When interventions were made only by delivering written printed materials, without the support of

professionals, the results were considerably lower, suggesting that only printed information is not as effective as individualized contact.[46,49]

6. **Use of media and digital technologies:** two SRs included interventions by means of web technologies, CD-ROM, virtual interactive approach, e-prompt, television, printed material, voice and/or SMS messages, radio, megaphones/speakers, videos, social media, and music/dramatization. Evidence is limited on the positive effect of these interventions on BF initiation, BF duration, and BF attitudes and knowledge. The results come from studies conducted in developed regions with wide access to the internet or cell phone.[58,76]
7. **Father involvement:** father involvement appears to be promising for BF promotion.[61,62] The probability of EBF for six months and other outcomes such as reduced use of infant formula was doubled when the target was mothers and fathers.[62] In two SRs, actions involving fathers included information-education-communication actions, such as streaming videos and discussing them, individual or group counseling, mass and electronic media, delivery of informative materials, and a combination of these. Such actions were conducted by health professionals (physicians, pediatricians and community health workers) in hospitals, PHC services, and households.[61,62] Interventions took place in pre, post and neonatal periods, lasting from one to six sessions, and improved the rate of EBF at three, four, and six months of age in low- and middle-income countries.[61]
8. **Training of health professionals:** only one SR evaluated this intervention model to increase knowledge and improve attitudes towards BF of professionals who provide assistance to women and children. Small but significant positive effects were observed in three programs: process-oriented training (seven sessions); training based on the World Health Organization (WHO) BF courses (18 and 40 hours); and the "Wellstart TM Lactation" course (133 hours) adapted for Brazil. This evidence is extremely limited by the low methodological quality and the small number of primary studies; therefore, it was not possible to determine whether breastfeeding training is effective in improving the care provided by the health team.[57]
9. **International Board of Lactation Consultant Examiners® (IBLCE®):** these interventions were reviewed by an SR; consultants made at least two prenatal contacts, one contact at the hospital, and three to nine postpartum telephone calls. Of 16 primary studies, 10 included interventions in PHC setting (prenatal and postpartum). Among children aged three months, one intervention significantly improved BF and two improved EBF. At six months, one intervention was relevant for promoting BF and another was effective for EBF.[59]
10. **Material or Financial Incentive:** one SR evaluated incentive delivery interventions such as breast pumps, gifts, coupons, cash, food packages, and help with household chores. The most used incentive was breast pump, alone or in combination with other gifts. Primary studies were heterogeneous, as well as the quality of data collection, with low consistency in reporting results, leading to the conclusion that the effect of these interventions is unclear.[60]

Interventions to promote healthy complementary feeding

1. **Information and/or education and/or counseling:** two SRs showed interventions carried out by counselors and/or trained nutritional educators, as well as in peer support groups. They included training in nutrition counseling for professionals and laypersons (peer support) and counseling on healthy CF and responsive feeding directly to mothers. One intervention provided a set of basic meal preparation tools (bowl, spoon and an illustrated card). The frequency of interventions ranged from monthly, weekly, three or six sessions.[71,72] Overall, counseling, education and information actions had an impact on several outcomes: timely introduction of CF, quantity, frequency and diversity of foods offered, and responsive feeding.[71] An intervention based on eight home visits for pregnant women and monthly home visits in the first year of the infant's life was successful in decreasing anemia rates, promoting maternal knowledge about nutrition, improving feeding practices, BF rates and infant growth at 12 months of age.[72]
2. **Behavioral and non-behavioral interventions:** two SRs presented these interventions to improve diet diversity and vegetable acceptance. Approaches included repeated and varied exposure to vegetables, introduction of healthy CF with vegetables, improvement of parents' eating practices, responsive feeding, parenting, and support for lactation and mothers' health.[73,74] Introducing fruits and vegetables at the beginning of CF and promoting repeated exposure were successful strategies to improve acceptance of this food group. All studies that investigated the association between EBF duration and subsequent vegetable intake, reported significant positive associations.[73] Home visits focused on improving eating practices of both the parents and their children had positive effects on fruit and vegetable intake.[74] No effects

were found for vegetable intake using the Baby-Led-Weaning (BLW) technique or taste learning compared to spoon-feeding.[73]

3. **Community workers:** an SR identified the impact of home visits carried out by women in the community educated on BF practices and healthy CF. Visits took place after the child was born: once between the third and fifth day of life, then again between the seventh and tenth day of life, on the 21st day, at 1.5 months of age, and then once a month until 5.5 months of age. Healthy CF at six months was significantly higher in the intervention group.[75]
4. **Use of mass media with or without nutrition education:** an SR evaluated interventions conducted with mothers of children up to 24 months, pregnant women and mothers who had given birth in the last five years. They were offered a variety of formats of information (printed material, television, voice messages and/or SMS, radio messages, megaphone/speaker messages, videos, social media posts and music/dramatization), and duration ranged from nine weeks to four years (mostly one year). The results showed an increase in the prevalence of healthy CF. When nutrition education was combined with mass media, the effects were more robust.[76]

Income Level of Study Countries

Most SRs (n=26) included studies from high-income countries,[45-60,62-68,70,72,73] although 21 studies included lower-middle-income (n=14)[50-53,61,63,64,67,69-72,75,76] and low-income (n=7) countries.[51,63,64,69,70,75,76] The income classification of countries where the primary studies were conducted, according to the World Bank list of economies from July 2018, is shown in Table 3.

Table 3. Income level of countries of primary studies in systematic reviews.

Income levels	Number of systematic reviews	References
High	26	45-60,62-68,70,72,73
Medium-high	22	46-48,50-58,61-64, 66,70,72,73,75,76
Medium-low	14	50-53,61,63,64, 67,69-72,75,76
Low	7	51,63,64,69,70,75,76
Multicenter studies*	6	51-53,63,72,76
Not reported	1	74

*Multicenter studies were conducted in high- to low-income countries.

Quality of Evidence

The quality of SRs and the confidence in findings were critically low in 22 SRs,[46,47,49,51,53,55,56,58,61,64-73,74,76] low in five SRs,[48,52,54,57,63] moderate in five SRs[45,50,60,62,75]; no review reached the high-quality level. Figure 2 shows the evaluation results of each study.

DISCUSSION

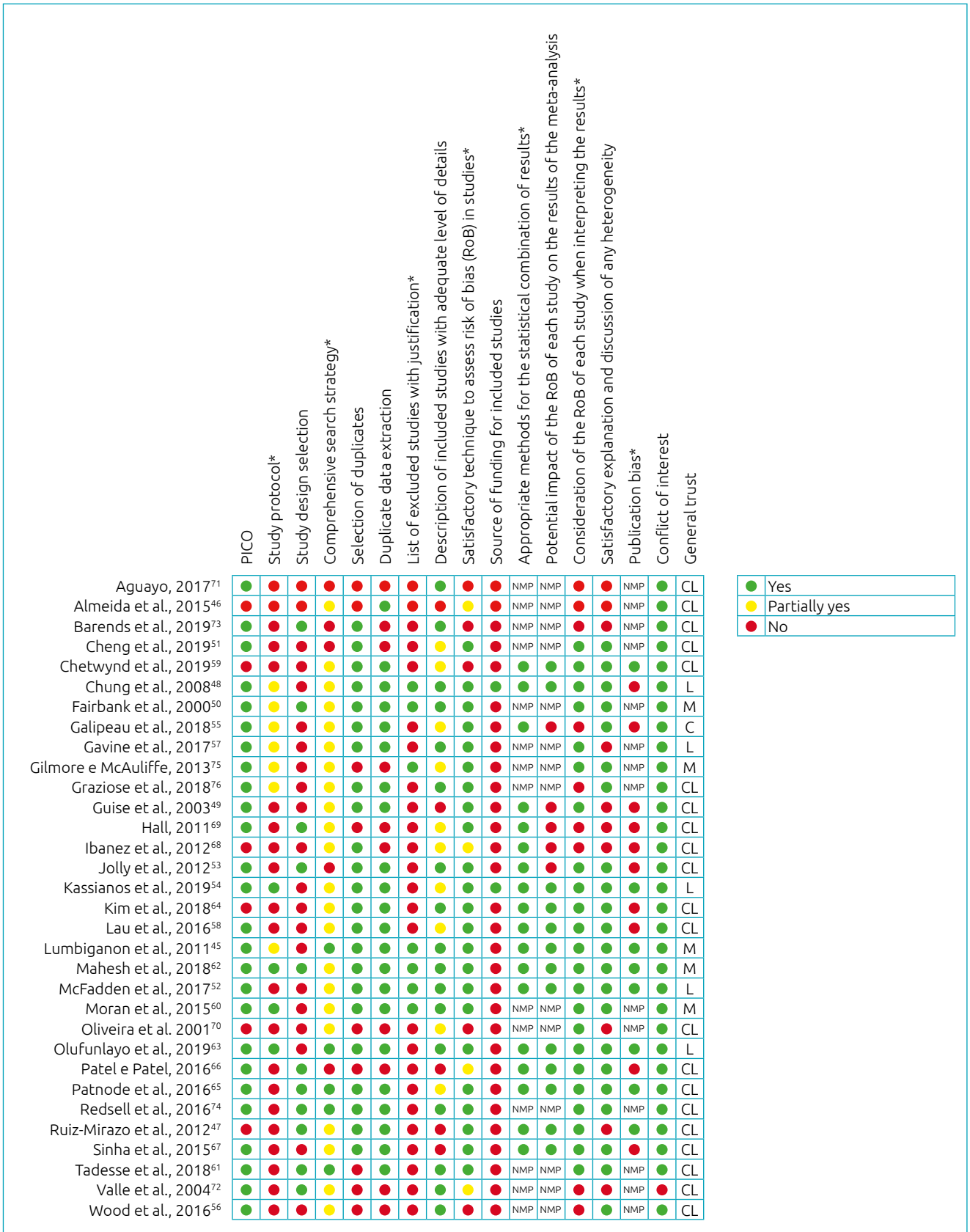
Several interventions have shown effectiveness in improving outcomes related to BF and healthy CF, and these findings may contribute to the planning of PHC actions. The synthesis of results allowed us to discuss six aspects that should be considered to increase the chances of interventions having an impact.

The first aspect refers to the type of intervention, highlighting the positive impact of educational actions,[45-50,71,72] of interventions based on support for women[46,48,52,53,75] and of interventions based on theories of maternal self-efficacy.[54-56] These interventions presuppose, respectively: defining contents or themes that will be worked with the target audience in educational actions; focus on the needs of the target audience and use of a counseling approach to support interventions; behavior change techniques aimed at cognitive and behavioral aspects of BF practice and coping with difficulties in interventions of maternal self-efficacy theories. Although many studies have reported the importance of training the actors involved, there is no evidence that training alone is effective in promoting changes in BF and healthy CF. This reflects the importance of clearly defining interventions during trainings to ensure fidelity and outcomes.[45-50,57] Finally, the combination of diverse approaches (education and support) involving different scenarios (hospital and community) had a great potential to impact the outcomes analyzed.[56,61,64-70]

The target audience is the second aspect to consider. In most SRs, the interventions were aimed at women in the period of pregnancy, in the immediate postpartum period and taking care of children up to two years old. Two of them reported positive results with the involvement of the father, which puts the spotlight on the importance of their participation when implementing interventions.[61,62]

The third aspect is the moment of intervention. Educational actions performed only in prenatal care significantly increased the rate of BF in the short term, but the combination of actions in pre- and postnatal periods increased the rates of BF in the medium and long terms. Therefore, interventions that cover both the prenatal and the postnatal periods tend to be more effective.[46,48,52,53,63-65,68]

The fourth aspect relates to the actors that can implement interventions. Health professionals, specialized consultants, trained lay people or "peer support" (generally mothers supporting other mothers) were mentioned.[46,48,52,53,59,71,72] In the Brazilian



CL: critically low; L: low; M: moderate; NMP: no meta-analysis performed; *critical domains.

Figure 2. Quality assessment of systematic reviews using AMSTAR-2.

context, we can consider that "peer support" is similar to the role of community health workers because they are members of the community in which they work.[77] One SR showed effectiveness in promoting healthy BF and CF through an intervention practiced by community health workers in low-income and middle-income countries.[75] In general, interventions that combine the work of health professionals and lay people tend to be more effective than isolated actions, and non-formal trained professionals can also support BF rate increase in low-middle and low-income countries.[63,64,66,68,69]

The fifth aspect refers to strategies and methods, that is, how interventions are applied. Educational actions can be carried out individually or in groups, but there are few in favor of group prenatal care and better results were identified when carried out in small groups.[47,55] Interventions had limited effectiveness when: a single method of education was used; only written material on BF was offered; there was no direct contact with any health professional; a more formal and non-interactive method of providing health education was used.[68-70] Face-to-face support strategies are more likely to be successful when compared, for example, to over-the-phone sessions only. There is evidence that support-based intervention using home visits is effective.[49,51,72,74,75] As a strategy, the results suggest that media-based interventions can improve BF initiation, EBF duration, and attitudes and knowledge about BF, but the results are based on studies conducted in developed regions, with internet or cell phone access, and may not be applicable to developing regions.[58,76] Support-based interventions should be adapted to local needs and offered routinely by trained personnel.

Finally, the intensity of intervention is another relevant aspect for its success. Some findings deserve attention: educational interventions structured in a single contact between the postpartum woman and the professional along with low-intensity peer support seem to be ineffective for any type of BF .[51,75] Home visits should take place at least once in the prenatal period, after birth, and in the postpartum period (days 1-3), along with visits after the first month of postpartum, in a high frequency of up to seven visits.[49,51,75]

It is also worth mentioning that, in order to achieve effectiveness, it is essential that the actions are implemented as planned. Often, the plan defines the actions, the target audience, the moments, the actors, the strategies and the intensity, but the flow is modified during implementation. In this sense, monitoring the fidelity of intervention is crucial to identify and overcome possible barriers.[78]

It should be borne in mind that this rapid review used previously defined methodological shortcuts, such as limiting the number of databases, restricting languages to Portuguese, English and Spanish, including only SRs and excluding primary studies, and data collection by a single reviewer. It all must be considered when interpreting the results.

Although these methodological shortcuts were adopted, the study served its purpose of responding in a timely manner to the Ministry of Health's demand to support the EAAB implementation. The time spent in searches, data collection and quality assessment of the articles was limited; however, a systematic and transparent process was adopted at all methodological stages. The SRs provided relevant information on the effectiveness of different categories of interventions aimed at BF and healthy CF, as well as brought about lessons to be learned for their implementation, even though most SRs were classified as critically-low quality. It is noteworthy that cultural and economic aspects related to different realities of studies must be considered. Therefore, additional caution was taken when interpreting the results of SRs, identifying and presenting the context of the countries where the primary studies were conducted, so we could better understand the potential for application of interventions in the context of PHC in Brazil.

CONCLUSION

Rapid reviews can be an agile and consistent way to respond to management's demands for evidence-informed policy implementation. Education and support interventions based on scientific evidence and adapted to local contexts are key to promoting optimal BF and healthy CF practices. It is hoped that the evidence presented here can support the implementation of programs for BF and healthy CF in PHC, offering professionals a list of effective actions and providing elements for local adaptations.

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Conflict of interests

The authors declare no conflict of interest.

Authors' contribution

Study design: Venancio SI. *Data collection*: Venancio SI, Melo DS, Relvas GRB, Bortoli MC, Araújo BC, Oliveira CF, Silva LALB, Melo RC, Moreira HOM, Rodrigues JM. *Data analysis*: Venancio SI, Melo DS, Relvas GRB, Bortoli MC, Araújo BC, Oliveira CF, Silva LALB, Melo RC, Moreira HOM, Rodrigues JM. *Writing of manuscript*: Venancio SI, Melo DS, Relvas GRB. *Review of manuscript*: Venancio SI, Melo DS, Relvas GRB, Bortoli MC, Araújo BC, Oliveira CF, Silva LALB, Melo RC, Moreira HOM, Rodrigues JM. *Study supervision*: Venancio SI.

REFERENCES

1. United Nations Children's Fund. From the first hour of life. Making the case for improved infant and young child feeding everywhere. New York: UNICEF; 2016.
2. Brazil. Ministério da Saúde. Secretaria de Atenção Primária à Saúde. Departamento de Promoção da Saúde. Guia alimentar para crianças brasileiras menores de 2 anos. Brasília: Ministério da Saúde; 2019.
3. Brazil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Ações Programáticas e Estratégicas. Política nacional de atenção integral à saúde da criança: orientações para implementação. Brasília: Ministério da Saúde; 2018.
4. Brazil. Ministério da Saúde. Secretaria de Atenção à Saúde. Estratégia nacional para promoção do aleitamento materno e alimentação complementar saudável no Sistema Único de Saúde: manual de implementação. Brasília: Ministério da Saúde; 2015.
5. Brazil. Ministério da Saúde. Estratégia amamenta e alimenta Brasil. Relatório de oficinas de trabalho. Cadastro do plano de ação [homepage on the Internet]. Abrangência: Brasil Competência: Ano: 2019, Mês: TODOS [cited 2020 Dec 19]. Available from: https://sisaps.saude.gov.br/eaab/Relatorios/relatorios.php
6. Bortolini GA, Oliveira TF, Silva SA, Santin RC, Medeiros OL, Spaniol AM, et al. Feeding and nutrition efforts in the context of primary healthcare in Brazil. Rev Panam Salud Publica. 2020;44:e39. https://doi.org/10.26633/RPSP.2020.39
7. Ramos MC, Silva EN. How to use the evidence-informed policy approach in public health? Saúde Debate. 2018;42:296-306. https://doi.org/10.1590/0103-1104201811624
8. Garritty C, Stevens A, Gartlehner G, King V, Kamel C, Cochrane Rapid Reviews Methods Group. Cochrane rapid reviews methods group to play a leading role in guiding the production of informed high-quality, timely research evidence syntheses. Syst Rev. 2016;5:184. https://doi.org/10.1186/s13643-016-0360-z
9. Moher D, Liberati A, Tetzlaff J, Altman DG, PRISMA Group. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. PLoS Med. 2009;6:e1000097. https://doi.org/10.1371/journal.pmed.1000097
10. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan - a web and mobile app for systematic reviews. Syst Rev. 2016;5:210. https://doi.org/10.1186/s13643-016-0384-4
11. Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ. 2017;358:j4008. https://doi.org/10.1136/bmj.j4008
12. Beake S, Pellowe C, Dykes F, Schmied V, Bick D. A systematic review of structured compared with non-structured breastfeeding programmes to support the initiation and duration of exclusive and any breastfeeding in acute and primary health care settings. Matern Child Nutr. 2012;8:141-61. https://doi.org/10.1111/j.1740-8709.2011.00381.x
13. Bhutta ZA, Ahmed T, Black RE, Cousens S, Dewey K, Giugliani E, et al. What works? Interventions for maternal and child undernutrition and survival. Lancet. 2008;371:417-40. https://doi.org/10.1016/S0140-6736(07)61693-6
14. Bonilla C, Híjar G, Márquez D, Aramburú A, Aparco JP, Gutiérrez EL. Intervenciones para prevenir la aparición de sobrepeso y obesidad en niños menores de cinco años. Rev Peru Med Exp Salud Pública. 2017;34:682-9. http://dx.doi.org/10.17843/rpmesp.2017.344.2636
15. Marques ES, Cotta RM, Magalhães KA, Sant'Ana LF, Gomes AP, Siqueira-Batista R. The influence of the social net of lactating mothers in the breastfeeding: the strategic role of the relatives and professionals of health. Ciênc Saúde Coletiva. 2010;1:1391-400. https://doi.org/10.1590/S1413-81232010000700049
16. Oliveira MI, Camacho LA. Impact of primary health care units' practice on the duration of exclusive breastfeeding. Rev Bras Epidemiol. 2002;1:41-51. https://doi.org/10.1590/S1415-790X2002000100006
17. Sangalli CN, Henriques FN, Oliveira LD. Influência das avós no aleitamento materno exclusivo. Clin Biomed Res. 2010;30.
18. Watkins AL, Dodgson JE. Breastfeeding educational interventions for health professionals: a synthesis of intervention studies. J Spec Pediatr Nurs. 2010;15:223-32. https://doi.org/10.1111/j.1744-6155.2010.00240.x
19. Dewey KG, Adu-Afarwuah S. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. Matern Child Nutr. 2008;4(Suppl 1):24-85. https://doi.org/10.1111/j.1740-8709.2007.00124.x
20. Imdad A, Yakoob MY, Bhutta ZA. Impact of maternal education about complementary feeding and provision os complementary foods on child growth in developing countries. BMC Public Health. 2011;11(Suppl 3):S25. https://doi.org/10.1186/1471-2458-11-S3-S25

21. Lassi ZS, Das JK, Zahid G, Imdad A, Bhutta ZA. Impact of education and provision of complementary feeding on growth and morbidity in children less than 2 years of age in developing countries: a systematic review. BMC Public Health. 2013;13(Suppl 3):S13. https://doi.org/10.1186/1471-2458-13-S3-S13

22. Majamanda J, Maureen D, Munkhondia TM, Carrier J. The effectiveness of community-based nutrition education on the nutrition status of under-five children in developing countries. A systematic review. Malawi Med J. 2014;26:115-8. PMID: 26167260

23. Panjwani A, Heidkamp R. Complementary feeding interventions have a small but significant impact on linear and ponderal growth of children in low- and middle-income countries: a systematic review and meta-analysis. J Nutr. 2017:2169S-78S. https://doi.org/10.3945/jn.116.243857

24. Park JJ, Fang ML, Harari O, Dron L, Siden EG, Majzoub R. et al. Association of early interventions with birth outcomes and child linear growth in low-income and middle-income countries: bayesian network meta-analyses of randomized clinical trials. JAMA Netw Open. 2019;2:e197871. https://doi.org/10.1001/jamanetworkopen.2019.7871

25. Sguassero Y, Onis M, Carroli G. Efectividad de la alimentación suplementaria en países en vías de desarrollo: revisión sistemática. Arch Argent Pediatr. 2007;105:198-205.

26. Kim SK, Ahn S, Park S, Kim J, Lee M, Oh J. Breastfeeding support interventions allowing mothers to exclusively breastfeed for 6 months: a systematic review and meta-analysis of randomized controlled trials. Women's Health. 2017;26:A29.

27. Mushtaq N, Skaggs VJ, Thompson DM. Effect of breastfeeding education and support on promoting breastfeeding: a literature review. J Okla State Med Assoc. 2008;101:231-6. PMID: 19097343

28. Renfrew MJ, Dyson L, Wallace L. The effectiveness of public health interventions to promote the duration of breastfeeding: systematic reviews of the evidence. London: National Institute for Health and Clinical Excellence; 2005.

29. Witten CB, Kruger S, Taljaard C, Kahler B, Verstraeten R, Booth A. A systematic review of reviews on effective home, family and community based interventions from low- and middle-in-come countries to inform the breastfeeding action plan for South Africa. Ann Nutr Metab. 2017;71(suppl 2):872. https://doi.org/10.1159/000480486

30. Blaney S, Februhartanty J, Sukotjo S. Feeding practices among Indonesian children above six months of age: a literature review on their magnitude and quality (part 1). Asia Pac J Clin Nutr. 2015;24:16-27. https://doi.org/10.6133/apjcn.2015.24.1.13

31. Blaney S, Februhartanty J, Sukotjo S. Feeding practices among Indonesian children above six months of age: a literature review on their potential determinants (part 2). Asia Pac J Clin Nutr. 2015;24:28-37. https://doi.org/10.6133/apjcn.2015.24.1.14

32. Garcia AH, Voortman T, Baena CP, Chowdhurry R, Muka T, Jaspers L, et al. Maternal weight status, diet, and supplement use as determinants of breastfeeding and complementary feeding: a systematic review and meta-analysis. Nutr Rev. 2016;74:490-516. https://doi.org/10.1093/nutrit/nuw016

33. Carfoot S, Williamson PR, Dickson R. A systematic review of randomised controlled trials evaluating the effect of mother/baby skin-to-skin care on successful breast feeding. In: Database of Abstracts of Reviews of Effects (DARE): Quality-assessed Reviews [Internet]. York: Centre for Reviews and Dissemination; 2003.

34. Spiby H, McCormick F, Wallace L, Renfrew MJ, D'Souza L, Dyson L. A systematic review of education and evidence-based practice interventions with health professionals and breast feeding counsellors on duration of breast feeding. Midwifery. 2009;25:50-61. https://doi.org/10.1016/j.midw.2007.01.006

35. Hesketh KD, Campbell KJ. Interventions to prevent obesity in 0-5 year olds: an updated systematic review of the literature. Obesity (Silver Spring). 2010;18 Suppl:S27-35. https://doi.org/10.1038/oby.2009.429

36. McNeill J, Lynn F, Alderdice F. Public health interventions in midwifery: a systematic review of systematic reviews. BMC Public Health. 2012;12:955. https://doi.org/10.1186/1471-2458-12-955

37. Anderson L, Kynoch K, Kildea S, Lee N. Effectiveness of breast massage for the treatment of women with breastfeeding problems: a systematic review. JBI Database System Rev Implement Rep. 2019;17:1668-94. https://doi.org/10.11124/JBISRIR-2017-003932

38. Prudhon C, Benelli P, Maclaine A, Harrigan P, Frize J. Informing infant and young child feeding programming in humanitarian emergencies: an evidence map of reviews including low and middle income countries. Matern Child Nutr. 2018;14:e12457. https://doi.org/10.1111/mcn.12457

39. Whitford HM, Wallis SK, Dowswell T, West HM, Renfrew MJ. Breastfeeding education and support for women with twins or higher order multiples. Cochrane Database Syst Rev. 2017;2:CD012003. https://doi.org/10.1002/14651858.CD012003.pub2.

40. Sipsma HL, Jones KL, Cole-Lewis H. Breastfeeding among adolescent mothers: a systematic review of interventions from high-income countries. J Hum Lact. 2015;31:221-9; quiz 321-2. https://doi.org/10.1177/0890334414561264

41. Zhang JS. Efficacy and effectiveness of 20 child health interventions in China: systematic review of Chinese literature. J Glob Health. 2011;1:87-95. PMID: 23198106

42. Arikpo D, Edet ES, Chibuzor MT, Odey F, Caldwell DM. Educational interventions for improving primary caregiver complementary feeding practices for children aged 24 months and under. Cochrane Database Syst Rev. 2018;5:CD011768. https://doi.org/10.1002/14651858.CD011768.pub2

43. Sikorski J, Renfrew MJ, Pindoria S, Wade A. Support for breastfeeding mothers: a systematic review. Paediatric Perinatal Epidemiol. 2003;17:407-17. https://doi.org/10.1046/j.1365-3016.2003.00512.x

44. Sousa AM, Fracolli LA, Zoboli EL. Práticas familiares relacionadas à manutenção da amamentação: revisão da literatura e metassíntese. Rev Panam Salud Publica. 2013;34:127-34.

45. Lumbiganon P, Martis R, Laopaiboon M, Festin MR, Ho JJ, Hakimi M. Antenatal breastfeeding education for increasing breastfeeding duration. Cochrane Database Syst Rev. 2011;9:CD006425. https://doi.org/10.1002/14651858.CD006425.pub2

46. Almeida IS, Pugliesi Y, Rosado LE. Evidence based strategies of promotion and maintenance of breastfeeding: systematic review. Femina. 2015;43:97-103.

47. Ruiz-Mirazo E, Lopez-Yarto M, McDonald SD. Group prenatal care versus individual prenatal care: a systematic review and meta-analyses. J Obstet Gynaecol Can. 2012;34:223-9. https://doi.org/10.1016/S1701-2163(16)35182-9

48. Chung M, Raman G, Trikalinos T, Lau J, Ip S. Interventions in primary care to promote breastfeeding: an evidence review for the U.S. Preventive Services Task Force. Ann Intern Med. 2008;149:565-82. https://doi.org/10.7326/0003-4819-149-8-200810210-00009

49. Guise JM, Palda V, Westhoff C, Chan BK, Helfand M, Lieu TA, et al. The effectiveness of primary care-based interventions to promote breastfeeding: systematic evidence review and meta-analysis for the US Preventive Services Task Force. Ann Fam Med. 2003;1:70-8. https://doi.org/10.1370/afm.56

50. Fairbank L, O'Meara S, Renfrew MJ, Woolridge M, Sowden AJ, Lister-Sharp D. A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding. Health Technol Assess. 2000;4:1-171. PMID: 11111103

51. Cheng LY, Wang X, Mo PK. The effect of home-based intervention with professional support on promoting breastfeeding: a systematic review. Int J Public Health. 2019;64:999-1014. https://doi.org/10.1007/s00038-019-01266-5

52. McFadden A, Gavine A, Renfrew MJ, Wade A, Buchanan P, Taylor JL, et al. Support for healthy breastfeeding mothers with healthy term babies. Cochrane Database Syst Rev. 2017;2:CD001141. https://doi.org/10.1002/14651858.CD001141.pub5

53. Jolly K, Ingram L, Khan KS, Deeks JJ, Freemantle N, MacArthur C. Systematic review of peer support for breastfeeding continuation: metaregression analysis of the effect of setting, intensity, and timing. BMJ. 2012;344:d8287. https://doi.org/10.1136/bmj.d8287

54. Kassianos AP, Ward E, Rojas-Garcia A, Kurti A, Mitchell FC, Nostikasari D, et al. A systematic review and meta-analysis of interventions incorporating behaviour change techniques to promote breastfeeding among postpartum women. Health Psychol Rev. 2019;13:344-72. https://doi.org/10.1080/17437199.2019.1618724

55. Galipeau R, Baillot A, Trottier A, Lemire L. Effectiveness of interventions on breastfeeding self-efficacy and perceived insufficient milk supply: a systematic review and meta-analysis. Matern Child Nutr. 2018;14:e12607. https://doi.org/10.1111/mcn.12607

56. Wood NK, Woods NF, Blackburn ST, Sanders EA. Interventions that enhance breastfeeding initiation, duration, and exclusivity: a systematic review. MCN Am J Matern Child Nurs. 2016;41:299-307. https://doi.org/10.1097/NMC.0000000000000264

57. Gavine A, MacGillivray S, Renfrew MJ, Siebelt L, Haggi H, McFadden A. Education and training of healthcare staff in the knowledge, attitudes and skills needed to work effectively with breastfeeding women: a systematic review. Int Breastfeed J. 2017;12:6. https://doi.org/10.1186/s13006-016-0097-2

58. Lau Y, Htun TP, Tam WS, Klainin-Yobas P. Efficacy of e-technologies in improving breastfeeding outcomes among perinatal women: a meta-analysis. Matern Child Nutr. 2016;12:381-401. https://doi.org/10.1111/mcn.12202

59. Chetwynd EM, Wasser HM, Poole C. Breastfeeding support interventions by International Board Certified Lactation Consultants: a systematic review and meta-analysis. J Hum Lact. 2019;35:424-40. https://doi.org/10.1177/0890334419851482

60. Moran VH, Morgan H, Rothnie K, MacLennan G, Stewart F, Thomson G, et al. Incentives to promote breastfeeding: a systematic review. Pediatrics. 2015;135:e687-702. https://doi.org/10.1542/peds.2014-2221

61. Tadesse K, Zelenko O, Mulugeta A, Gallegos D. Effectiveness of breastfeeding interventions delivered to fathers in low- and middle-income countries: a systematic review. Matern Child Nutr. 2018;14:e12612. https://doi.org/10.1111/mcn.12612

62. Mahesh PK, Gunathunga MW, Arnold SM, Jayasinghe C, Pathirana S, Makarim MF, et al. Effectiveness of targeting fathers for breastfeeding promotion: systematic review and meta-analysis. BMC Public Health. 2018;8:1140. https://doi.org/10.1186/s12889-018-6037-x.

63. Olufunlayo TF, Roberts AA, MacArthur C, Thomas N, Odeyemi KA, Price M, et al. Improving exclusive breastfeeding in low and middle-income countries: a systematic review. Matern Child Nutr. 2019;15:e12788. https://doi.org/10.1111/mcn.12788

64. Kim SK, Park S, Oh J, Kim J, Ahn S. Interventions promoting exclusive breastfeeding up to six months after birth: a systematic review and meta-analysis of randomized controlled trials. Int J Nurs Stud. 2018;80:94-105. https://doi.org/10.1016/j.ijnurstu.2018.01.004

65. Patnode CD, Henninger ML, Senger CA, Perdue LA, Whitlock EP. Primary care interventions to support breastfeeding: updated evidence report and systematic review for the US preventive services task force. JAMA. 2016;316:1694-705. https://doi.org/10.1001/jama.2016.8882

66. Patel S, Patel S. The effectiveness of lactation consultants and lactation counselors on breastfeeding outcomes. J Hum Lact. 2016;32:530-41. https://doi.org/10.1177/0890334415618668

67. Sinha B, Chowdhury R, Sankar MJ, Martines J, Taneja S, Mazumder S, et al. Interventions to improve breastfeeding outcomes: a systematic review and meta-analysis. Acta Paediatr. 2015;104:114-34. https://doi.org/10.1111/apa.13127

68. Ibanez G, Michel CR, Denantes M, Saurel-Cubizolles MJ, Ringa V, Magnier AM. Systematic review and meta-analysis of randomized controlled trials evaluating primary care-based interventions to promote breastfeeding in low-income women. Fam Pract. 2012;29:245-54. https://doi.org/10.1093/fampra/cmr085

69. Hall J. Effective community-based interventions to improve exclusive breast feeding at four to six months in low- and low-middle-income countries: a systematic review of randomised controlled trials. Midwifery. 2011;27:497-502. https://doi.org/10.1016/j.midw.2010.03.011

70. Oliveira MI, Camacho LA, Tedstone AE. Extending breastfeeding duration through primary care: a systematic review of prenatal and postnatal interventions. J Hum Lact. 2001;17:326-43. https://doi.org/10.1177/089033440101700407

71. Aguayo VM. Complementary feeding practices for infants and young children in South Asia. A review of evidence for action post-2015. Matern Child Nutr. 2017;13(Suppl 2):e12439. https://doi.org/10.1111/mcn.12439

72. Valle NJ, Santos IS, Gigante DP. Nutritional interventions and child growth among under-two-year-olds: a systematic review. Cad Saude Publica. 2004;20:1458-67. https://doi.org/10.1590/s0102-311x2004000600003

73. Barends C, Weenen H, Warren J, Hetherington MM, Graaf C, Vries JH. A systematic review of practices to promote vegetable acceptance in the first three years of life. Appetite. 2019;137:174-97. https://doi.org/10.1016/j.appet.2019.02.003

74. Redsell SA, Edmonds B, Swift JA, Siriwardena AN, Weng S, Nathan D, et al. Systematic review of randomised controlled trials of interventions that aim to reduce the risk, either directly or indirectly, of overweight and obesity in infancy and early childhood. Matern Child Nutr. 2016;12:24-38. https://doi.org/10.1111/mcn.12184

75. Gilmore B, McAuliffe E. Effectiveness of community health workers delivering preventive interventions for maternal and child health in low- and middle-income countries: a systematic review. BMC Public Health. 2013;13:847. https://doi.org/10.1186/1471-2458-13-847

76. Graziose MM, Downs SM, O'Brien Q, Fanzo J. Systematic review of the design, implementation and effectiveness of mass media and nutrition education interventions for infant and young child feeding. Public Health Nutr. 2018;21:273-87. https://doi.org/10.1017/S1368980017002786

77. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. O trabalho do agente comunitário de saúde. Brasília: Ministério da Saúde; 2009.

78. Walton H, Spector A, Williamson M, Tombor I, Michie S. Developing quality fidelity and engagement measures for complex health interventions. Br J Health Psychol. 2020;25:39-60. https://doi.org/10.1111/bjhp.12394