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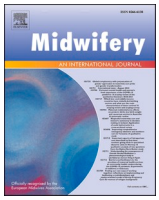

Review Article

Underpinnings of breastfeeding motivation: A systematic review

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ABSTRACT

Background: Breastfeeding is a fundamental practice for child and maternal health, recommended by the World Health Organisation (WHO) and the United Nations International Children's Emergency Fund (UNICEF). However, despite its proven benefits, exclusive breastfeeding rates remain suboptimal in many countries. Mothers' motivation plays a crucial role in the initiation, continuation and prolongation of breastfeeding, but various factors can negatively influence this motivation.

Aim: This research explores the complex motivational dynamics surrounding breastfeeding, encompassing both the intrinsic motivation of mothers and the motivational interventions of health professionals.

Methods: A systematic review encompassing both qualitative and quantitative inquiries, was undertaken. Research questions were formulated, and a search strategy devised, to review PubMed, Scopus, and Web of Science repositories, with a retrospective scope spanning the past three decades, applying filters and eligibility criteria. We included scientific articles whose participants were healthy mothers aged 18-48 years with uncomplicated eutocic deliveries, together with their healthy full-term infants. The study aimed to analyze the motivation for breastfeeding from the prenatal stage to prolongation beyond the two years recommended by the WHO.

Findings: A total of 23 studies, from a variety of perspectives and sociocultural contexts, were identified and recovered. Average breastfeeding duration was 2.73 months shorter than the recommended 6-month period. Deciding to breastfeed "as long as possible" and prior breastfeeding experience were associated with meeting breastfeeding expectations. Instead, maternal age, caesarean delivery, and socio-environmental factors negatively affected the breastfeeding process. Our findings highlighted intrinsic maternal motivations and the impact of healthcare professional interventions, revealing the complex interplay of psychological, social, and cultural factors in breastfeeding decisions.

Conclusion: An exhaustive typological analysis of maternal motivation throughout breastfeeding phases is feasible. Motivational dynamics may vary, concretely influencing breastfeeding exclusivity and duration. These dynamics are foreseen by maternal intent and bolstered by self-efficacy conducive to successful progression. Furthermore, sociocultural and clinical variables modulate motivational pathways. In-depth analysis allows for more effective professional interventions within the framework of humanized care and the development of innovative health plans and policies.

Statement of significance

Problem: Motivation for breastfeeding is central to mothers' decision to breastfeed, but a number of factors can negatively influence this motivation, limiting the effective support they receive.

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What is already known: Age, educational level and social support are determinants of motivation to breastfeed. Self-efficacy and knowledge about breastfeeding are crucial, and lack of support during pregnancy can be a significant barrier.

What this paper provides: Comprehensive review that explores the various motivations that positively influence the decision to breastfeed. Both, intrinsic motivation, arising from the mother's desire to provide the best for her baby, and extrinsic motivation, derived from the support of family, community and health professionals, play crucial roles.

Introduction

Breastfeeding (BF), an ancestral physiological norm, is today in certain cultural contexts a conscious choice, even a luxury. Science, far from being able to replicate BF, seeks to recreate the complexity of breastmilk in the laboratory. Therefore, BF is both a biological norm and a cultural activity, influenced by a variety of socioeconomic and cultural factors (Martínez-Poblete and Ossa, 2020).

Exclusive breastfeeding (EBF) is defined as the practice of feeding the infant solely with breastmilk for the first six months of life, followed by the continuation of complementary BF until at least the age of 2. Breastmilk provides all the essential nutrients a baby needs for the first six months of life, along with a range of psychological and health benefits that go beyond purely rational considerations (Victora et al., 2016). These practices are highly effective in reducing infant and maternal mortality (Bartick et al., 2017; Victora et al., 2016).

BF finds itself at a critical juncture in the current context, posing a challenge for authorities globally (Baker et al., 2023; Russell and Adhanom, 2023). This challenge is exacerbated by a series of structural, political, economic, and social barriers that hinder both mothers' individual BF goals and the objectives outlined by the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) for the year 2030 (WHO, 2023.). Addressing these barriers and ensuring the rights of both mothers and infants requires a comprehensive framework of public policies that protect BF, ensure compliance with the code of breastmilk substitutes, and regulate breastmilk donation (McCloskey and Karandikar, 2019).

In many high-income countries, prejudice and social stigma surrounding BF persist, making its practice in public settings challenging (Díaz-Gómez et al., 2016; Grant et al., 2019). Additionally, mothers who choose to breastfeed often face workplace discrimination or lack adequate conditions to continue BF while working (Baker et al., 2023; Vilar-Compte et al., 2021). The aggressive marketing by breastmilk substitute manufacturers also poses a significant threat to BF promotion, increasing health disparities between countries (Rollins et al., 2023). In low and middle income countries, socioeconomic disparities influence BF patterns, with mothers of higher purchasing power opting for formula feeding to a greater extent than those with fewer resources (Roberts et al., 2013). This situation underscores the need to address the structural barriers perpetuating these inequities.

Similarly, the promotion of formula feeding (FF) significantly contributes to infant and maternal mortality worldwide, as well as a range of lifelong health issues for both mothers and their children (Victora et al., 2016). Moreover, unsubstantiated advertising undermines mothers' intrinsic motivation to breastfeed, favouring the economic interests of companies (Rollins et al., 2023).

The lack of adequate support and promotion for BF also has significant economic repercussions, with estimated global losses ranging from 341,000 to 3 billion dollars annually due to unrealised health and human development benefits (Pérez-Escamilla et al., 2023; Walters et al., 2019).

Despite abundant scientific evidence of the benefits of BF, only 48 % of children under 6 months worldwide are breastfed at some point in their lives, which does not imply that they are breastfed until 6 months as recommended by WHO/UNICEF. Specifically, in the USA and Spain, BF rates are still below optimal levels, highlighting both the need for and lack of effective interventions to promote and support BF (Franco-Antonio et al., 2021). Increasing this percentage is crucial, especially given the positive impact of BF on child and maternal health (Victora et al., 2016), but achieving this requires acknowledging that BF necessitates adequate support and education for its success (Purdy, 2010; Santacruz-Salas et al., 2019).

Motivation plays a central role in the initiation, continuation, and prolongation of BF. Confidence in future success and the influence of cultural and biological factors are key elements which influence mothers' motivation to breastfeed (Kestler-Peleg et al., 2015; Ryan and Deci, 2000a). Despite historical and contemporary obstacles, mothers' intrinsic motivation towards BF remains fundamental (Wells et al., 2002).

Motivation can be defined as a psychological process that drives people to act in certain ways based on their needs, desires and values. According to the self-determination theory (SDT), proposed by Ryan and Deci motivation is divided into extrinsic motivation, which comes from external factors, and intrinsic motivation, which arises from personal interest (Ryan and Deci, 2000b). SDT proposes that external factors can facilitate the integration of a behaviour into personal values, making motivation towards the behaviour in question more independent even if it is not genuinely intrinsic (Deci et al., 1999b). For these reasons, many authors in the context of motivation towards BF define motivation as self-regulated or autonomous when it is closer to intrinsic or controlled when it is extrinsically conditioned (Lau et al., 2022; Martin et al., 2022; Mizrak Sahin et al., 2019). Other types of secondary motivation emanate from this self-regulation and are recognized as integrated, identified, introjected and external regulated (Ryan and Deci, 2000b) . Supportive social relationships, personal autonomy that promotes self-efficacy and competence based on a practical knowledge base influence motivation (Bandura and Adams, 1977; Dennis, 1999; Kadzikowska-Wrzosek, 2016). Research indicates a strong relationship between intention, motivation and BF outcomes (Ajzen, 1991; Khasawneh et al., 2020; Wells et al., 2002), demonstrating that intrinsic and extrinsic motivations are determinants of infant feeding decisions. The intention to breastfeed has been studied by several authors (Gómez García et al., 2020; Wallenborn et al., 2019; Wang et al., 2014), attracting a significant degree of interest; however, the issue of motivation has received much less attention, despite potentially being a key factor influencing the success or failure of EBF in different countries (Bagci Bosi et al., 2016; Sarki et al., 2019) .

Previous systematic reviews have examined BF motivation, both exclusive and mixed, but have only partially explored the concept. Until now, no review has comprehensively integrated current research on extrinsic motivation. Although the number of studies in this area is limited, some randomised controlled trials (RCTs) have provided strong evidence to justify further consideration of extrinsic motivation in BF (Anokye et al., 2020; Barta, 2024; Hoskins et al., 2019a; Moran et al., 2015; Russell et al., 2022a; Washio et al., 2021a).

The analysis of the full spectrum of motivation may open new lines of research that delve deeper into the external determinants that influence both the decision to breastfeed and the sustainability of BF. Furthermore, its impact on BF adherence, its relationship with sociocultural and structural factors, and its potential to guide more equitable and effective policies and support strategies are fundamental (Anokye et al., 2020).

The present study aims to gather and analyse available scientific evidence to understand and address the various types of motivation towards BF. This includes mothers' intrinsic motivation, as well as motivational approaches of healthcare professionals, with the ultimate goal of supporting, protecting, and promoting BF as a fundamental value for child health and human development. Therefore, this review seeks to address the following questions: 'What are the sociodemographic and obstetric variables that influence motivation towards BF?', 'how can

Table 1
Search strategy.

	Pubmed	Scopus	WOS
motivation	("Motivation"[MeSH Terms] OR "Information Motivation Behavioral Skills Model"[MeSH Terms])	TITLE-ABS-KEY-AUTH breastfeeding	ALL=(breast feeding)
AND			
breastfeeding	("Breast Feeding"[Mesh] OR BREASTFED)	motivation	ALL=(motivation)
Last search date	24/01/24		
	Filters: Clinical Trial, Meta-Analysis, Randomized Controlled Trial, Systematic Review, from 1970 - 2024	Filters: Article, from 1970 - 2024	(PY==("2023" OR "2022" OR "2021" OR "2020" OR "2019" OR "2018" OR "2017" OR "2016" OR "2015" OR "2013" OR "2012" OR "2011" OR "2000" OR "2001" OR "2002" OR "2003" OR "2006" OR "2007" OR "2008" OR "2009" OR "2010" OR "2023" OR "2022" OR "2021" OR "2020" OR "2019" OR "2018" OR "2017" OR "2016" OR "2015" OR "2014" OR "2013" OR "2012" OR "2011" OR "2010" OR "2009" OR "2008" OR "2007" OR "2006" OR "2003" OR "2002" OR "2001" OR "2000" OR "1999" OR "1998" OR "1997" OR "1996" OR "1995" OR "1994" OR "1993" OR "1992" OR "1984" OR "1981" OR "1978")
Findings	816	461	115

intrinsic and extrinsic motivation towards BF be described during the prenatal, immediate postpartum, and continuation phases?', 'what is the impact of motivation on BF, including an assessment of motivational interventions?' and 'how do psychological factors relate to motivation towards BF?'.

Participants, ethics and methods

Design

The research methodology, a systematic review including both quantitative and qualitative scientific articles, was designed and implemented in accordance with the PRISMA 2020 Statement (Page et al., 2021a, 2021b). The systematic review protocol was registered and published on PROSPERO (ID code: CRD42024517541).

Search strategy and selection criteria

The SCOPUS, Web of Science and PubMed databases were systematically searched for relevant studies. In addition, the reference lists of the retrieved articles were reviewed, and the Repository Service of the Biomedical Library of the University of Zaragoza, was contacted to identify relevant reports. Finally, backward and forward searches were conducted in PubMed to locate complete studies. The search strategies were tailored to each database individually using the Boolean operators AND, OR and NOT. The searches included the following terms: 'Motivat*', 'Information', 'Behaviour*', 'Skill*', 'Model', 'Breast Feeding', and 'Breastfeed*'. Searches were carried out between October 8th 2023 and January 24th 2024, and they were limited to peer-reviewed articles in English, Spanish, French, German and Portuguese published since January 2013 to obtain an updated view to the research topic (Table 1). The inclusion criteria were both quantitative and qualitative studies on healthy mothers, aged 18-48 years, with uncomplicated eutocic deliveries, and their healthy, full-term infants, analysing intention, planning, self-efficacy, knowledge and/or motivation to breastfeed; priority was given to studies using previously validated quantitative data collection tools. We excluded review articles, studies that analysed the association between motivation to breastfeed and specific pathologies, and studies on relactation.

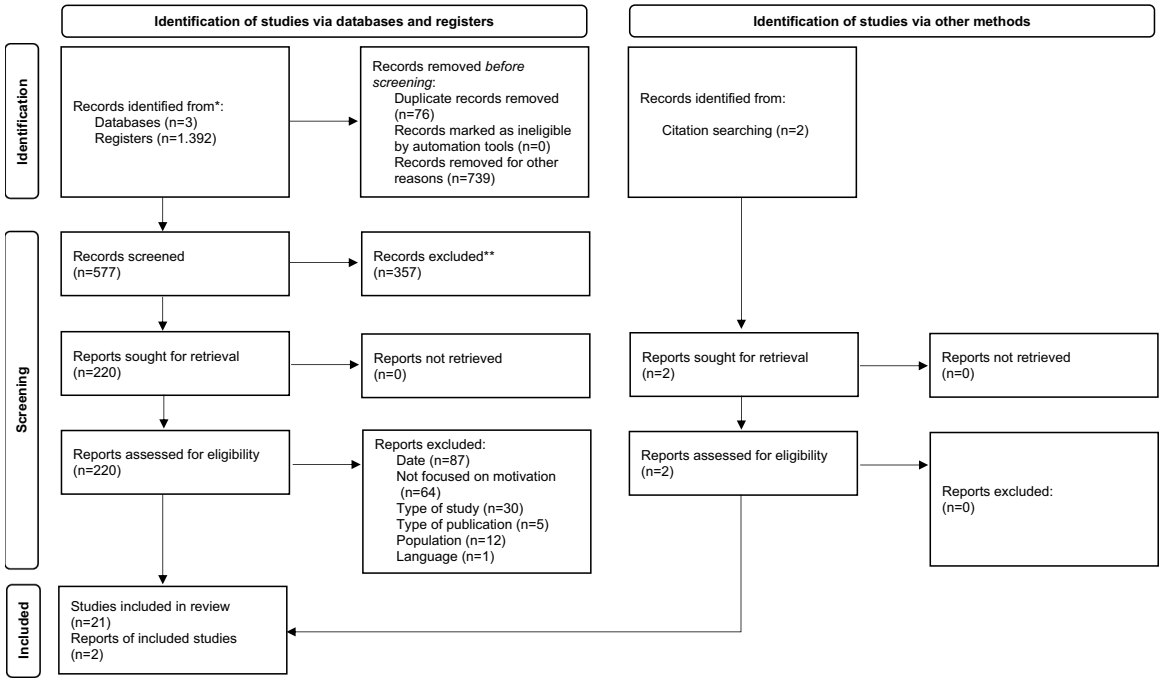

Fig. 1. PRISMA 2020 flowchart (30).

Table 2
Joanna Briggs Institute's tools for quality appraisal.

Critical appraisal results of included studies using the JBI Critical Appraisal Checklist for Analytical Cross-Sectional Studies

REFERENCE	Akgun 2020	Cloud 2020	Díaz-Gómez 2016	Dornan 2020	Khanjari 2023	Green 2021	Khasavaneh2020	Lange 2017	Martin 2021	Spear 2019	Pinto 2016	Pitaloka 2022	Schalla 2017
1. Were the criteria for inclusion in the sample clearly defined?	●	●	●	■	●	●	●	●	●	●	●	●	■
2. Were the study subjects and the setting described in detail?	●	●	●	●	●	●	●	●	●	●	●	●	●
3. Was the exposure measured in a valid and reliable way?	●	●	●	●	●	●	●	●	●	●	●	●	●
4. Were objective, standard criteria used for measurement of the condition?	●	●	●	●	●	●	●	●	●	●	●	●	●
5. Were confounding factors identified?	▸	▸	▸	▸	■	■	■	●	●	■	●	●	●
6. Were strategies to deal with confounding factors stated?	▸	▸	▸	●	▸	●	▸	●	■	■	●	●	▸
7. Were the outcomes measured in a valid and reliable way?	●	●	●	●	▸	●	●	●	●	●	▸	●	■
8. Was appropriate statistical analysis used?	●	●	●	●	●	●	●	●	●	●	●	●	■
Include (Y/N))	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Search outcome and selection of studies

The search yielded 1392 hits. After removing duplicates (79) and unrelated studies (739), 577 articles remained. Two separate reviewers analysed the remaining articles. Articles retrieved based on abstracts were excluded from further analysis if they were written in a language other than English, French, German, Spanish or Portuguese, and/or they were unrelated to the research questions. Reviews, editorials and discussion papers were also excluded at this point. After this exclusion process, 220 articles remained for consideration. Two researchers read the full texts of these articles to evaluate their eligibility for the review, resulting in the exclusion of a further 199 articles. At this point, articles were excluded if they did not address the research questions or did not fully meet the inclusion criteria. Specifically, studies were excluded if either mothers, infants or both had a health issue either during pregnancy or after delivery, and if they addressed relactation. Researchers screened every article independently. Any disagreements arising between the researchers were solved by consensus. The reference lists of the 21 remaining articles were manually screened to identify additional relevant articles. As a result, two further articles were included in the review. All these results were presented in a Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) flow chart (Haddaway et al., 2022) (Fig. 1).

Quality assessment

The final list of selected studies comprised 13 cross-sectional studies, 2 randomized controlled trials, 2 cohort studies, 1 quasi-experimental study and 6 qualitative studies. Quality assessment of the articles was carried out using the Joanna Briggs Institute's tools for quality appraisal as appropriate (Barker et al., 2023; *JBI Manual for Evidence Synthesis*, 2020; Lockwood et al., 2015). These tools include a variable number of items depending on the studies' design. The results from the quality assessment of the selected articles are displayed in Table 2.

Critical appraisal results of included studies using the JBI Critical Appraisal Checklist for Cohort Studies

REFERENCE	Read 2022	Santacruz-Rooms 2019
1. Were the two groups similar and recruited from the same population?	●	●
2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?	●	●
3.Was the exposure measured in a valid and reliable way?	●	●
4. Were confounding factors identified?	●	▾
5. Were strategies to deal with confounding factors stated?	●	▾
6. Were the groups/participants free of the outcome at the start of the study (or at the moment of exposure)?	●	●
7. Were the outcomes measured in a valid and reliable way?	●	●
8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?	■	●
9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	▾	●
10. Were strategies to address incomplete follow up utilized?	●	●
11. Was appropriate statistical analysis used?	●	●
Include (Y/N))	Y	Y

Critical appraisal results of included studies using the JBI Critical Appraisal Checklist for Quasi experimental Studies

REFERENCE	Naroee 2020

(*continued on next page*)

	(*continued*)
1. Is it clear in the study what is the "cause" and what is the "effect" (i.e. there is no confusion about which variable comes first)?	●
2. Were the participants included in any comparisons similar?	●
3. Were participants included in any comparisons that received similar treatment/care, other than the exposure or intervention of interest?	●
4. Was there a control group?	●
5. Were there multiple outcome measurements before and after the intervention/exposure?	●
6. Was follow-up completed and, if not, were differences between groups adequately described and analysed in terms of follow-up?	●
7. Were the outcomes of the participants included in the comparisons measured in the same way?	●
8. Were the results measured reliably?	●
9. Was an appropriate statistical analysis used?	●
Include (Y/N))	Y

Two researchers independently assessed the quality of the selected studies. A third researcher intervened when there were disagreements in the ratings assigned by the initial reviewers. The threshold of minimum acceptable quality to include the potentially eligible studies was established by consensus. Studies were found to have an acceptable quality if 50 % or more of the items in the quality appraisal tool were assessed as being positive; they were found to have good quality if 75 % or more of the items were assessed as being positive. Only two quantitative studies were found to have an acceptable quality (Khanjari et al., 2023; Schalla et al., 2017); the rest of the studies exceeded the threshold set by the researchers for good quality.

All the studies included in the review addressed clearly focused questions using appropriate research methods. The quantitative studies used representative samples and validated measurement instruments. However, certain methodological limitations were found regarding sample selection bias in two of the cross-sectional studies (Dornan et al., 2020; Schalla et al., 2017). Additionally, confounding factors could not be identified in many of these quantitative studies although, in some

Critical appraisal results of included studies using The JBI qualitative critical appraisal checklist

REFERENCE	Dornan 2017	Dornan 2020	Grant 2019	Martinez-Poblete 2020	McCloskey 2020	Rodriguez Vázquez 2023
1. Is there congruity between the stated philosophical perspective and the research methodology?	●	●	●	●	●	●
2. Is there congruity between the research methodology and the research question or objectives?	●	●	●	●	●	●
3. Is there congruity between the research methodology and the methods used to collect data?	●	●	●	●	●	●
4. Is there congruity between the research methodology and the representation and analysis of data?	●	●	●	●	●	●
5. Is there congruity between the research methodology and the interpretation of results?	●	●	●	●	●	●
6. Is there a statement locating the researcher culturally or theoretically?	▼	■	▼	▼	▼	●
7. Is the influence of the researcher on the research, and vice-versa, addressed?	●	●	●	▼	▼	●
8.Are participants, and their voices, adequately represented?	●	●	●	●	●	●
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?	●	●	●	●	●	■
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?	●	●	●	●	●	●
Include (Y/N))	Y	Y	Y	Y	Y	Y

Critical appraisal results of included studies using the JBI Critical Appraisal Checklist for Randomised Controlled Trials

		REFERENCE	Franco-Antonio 2021	Retton, 2018
Internal Validity	**Bias related to selection and allocation**	1. Was true randomization used for assignment of participants to treatment groups?	●	●
		2. Was allocation to treatment groups concealed?	●	●
		3. Were treatment groups similar at the baseline?	●	●
	Bias related to administration of intervention/exposure	4. Were participants blind to treatment assignment?	■	●
		5. Were those delivering the treatment blind to treatment assignment?	▼	●
		6. Were treatment groups treated identically other than the intervention of interest?	●	●
	Bias related to assessment, detection and measurement of the outcome	7. Were outcome assessors blind to treatment assignment?	●	●
		8. Were outcomes measured in the same way for treatment groups?	●	●
		9. Were outcomes measured in a reliable way?	●	●
	Bias related to participant retention	10. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?	●	●
Statistical Conclusion Validity		11. Were participants analysed in the groups to which they were randomized?	●	●
		12. Was appropriate statistical analysis used?	●	●
		13. Was the trial design appropriate and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	●	●
		Include (Y/N))	Y	Y

● accepted ▼rejected ■unclear

cases, strategies to deal with them were described. All the qualitative studies adequately described how the interviews were conducted, although there was no information reported on the reliability of data analysis and interpretation through triangulation or member checking. However, possible information bias related to the researchers' professional experience or areas of interest was not reported in most of the qualitative studies, except in two cases (Martínez-Poblete and Ossa, 2020; McCloskey and Karandikar, 2019). All of the eligible qualitative studies reported on theoretical or philosophical bases to justify their methodological choices.

Methods of synthesis

This systematic review synthesizes a heterogeneous body of qualitative and quantitative studies exploring BF motivation. Given the methodological diversity of the included research, a narrative synthesis approach was applied, allowing for the integration of findings across different study designs while preserving contextual depth.

The papers selected were classified based on their respective relevance to the research questions. The articles' content was analysed though detailed repeated examination. A convergent integrated approach was used according to the JBI methodology for systematic reviews integrating both quantitative and qualitative studies (Lizarondo et al., 2020). The data extracted on the variables studied was classified in an Excel table producing a set of integrated findings, which is presented as a Supplementary file. Subsequently, quantitative information was converted into qualitative data through a narrative interpretation of the quantitative results, addressing the review questions through a reflective exercise known as direct assimilation (Sandelowski et al., 2006).

This narrative synthesis bridges qualitative insights and quantitative evidence, providing a holistic understanding of how motivation influences BF initiation, duration, and exclusivity. This approach also facilitates the identification of key patterns, barriers, and facilitators across different populations and healthcare contexts.

Results

The selected studies were published between 2016 and 2023. The investigations were carried out in a range of different countries, including Canada, China, Chile, Germany, Indonesia, Iran, Jordan, Portugal, Spain, Thailand, Turkey, and the United States. They covered a variety of settings, from hospitals to community settings, using methodologies that included questionnaires, direct observations and in-depth interviews, among others. In addition, validated scales were used to explore correlations between motivation, self-efficacy, knowledge, and social and family support, as well as socio-economic factors (Table 3).

The mean age of the mothers included in the selected articles was 25.9. Information about the participants' educational level, employment status, previous experience with BF, among other variables, was recorded. Self-efficacy was the most frequently explored psychological factor related to motivation towards BF, followed by knowledge and intention. Other factors included attitude, family and professional support, planning and expectations of BF success, among others.

According to the results of different studies EBF rates at 6 months varied between 20-56 % in intervention groups and 20-30 % in controls (Franco-Antonio et al., 2021; Rodríguez Vázquez et al., 2023). The rate of initiation of BF was 88.4 % on average. At 6 weeks, 34.4 % practised EBF and 80.3 % any type of BF, while at 12 weeks, these figures were 28.8 % and 68.1 %, respectively (Lange et al., 2016).

One of the studies conducted in Germany, described the motivation for BF, developing a motivation score. The authors successfully identified the factors influencing motivation for BF and proposed specific interventions aimed at improving motivation among particular groups of mothers. In 2005, 71.9 % of mothers intended to breastfeed exclusively, a figure that increased to 76.8 % in 2008. Factors such as advanced age, primiparity and vaginal delivery favoured BF, while less frequent attendance to antenatal classes, lower level of education, lower income and smoking hindered it (Lange et al., 2016).

A brief motivational intervention increased the duration of EBF by 11 weeks and overall BF by 10 weeks (Franco-Antonio et al., 2021). A financial incentive increased EBF at 6-8 weeks by 5.7 percentage points (37.9 % vs. 31.7 %) (Relton et al., 2018). Autonomous motivation was associated with greater EBF, and for each additional point in BF self-efficacy, the probability of EBF increased by 10 % (Franco-Antonio et al., 2021).

A different study evaluating knowledge, attitude, support and planning for BF among Jordanian women found high levels of knowledge and intention to breastfeed. Of the 660 women surveyed (330 pregnant and 330 postpartum), 78 % were aware of the benefits of BF, 72 % had a positive attitude and 97 % planned to breastfeed, although only 20 % received professional counselling. More than 50 % obtained support from their partner. This same study reports the strength of association between predictive factors for EBF include primiparity (AOR 1.79), a positive attitude (AOR 1.80) and support from the husband (AOR 1.92). Barriers include the mother being employed (AOR 0.43) [14] and low birth weight (AOR 0.46)(Khasawneh et al., 2020).

Socio-demographic and obstetric variables influencing BF motivation

Sociodemographic and obstetric variables played a crucial role in BF motivation, affecting mothers' both intrinsic and extrinsic motivation.

Maternal age played a significant role in terms of intrinsic motivation. Younger mothers tended to show higher intrinsic motivation towards BF, although this did not always guarantee success (Lange et al., 2016; Martin et al., 2022; Martínez-Poblete and Ossa, 2020; Mizrak Sahin et al., 2019; Santacruz-Salas et al., 2019; Schalla et al., 2017). The mothers' level of education was also related to intrinsic motivation, with higher educational attainment correlating with higher motivation to initiate BF (Lau et al., 2022; Mizrak Sahin et al., 2019; Pinto et al., 2016) . In addition, social and family support, together with favourable labour policies, were found to be closely linked to intrinsic motivation, facilitating exclusive EBF for up to six months in various socio-economic contexts (Díaz-Gómez et al., 2016; Khasawneh et al., 2020; Lange et al., 2016). Previous BF experience and number of children also increased intrinsic motivation by fostering self-efficacy and positive expectations (Franco-Antonio et al., 2021; Khanjari et al., 2023; Santacruz-Salas et al., 2019). Initiating BF within the first hour of a baby's life was crucial as it was found to boost intrinsic motivation and help establish a strong mother-child bond, which positively influenced the success and duration of BF (Akgün and Taştekin, 2019; Bulut and Küçük Alemdar, 2021; Mizrak Sahin et al., 2019; Naroee et al., 2020; Pinto et al., 2016). Cultural perspective and empathic support from health professionals were also considered essential for the successful prolongation of BF (Bulut and Küçük Alemdar, 2021; Dornan et al., 2020; Franco-Antonio et al., 2021; Mizrak Sahin et al., 2019; Pinto et al., 2016).

In terms of extrinsic motivation, which is that which has a reason outside the person and is externally controlled, it was observed that older mothers opted for tandem or prolonged BF, motivated by practicality and health benefits for their children and themselves. A prior, this would be a type of extrinsic motivation, but not completely controlled, but with a self-regulated component close to intrinsic motivation (Martínez-Poblete and Ossa, 2020; Rodríguez Vázquez et al., 2023).

Having a lower level of education correlated with extrinsic motivation and shorter duration of BF (Grant et al., 2019; Lau et al., 2022; Mizrak Sahin et al., 2019; Pinto et al., 2016). It was observed that institutional support during BF, through social encouragement, respect from professionals and effective resolution of real problems encountered during BF, could shift some mothers' extrinsic motivation towards more self-regulated behaviour defined as identified motivation, leading to greater BF success (Dornan et al., 2020, 2017). However, it was essential

Table 3
Summary of evidence.

Author (Year)	Objective	Methodology	Key Findings
Akgün and Taştekin (2019)	Identify factors affecting breastfeeding using IBM model	Cross-sectional survey & observation	Information, motivation, and behavioral skills all significantly influenced self-management and breastfeeding success.
Bulut and Küçük Alemdar (2021)	Relationship between baby's crying and BF motivation	Cross-sectional	Positive perception of crying linked to higher motivation to breastfeed.
Díaz-Gómez et al. (2016)	Identify BF motivations and barriers	Observational survey	Work conflict, lack of support, and low milk supply cited as challenges. Motivation linked to naturalness, pleasure, and partner support.
Dornan et al. (2017)	Cultural/ motivational elements in BF education	Observational	Midwife instruction emphasized health benefits and technique. Thai culture influenced content.
Dornan et al. (2020)	Motivational content in BF education	Mixed-methods	Key motivators: health, attachment, culture, confidence. Midwives played a key role.
Franco-Antonio et al. (2021)	Effect of Brief Motivational Intervention	RCT	BMI group showed higher BF self-efficacy. Education level moderated effects.
Grant et al. (2019)	Health behaviors & BF intent in low-income women	Qualitative	Partner/expert support and knowledge key to motivation; mapped to COM-B model.
Green et al. (2021)	BF & substitute feeding in Indonesia	Cross-sectional	Perceived milk insufficiency, maternal employment, and formula marketing influenced decisions.
Khanjari et al. (2023)	Predictors of EBF using TPB	Cross-sectional	Beliefs, evaluation, intention, and planning were key predictors. Unplanned pregnancy reduced intent.
Khasawneh et al. (2020)	Assess BF knowledge and attitudes	Cross-sectional	Positive attitude and husband support predicted EBF. Lack of counselling was a key gap.
Lange et al. (2016)	Socio-demographics and BF motivation	Cohort study	Higher age, education, and antenatal classes linked to stronger BF motivation. Smoking and caesarean linked to lower motivation.
Lau et al. (2022)	BF motivation and continuation	Prospective cohort	Intrinsic and identified motivation predicted longer BF duration.
Martin et al. (2022)	Validate TSRQ-BF scale	Observational	Autonomous motivation predicted EBF intention and success.
Martínez-Poblete and Ossa (2020)	Extended BF motivation	Qualitative	Cultural, emotional, and experiential factors influenced prolonged BF.
McCloskey and Karandikar (2019)	PBMS recipients' motivations	Qualitative	Mothers valued human milk highly; donation improved mental health.
Mizrak Şahin et al. (2019)	Adapt and validate BFMS	Descriptive	Autonomous motivation linked to longer EBF; age, education, and non-smoking boosted motivation.
Naroee et al. (2020)	Impact of MI on BF self-efficacy	Quasi-experimental	MI improved self-efficacy and extended EBF duration by 38 days.
Pinto et al. (2016)	Factors influencing BF motivation	Cross-sectional	Skin-to-skin contact and support groups influenced motivation; maternal affection not significantly correlated.
Pitaloka et al. (2022)	Maternal motivation & early marriage on EBF	Cross-sectional	Higher age at marriage and strong motivation associated with greater EBF likelihood.
Relton et al. (2018)	Incentives and BF rates	Cluster RCT	Financial incentives increased BF rates by 5.7 percentage points at 6–8 weeks.
Rodríguez Vázquez et al. (2023)	Motivation for tandem BF	Qualitative	Intrinsic: bonding and emotional healing. Extrinsic: values and empowerment.
Santacruz-Salas et al. (2019)	Maternal expectations and BF duration	Cohort	Expectations and experience influenced duration; barriers included age, cesarean, and environment.
Schalla et al. (2017)	Body image and BF motivation	Cross-sectional	Few mothers BF for body-related benefits; most satisfied with feeding decisions.

BF. Breastfeeding
EBF. Exclusive Breastfeeding

not to overlook other critical factors for BF well-being, such as self-efficacy and understanding the associated benefits (Akgün and Taştekin, 2019). Women's employment status was also critical; lack of support in the workplace interfered with successful BF, despite a favourable attitude and motivation (Akgün and Taştekin, 2019; Lau et al., 2022; Mizrak Sahin et al., 2019).

High family income increased the duration of BF, although there was not a significant association between high family income and motivation (Díaz-Gómez et al., 2016; Franco-Antonio et al., 2021; Khanjari et al., 2023; Martin et al., 2022). Additionally, studies conducted in the United States and the United Kingdom (Hoskins et al., 2019b; Relton et al., 2018), showed that BF motivated by economic incentives, which encourages mothers to act under extrinsic motivation, yielded favourable

and statistically significant results. Planned type of delivery correlated with greater intention to BF (Lange et al., 2016; Lau et al., 2022). Although some studies did not find a clear correlation between type of delivery and motivation to BF, some authors (Khanjari et al., 2023; Khasawneh et al., 2020) claimed that planning and general motivation predicted BF success when considering the type of delivery, vaginal or caesarean, as a spontaneous variable (Mizrak Sahin et al., 2019). Therefore, planning the type of delivery, combined with maternal motivation, correlates with an increase in the motivation towards BF and potential success of BF, so that even under the pressure of an unplanned type of delivery, motivation can exert a positive effect on the success of BF. Finally, smoking was directly related to extrinsic motivation and, in this case, could lead to failure of BF. In addition, smoking reflected psychological characteristics of young mothers, related to unplanned pregnancies and unscheduled BF (Grant et al., 2019; Lange et al., 2016; Mizrak Sahin et al., 2019). As a result, Grant et al.(Grant et al., 2019) justified the use of material incentives for smoking cessation in BF mothers.

Intrinsic motivation and extrinsic motivation at each stage of BF

Motivation towards BF was analysed through the Self-Determination Theory (SDT) (Deci and Ryan, 1985; Ryan et al., 1997; Ryan and Deci, 2000a), which includes cognitive assessment and served as the basis for the first validated scale of motivation towards BF (Wells et al., 2002). This theory encompasses five general factors and has been used to study self-regulated motivation in the immediate postpartum period (Lau et al., 2022). In addition, Fisher and Fisher's Information, Motivation and Behavioural Skills (IMB) model (Fisher and Fisher, 1992) explores motivational constructs related to self-efficacy for BF success, highlighting the importance of improving mothers' self-management.

In various contexts, other studies have applied motivational models such as the COM-B (Capability, Opportunity, Motivation-Behaviour) model to understand mothers' behaviour (Grant et al., 2019). This model has also been incorporated into the educational approaches used by midwives in Thailand. In addition, various theoretical frameworks, such as Bandura's self-efficacy theory and Ajzen's theory of planned behaviour, have been used to further explore motivation towards BF (Dornan et al., 2017; Stockdale et al., 2013). Several framework theories, including Bandura's self-efficacy and Ajzen's planned behaviour, were also used to understand motivation towards BF (Dornan et al., 2020, 2017; Franco-Antonio et al., 2021; Khanjari et al., 2023; Khasawneh et al., 2020; Santacruz-Salas et al., 2019).

The results were grouped into four main stages, from the prenatal period to prolonged BF. In the prenatal period, previous studies (Dornan et al., 2020, 2017; Franco-Antonio et al., 2021; Grant et al., 2019; Khanjari et al., 2023; Khasawneh et al., 2020; Martin et al., 2022) highlighted the importance of knowledge of the benefits and family support. During the immediate postpartum period, motivation and self-efficacy were found to be crucial for the continuation of BF (Bulut and Küçük Alemdar, 2021; Dennis, 2003, 1999; Díaz-Gómez et al., 2016). It was also noted that extrinsic motivation, such as financial incentives, can influence the duration of BF (Relton et al., 2018).

Impact of motivation on BF

Some authors suggested that maternal motivation may be present from the gestational stage to the prolongation of BF beyond the two years recommended by the WHO and UNICEF (Martínez-Poblete and Ossa, 2020).

In the current context, where motherhood is increasingly occurring later in life, tandem BF has acquired importance as a unique practice. Tandem BF refers to the practice where a mother continues to breastfeed her child during a subsequent pregnancy and after the birth of the new baby. Rodríguez Vázquez et al.(Rodríguez Vázquez et al., 2023) investigated the motivation for tandem BF using a phenomenological observational study, documenting expressions such as 'self-fulfilment,' 'freedom,' 'spontaneity,' and 'ideal mothering.' According to the SDT, these expressions indicated intrinsic motivation linked to the joy of BF. In turn, this intrinsic motivation could be influenced by extrinsic factors, such as utility, and identified and integrated factors, such as the health benefits for both the mother and child, which ultimately internalized the practice of BF.

Some studies (Dornan et al., 2020, 2017; Purdy, 2010) found that having a positive attitude towards BF could lead to stress and postpartum depression when mothers' expectations were not realized and/or they believed that their production was insufficient. This phenomenon is triggering peer-to-peer exchange networks worldwide. Mothers' motivation for participating in these groups included health benefits for their babies, medical necessity and a preference for human milk over formula milk, literally defining it as 'liquid gold' (McCloskey and Karandikar, 2019). In fact, according to this study, symptoms of anxiety and postpartum depression improved after obtaining milk from other mothers even though the mothers were aware of the risks that this practice could entail (McCloskey and Karandikar, 2019).

Psychological factors related to motivation towards BF

Santacruz-Salas et al. (Santacruz-Salas et al., 2019) reported that mothers who based their BF expectations on their own needs, expressed as "as long as I can," tended to BF for longer compared to those with predefined time limits, indicating the presence of intrinsic motivation. Previous studies have demonstrated the usefulness of a Breastfeeding Motivational Instructional Measurement Scale (BMIMS), to explore the value and expectation of success that BF mothers experience, especially when they receive professional support, in the case of first-time mothers, BF is highly valued, but they reflected low expectations of success when they perceived little health care support while experienced mothers had a more positive expectation of success. Self-efficacy and knowledge were relevant psychological and motivational factors in maintaining EBF (Franco-Antonio et al., 2021; Ryan et al., 1997; Stockdale et al., 2008).

Under the SDT framework, Lau et al. (2022) found that different self-regulated motivations and initial intention to perform BF or EBF in mothers from Hong Kong were associated with high rates of BF and EBF at 6 and 12 weeks postpartum.

The model of planned behaviour could predict BF success; in Iranian mothers, anticipatory assessment of intention based, among other constructs, on social motivation did not reflect final behaviour (Khanjari et al., 2023). On the other hand, factors such as number of children, planned pregnancy and choice of type of delivery showed a significant relationship with intention.

Motivation towards BF of mothers with excessively crying babies was described as intrinsic under the BF Motivation Scale (BMS) based on the SDT (Kestler-Peleg et al., 2015).

According to this study, successful BF was associated with more positive thoughts and a lower belief in the milk secretion deficit associated with these cases and therefore, there was a lower propensity to abandon BF in these mothers (Bulut and Küçük Alemdar, 2021; Green et al., 2021).

Discussion

This systematic review has yielded a current and comprehensive view of mothers' motivation for EBF, considering different theories, models, and cultural contexts, throughout the different stages of the process.

The SDT offers a solid theoretical framework for understanding the motivation behind BF (Ryan and Deci, 2000a). It distinguishes between intrinsic motivation, which arises from personal desire and satisfaction, and extrinsic motivation, which comes from external factors such as social pressure or external incentives. Furthermore, this theory recognises the infant as a crucial factor in the BF process, thus transforming BF

behaviour through the bonding and attachment developed and strengthened between the two during BF (Peñacoba and Catala, 2019; Pinto et al., 2016; Wells et al., 2002). To apply these concepts in practice, it is essential to promote an environment that fosters the mother's intrinsic motivation towards BF (Dornan et al., 2020, 2017; Franco-Antonio et al., 2021; Naroee et al., 2020). This involves providing emotional and educational support and offering information about the benefits of BF for both mother and baby (Akgün and Taştekin, 2019; Lau et al., 2022; Martin et al., 2022). In addition, it is crucial to offer ongoing support to overcome potential barriers and to provide evidence-based knowledge which empowers mothers in their decision to BF (Dornan et al., 2020, 2017).

The interaction between socio-demographic, obstetric and cultural factors on motivation and duration of BF allows for a better understanding of the outcome for each mother, enabling effective, individualised support by health professionals, rather than uniform approaches. Younger mothers may be more intrinsically motivated, while older mothers may be influenced by practicalities and benefits to a greater degree (Pitaloka et al., 2022; Santacruz-Salas et al., 2019). Although previous research underscores the primary role of intrinsic motivation in successful BF behaviours (Deci et al., 1999a), it is important not to neglect external motivations. These external factors can provide crucial psychological reinforcement during the extraordinary challenges that mothers often face in the significant and not always satisfying BF journey (Hoskins et al., 2019b; Moran et al., 2015; Relton et al., 2018; Washio et al., 2021b).

Social and family support, together with favourable labour policies, correlate with greater intrinsic motivation towards BF (Khasawneh et al., 2020; Martin et al., 2022; Mizrak Sahin et al., 2019; Rodríguez Vázquez et al., 2023). Hence the importance of facilitating supportive environments that enable the practice of BF in all socioeconomic contexts (Chang et al., 2021; Díaz-Gómez et al., 2016). Underlying these findings is the crucial importance of family and paternal support, even for women without paid employment (Khanjari et al., 2023). Recent research (Sezer et al., 2024) has emphasised the need to validate specific scales of paternal support as professional tools for predicting BF success, enabling their use in more individualised care plans. These studies underscore the importance of the paternal role, aligning with findings from this review (Akgün and Taştekin, 2019; Díaz-Gómez et al., 2016; Khasawneh et al., 2020; Rodríguez Vázquez et al., 2023). We suggest that the role of men on BF is culturally influenced. However, more studies are necessary to better understand the impact on culture on fathers' involvement in BF, as well as motivation for BF.

The expectations of intensive motherhood along with different professional and social roles are causing mothers additional identity conflicts and anxieties, especially in cultural contexts where both professional success and the realisation of the mothering ideal are valued (Chang et al., 2021; Khasawneh et al., 2020; Lau et al., 2022; McCloskey and Karandikar, 2019; Russell et al., 2022b). It is crucial to recognise that BF difficulties can cause significant maternal distress, highlighting the importance of comprehensive support that addresses both the physical and emotional needs of mothers (Fallon et al., 2015). In addition, it is critical to take cultural beliefs and traditions into account when providing BF support and education (Dornan et al., 2020, 2017; Kuswara et al., 2021; Martínez-Poblete and Ossa, 2020).

Self-efficacy, knowledge, and also proper planning from the beginning, shape the motivation and intention for BF in its different styles (Kestler-Peleg et al., 2015) and have been present in all the studies. It is also essential to recognise and respect the diversity of each mother's individual experiences and circumstances, avoiding any form of external pressure or judgement. This involves not only creating safe and supportive spaces where mothers can share their experiences, receive personalised counselling and feel supported in their choice to breastfeed (Çerçer and Nazik, 2023; Chua et al., 2023), but also strengthening social values which make BF visible and recognised as a crucial asset for infant and maternal health.

Dividing the development of maternal motivation for BF into four stages (Humphreys et al., 1998) may be appropriate for adjusting goals in BF plans, as motivation for BF flows through the phases and fluctuates as the mother faces unexpected challenges, so that BF can benefit from the versatility that motivation offers.

Tandem BF and prolonging BF beyond two years (Martínez-Poblete and Ossa, 2020; Rodríguez Vázquez et al., 2023) can support a change in social motivation and further the goals of WHO and UNICEF. However, studies on these practices are very scarce in high and middle-income countries and virtually non-existent in low-income countries (Khasawneh et al., 2020) . The extreme side can be seen through the data collected in the qualitative study by McCloskey et al. (McCloskey and Karandikar, 2019) which reflects, in textual words, the happiness and peace of mind that parents achieve when they are able to satisfy, through non-milk bank controlled peer-to-peer exchange, the human milk supply demanded by their children, valuing BF to the extreme of taking a health risk.

In summary, motivation towards BF is influenced by a variety of factors and theoretical models; understanding motivation towards BF is critical to promote and support successful BF in different contexts (Green et al., 2021; Martínez-Poblete and Ossa, 2020). Interventions based on the management of general problems encountered during BF can improve motivation throughout the BF process. However, these interventions address the scenarios globally and do not take tradition and social motivation into account. Instruction through health hygiene education in primary and secondary school settings can address the issue of social change at an early age (Cangöl and Şahin, 2017; Glaser et al., 2015; Martínez-Poblete and Ossa, 2020).

This review has certain limitations, particularly the heterogeneity bias resulting from the simultaneous consideration of qualitative and quantitative methodologies. However, this approach has enriched the final results by incorporating studies based on life experiences. Additionally, it has enhanced the sample size and robustness of the results, making them more generalisable.

Conclusion

It can be concluded that research on BF motivation covers a broad spectrum of variables grouped into two main categories. Those which correspond to intrinsic motivation, driven by personal satisfaction and self-happiness; and those which focus on extrinsic motivation and look towards emotional and material needs. Although extrinsic motivation is more externally controlled, it is possible for both to contribute to the success and duration of BF.

In high and middle-income countries, factors associated with intrinsic motivation are given particular importance and are considered critical to the success and duration of BF. In contrast, in low-income countries, the priorities differ, such as addressing favourable and unfavourable cultural practices and the influence of marketing of substitutes.

It is important to recognise that personal, societal and institutional motivation for BF varies according to the socio-cultural context. Understanding that motivation towards BF is not a unified global issue can help to better understand the joint interests necessary to achieve common well-being. But motivation, in turn, requires an understanding of the particularities of each individual in the process of motivation and choice to BF. Thus, each mother develops her own motivation towards BF and requires appropriate health professional interventions considering the type of motivation that guides BF at each stage.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) used ChatGPT, an AI language model developed by OpenAI, to improve the language and readability during the writing process. All content has been reviewed

and verified to ensure its accuracy and appropriateness. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

AI use declaration

During the preparation of this work the author(s) used ChatGPT, an AI language model developed by OpenAI, to improve the language and readability during the writing process. All content has been reviewed and verified to ensure its accuracy and appropriateness. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

Ethical standards disclosure

This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the Biomedical Research Ethics Committee of Aragón.

CRediT authorship contribution statement

María José Carrasco-López: Writing – review & editing, Writing – original draft, Investigation, Formal analysis, Data curation. **Isabel Antón-Solanas:** Writing – review & editing, Visualization, Validation, Supervision, Methodology, Investigation, Data curation. **Eva Benito-Ruiz:** Writing – review & editing, Investigation, Formal analysis. **Natalia Barrio-Forné:** Writing – review & editing, Investigation, Formal analysis. **Carlos Navas-Ferrer:** Resources, Formal analysis, Data curation. **Enrique Ramón-Arbúes:** Writing – review & editing. **Ana Belén Subirón-Valera:** Writing – review & editing, Supervision, Methodology, Investigation, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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