REVIEW ARTICLE

An integrative review on mothers' experiences of online breastfeeding peer support: Motivations, attributes and effects

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Abstract

Information on the experiences surrounding online breastfeeding peer support among breastfeeding mothers and its effects on breastfeeding outcomes is growing yet to be synthesized. The aim of this review was to synthesize the evidence of mothers' experiences of online breastfeeding peer support. An integrative review was conducted. Five electronic databases were searched. Two reviewers independently screened the articles for inclusion. The inclusion criteria were (1) involved original data focusing on mothers' experiences of online breastfeeding peer support, (2) participants who were mothers who were breastfeeding or had experiences of breastfeeding and (3) studies focusing on interaction and communication among mothers through online communities. In total, 14 publications met the inclusion criteria. Breastfeeding mothers turned to online groups when they felt isolated, lacked professional support or preferred online support over face-to-face support. Online breastfeeding peer support was characterized as a virtual community, with easy access, availability and a wealth of resources from actual experiences of mothers. It empowered breastfeeding mothers and resulted in changes in breastfeeding outcomes and perceptions. The positive aspects of online breastfeeding peer support have recently garnered more attention. This review provided baseline data and evidence to supplement and improve the current breastfeeding support system for breastfeeding mothers. The evidence on the effectiveness of online breastfeeding peer support for influencing breastfeeding outcomes remains inconclusive. Further empirical studies with rigorous study designs are warranted.

KEYWORDS
breastfeeding, breastfeeding support, human lactation, peer support, support, support group

1 | INTRODUCTION

Breast milk is the ideal source of nutrition for newborns and young children. Breast milk, sometimes called the newborn's first vaccine, contains all the nutrients and immune substances necessary for newborns (World Health Organization, 2018). It helps in the physical and mental development of children and reduces their risk of becoming overweight or obese (World Health Organization, 2018). In addition,

children who are breastfed have a lower risk of developing asthma, type 1 diabetes, acute otitis media and respiratory diseases (Centers for Disease Control and Prevention, 2019). Breastfeeding is also beneficial for the health of mothers. It lowers the risk of breast cancer, ovarian cancer and metabolic diseases such as type 2 diabetes (Centers for Disease Control and Prevention, 2019; Chowdhury et al., 2015; World Health Organization, 2020).

Despite increasing reports on its benefits over the past two decades, no notable increase in the global rates of breastfeeding has been observed (World Health Organization, 2020). The exclusive breastfeeding rates among infants under 6 months of age have been well below 50% in most countries (World Health Organization, 2020). It has been reported that mothers stop breastfeeding earlier than initially planned when they fail to obtain appropriate support for various issues that occur during breastfeeding (Odom et al., 2013; Sriraman & Kellams, 2016).

Breastfeeding support from peers is highly valued. Peer support is provided by mothers who have a wealth of empirical knowledge regarding breastfeeding and are usually of a similar level of age, socioeconomic status, race and place of residence at an appropriate time (Dennis, 2002). The positive effects of peer support on breastfeeding attempts and duration have been reported in several previous studies (Hongo et al., 2019; Meedya et al., 2010; Raj & Plichta, 1998; Shakya et al., 2017; Sudfeld et al., 2012).

Breastfeeding peer support can come in a variety of forms, either in person, over the phone, or through social media on the Internet. According to a review by McFadden et al. (2017), breastfeeding peer support had a better effect on support received face-to-face than non-face-to-face support such as over the telephone. However, in reality, obtaining peer support in-person during the postpartum period has certain limitations such as physical restraints. In addition, there has been more limit to gaining support for breastfeeding by face-to-face after childbirth because of COVID-19 (Brown & Shenker, 2021).

Only recently has research on breastfeeding peer support through social media been conducted actively. Mothers form breastfeeding support groups through social media where they exchange support related to breastfeeding (Bridges, 2016; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Robinson, Davis, et al., 2019; Skelton et al., 2018). In the context of COVID-19, where in-person social networks have become increasingly restricted, online peer support provides an easy, convenient and unique opportunity to connect and communicate with the other mothers (Yamashita et al., 2020).

Previous studies have reviewed the effects of peer support on breastfeeding (Jolly et al., 2012; Kaunonen et al., 2012; Shakya et al., 2017; Sudfeld et al., 2012), but none, to best of our knowledge, have focused on the breastfeeding peer support through social media. Integrative review method is the only approach that incorporates diverse methodologies such as experimental and non-experimental research and potentiates evidence-based nursing practice (Whittemore & Knafl, 2005). Therefore, the purpose of this review is to synthesize the current evidence on mothers' experiences of online breastfeeding peer support in studies using various methodologies to provide

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Key messages

- Evidence regarding mothers' experiences of the utilization of online breastfeeding peer support and its effects on breastfeeding outcomes is currently limited.
- This review demonstrates that breastfeeding mothers seek online peer support when they feel isolated, lack professional support or prefer online than offline support. Online peer support groups are virtual communities for breastfeeding mothers and are easily accessible, constantly available and provide a wealth of resources from experienced mothers.
- Online breastfeeding peer support provides some positive effects on breastfeeding duration and exclusive breastfeeding rates, but the evidence is limited due to the lack of empirical designs.
- This review provided baseline data and evidence for supplementing and improving the current breastfeeding support system.

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baseline data and evidence to supplement and improve the current breastfeeding peer support system. The research questions were as follows:

1. What are the reasons that mothers seek online breastfeeding peer support?
2. What are the attributes of online breastfeeding peer support?
3. What effects have been achieved by utilizing online breastfeeding peer support?

2 | METHODS

2.1 | Inclusion and exclusion criteria

This integrative review followed the five stages described by Whittemore and Knafl (2005): (1) problem identification, (2) literature search, (3) data evaluation, (4) data analysis and (5) presentation. The inclusion criteria were as follows: first, studies that reported on original data focusing on mothers' experiences of breastfeeding peer support in online communities such as Facebook groups, discussion forums or bulletin boards, in which social aggregations occur among individuals sharing common interests through Internet; second, studies conducted on mothers who were breastfeeding or had experiences of breastfeeding; and third, studies that focused on interaction and communication among mothers through online communities, such as posting questions, commenting on other questions or doubts and sharing information, resources and personal experiences. Excluded studies were as follows: studies conducted on non-breastfeeding mothers, studies that analysed the contents of the posts on social media, studies that reported the development process of a

breastfeeding mobile application or a website, nonresearch articles and those whose full texts were unavailable.

2.2 | Search strategy

The search was carried out in October 2020. Five databases (PubMed, CINAHL, Web of Science, PsycINFO and Cochrane Library) were searched using both medical subject headings (MeSH terms) and key words presented in Table 1. Reference lists were also checked for any relevant articles. Searches were limited to studies published in English with full texts and human subjects. No limitations related to the year of publication were applied.

The two reviewers (HM and KW) independently screened the titles and abstracts to decide which articles would potentially meet the inclusion criteria. Then, full texts were reviewed independently by the reviewers, and a consensus was reached after discussion.

2.3 | The quality of the studies

The quality of the selected studies was evaluated according to the Mixed Methods Appraisal Tool (MMAT) version 2018 (Hong et al., 2018). All included studies were evaluated by two reviewers. Both reviewers independently conducted the quality assessment, and a consensus was reached after discussion. All studies were included in the analysis to achieve a comprehensive view of the status of the research.

2.4 | Data synthesis

The contents from the studies were extracted and tabulated. This includes the authors and year of publication, study design, number of participants, characteristics of participants, the description of online breastfeeding peer support groups, interventions, methods of data collection and analysis and a summary of essential findings. The details of findings were placed in a matrix. Then, the contents were compared item by item, and similar data were categorized and grouped together according to the research questions (Whittemore & Knafl, 2005). While constantly comparing the grouped data, the findings were coded according to emergent themes and subthemes. Constant comparison enables the identification of patterns and commonalities between studies (Whittemore & Knafl, 2005). The data analysis process was reviewed by the authors, and agreement was reached on the identification of major themes of the study.

3 | RESULTS

The initial search yielded 941 articles. After removing duplicate citations, 506 article titles and abstracts were screened. Of those, 31 full-text studies were assessed for eligibility based on the inclusion

TABLE 1 Search terms and structure

Database	Search terms and structure
PubMed	1 "online"[Title/Abstract] OR "social media"[MeSH Terms] OR "internet"[MeSH Terms] OR "Facebook"[Title/Abstract] OR "web"[Title/Abstract]
	2 "breast feeding"[MeSH Terms] OR "breastfeeding"[Title/Abstract] OR "breast milk"[Title/Abstract]
	3 1 AND 2
	4 "support"[Title/Abstract] OR "peer group"[MeSH Terms] OR "peer support"[Title/Abstract] OR "peer counseling"[Title/Abstract] OR "social support"[MeSH Terms]
	5 3 AND 4
CINAHL	1 AB online OR MH "social media" OR MH Internet OR AB Facebook OR AB web
	2 MH "breast feeding" OR AB breastfeeding OR AB "breast milk"
	3 1 AND 2
	4 AB support OR MH "peer group" OR AB "peer support" OR AB "peer counseling" OR MH "social support"
	5 3 AND 4
Web of Science	1 TOPIC: (online) OR TOPIC: ("social media") OR TOPIC: (Internet) OR TOPIC: (Facebook) OR TOPIC: (web)
	2 TOPIC: ("breast feeding") OR TOPIC: (breastfeeding) OR TOPIC: ("breast milk")
	3 1 AND 2
	4 TOPIC: (support) OR TOPIC: ("peer group") OR TOPIC: ("peer support") OR TOPIC: ("peer counseling") OR TOPIC: ("social support")
	5 3 AND 4
PsycINFO	1 AB online OR MA "social media" OR MA Internet OR AB Facebook OR AB web
	2 MA "breast feeding" OR AB breastfeeding OR AB "breast milk"
	3 1 AND 2
	4 AB support OR MA "peer group" OR AB "peer support" OR AB "peer counseling" OR MA "social support"
	5 3 AND 4
Cochrane Library	1 (online):ti,ab,kw OR ("social media"):ti,ab,kw OR ("Internet"):ti,ab,kw OR (Facebook):ti,ab,kw OR (web):ti,ab,kw
	2 ("breast feeding"):ti,ab,kw OR (breastfeeding):ti,ab,kw OR ("breast milk"):ti,ab,kw
	3 1 AND 2
	4 (support):ti,ab,kw OR ("peer group"):ti,ab,kw OR ("peer support"):ti,ab,kw OR ("peer counseling"):ti,ab,kw OR ("social support"):ti,ab,kw
	5 3 AND 4

criteria. Those not meeting the criteria were excluded, leaving 14 articles for this review (Figure 1).

3.1 | Included studies

A total of 14 publications met the criteria and were chosen for the review. Nine were qualitative (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018), and two were mixed methods (Herron et al., 2015; Skelton et al., 2020). The remaining three were quantitative studies, of which two were randomized controlled trials (RCTs) (Cavalcanti et al., 2019; Niela-Vilén et al., 2016) and one was a cross-sectional survey (Robinson, Lauckner, et al., 2019). The participants in seven studies were breastfeeding mothers with no specification (Alianmoghaddam et al., 2019; Bridges, 2016; Cavalcanti et al., 2019; Herron et al., 2015; Regan & Brown, 2019; Skelton et al., 2018, 2020). In the other seven studies, the participants were from specific groups of breastfeeding mothers, including primiparous mothers, mothers with preterm infants, primiparous African American mothers, mothers who exclusively expressed breast milk and ones who continued

breastfeeding over 12 months of the child's age (Black et al., 2020; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Niela-Vilén et al., 2016; Robinson, Davis, et al., 2019; Robinson, Lauckner, et al., 2019). The breastfeeding peer support groups in 10 studies were exclusively on Facebook (Black et al., 2020; Bridges, 2016; Cavalcanti et al., 2019; Clapton-Caputo et al., 2020; Niela-Vilén et al., 2015; Niela-Vilén et al., 2016; Robinson, Davis, et al., 2019; Robinson, Lauckner, et al., 2019; Skelton et al., 2018, 2020). The groups in the remaining four studies were from forums in parenting websites or unspecified social media groups (Alianmoghaddam et al., 2019; Herron et al., 2015; Jackson & Hallam, 2020; Regan & Brown, 2019). The scope of social media was diverse, from local to national and even international-level peer support groups. In most studies, that is, 10 of them, the groups were moderated by voluntary peer supporters and professionals, such as International Board-Certified Lactation Consultants (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Cavalcanti et al., 2019; Niela-Vilén et al., 2015, 2016; Robinson, Davis, et al., 2019; Robinson, Lauckner, et al., 2019; Skelton et al., 2018, 2020). Although the publication years were not limited, all selected studies were published after 2015. Four studies were conducted in the United States (Robinson, Davis, et al., 2019; Robinson, Lauckner, et al., 2019; Skelton et al., 2018, 2020), three in the United Kingdom (Herron et al., 2015;
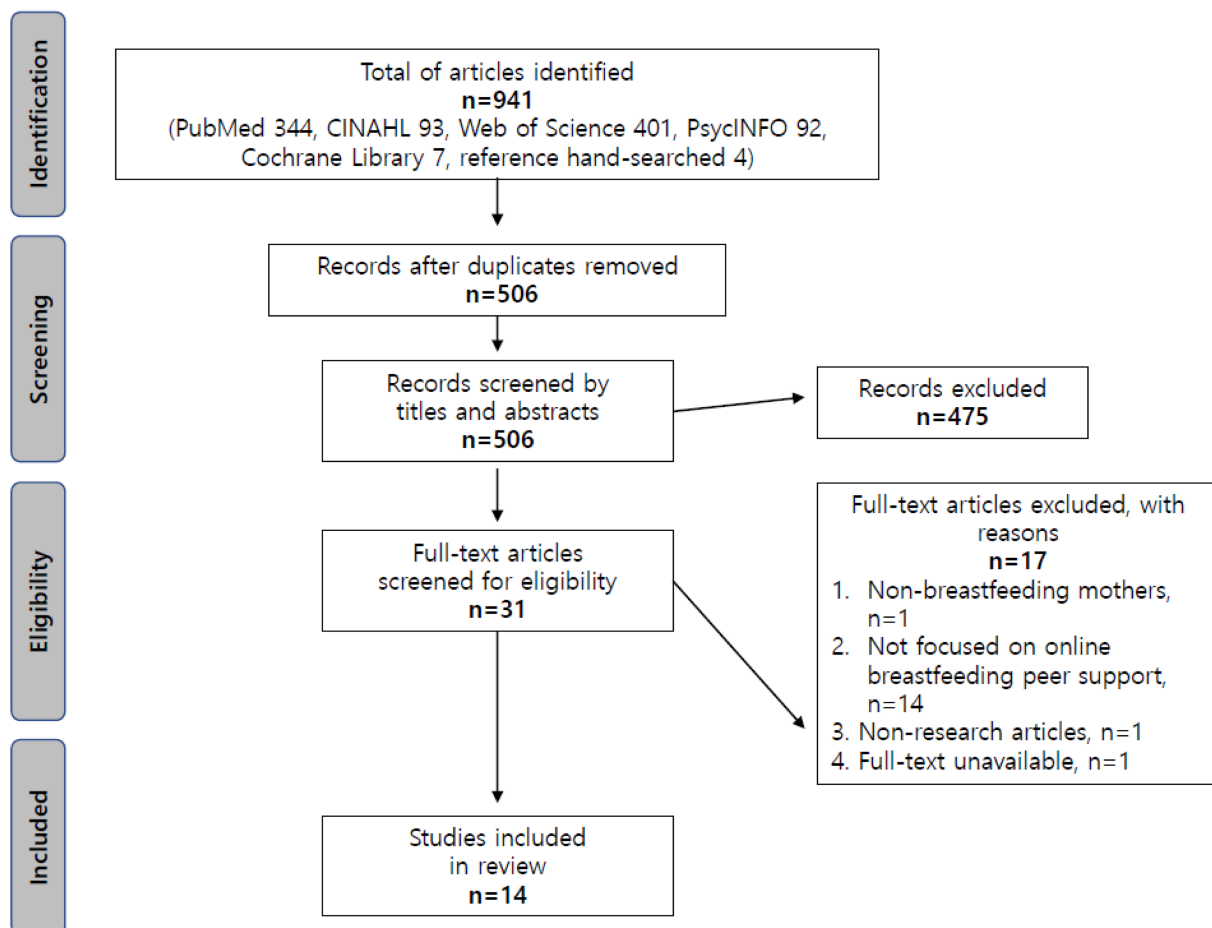

FIGURE 1 PRISMA flow diagram

Jackson & Hallam, 2020; Regan & Brown, 2019), two in Finland (Niela-Vilén et al., 2015, 2016), two in Australia (Bridges, 2016; Clapton-Caputo et al., 2020) and one each in Brazil (Cavalcanti et al., 2019), Ireland (Black et al., 2020) and New Zealand (Alianmoghaddam et al., 2019) (Table 2).

3.2 | Quality of included studies

Study quality appraisal using the MMAT version 2018 is presented in Table 3. Overall, the quality of qualitative studies was good. Seven out of nine qualitative studies met all five criteria for quality (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018). However, two qualitative studies (Jackson & Hallam, 2020; Niela-Vilén et al., 2015) met three out of five criteria, showing weakness in the interpretation of results and coherence between data sources, collection, analysis and interpretation.

Two mixed methods studies were of adequate quality, meeting most of the criteria (Herron et al., 2015; Skelton et al., 2020). The study by Herron et al. (2015) showed weakness in the interpretation of the results, failing to elaborate on the integration of different study methods and divergences and inconsistencies between the qualitative components. The study by Skelton et al. (2020) did not meet the quality criteria on the explanation of the sampling strategy and representativeness of the sample. In addition, the study did not adequately describe the risk of nonresponse bias.

The quantitative studies were of good quality. Two RCT studies (Cavalcanti et al., 2019; Niela-Vilén et al., 2016) and a cross-sectional study (Robinson, Lauckner, et al., 2019) were appraised. The study by Cavalcanti et al. (2019) met all five criteria, whereas the study by Niela-Vilén et al. (2016) showed weakness in the intervention that failed to make all the participants adhere to the intervention. The cross-sectional study by Robinson, Lauckner, et al. (2019) was judged to be weak, failing to provide adequate details about the risk of nonresponse bias.

3.3 | Motivations to seek online breastfeeding peer support

3.3.1 | Isolation as a breastfeeding mother

Breastfeeding mothers sought online support when they felt isolated. An absent or inadequate in-person social support network was identified in four studies (Clapton-Caputo et al., 2020; Herron et al., 2015; Regan & Brown, 2019; Skelton et al., 2020). Primiparous mothers who did not know anyone or knew only a few others with experiences of breastfeeding had a limited resource to seek breastfeeding support (Herron et al., 2015). Breastfeeding mothers who did not know anyone with experiences within the immediate social network felt isolated and desired to find the support online (Regan & Brown, 2019;

Skelton et al., 2020). For mothers, whose breastfeeding practices were uncommon, such as mothers who practiced exclusive expression of breast milk, unmet needs of in-person breastfeeding support were observed (Clapton-Caputo et al., 2020). Mothers turned to online platforms when they received no support (Skelton et al., 2018) or unsatisfactory support from significant others, family members and/or friends (Herron et al., 2015; Regan & Brown, 2019). Unmet informational needs, a lack of skill (Alianmoghaddam et al., 2019; Clapton-Caputo et al., 2020; Herron et al., 2015; Niela-Vilén et al., 2015) and stigmatization regarding breastfeeding in public, exclusive pumping and continued breastfeeding beyond infancy (Alianmoghaddam et al., 2019; Skelton et al., 2018) were reported as motivations of seeking online breastfeeding peer support (Table 4).

3.3.2 | Unmet support needs from HCPs

Mothers reported that inadequate breastfeeding support from health care professionals (HCPs) led them to turn to online support. In a study by Regan and Brown (2019), mothers stated that the support on breastfeeding was insufficiently provided after childbirth. In addition, mothers reported that the support from their HCPs diminished and was insufficient as they continued breastfeeding beyond 12 months of their child in a study by Jackson and Hallam (2020). Mothers' negative experiences with HCPs who had a lacked knowledge and/or specific training on breastfeeding were also addressed (Clapton-Caputo et al., 2020; Herron et al., 2015; Regan & Brown, 2019). Furthermore, contradictory and discouraging advice from HCPs was reported as the motivation to seek support online (Herron et al., 2015; Niela-Vilén et al., 2015; Regan & Brown, 2019).

3.3.3 | Preference for online breastfeeding support

Breastfeeding mothers who preferred online support mentioned that they had difficulty accessing local face-to-face breastfeeding support due to physical exhaustion (Bridges, 2016; Regan & Brown, 2019) and pressure in terms of time and resource (Bridges, 2016; Herron et al., 2015; Regan & Brown, 2019). In addition, mothers preferred online breastfeeding support due to its convenience (Herron et al., 2015) and flexibility (Bridges, 2016).

3.4 | Attributes of online breastfeeding peer support

3.4.1 | A virtual community for breastfeeding mothers

Online breastfeeding peer support took place in a virtual community for breastfeeding mothers. There were four factors describing an online breastfeeding community: shared experiences in breastfeeding,

TABLE 2 Summary of included studies

Author(s), year, country	Aims/objectives	Description of online breastfeeding support groups/intervention/peer supporters	Methodological approach, data collection, number of participants/postings	Relevant findings
Alianmoghaddam et al. (2019), New Zealand	To explore the influence of social media on exclusive breastfeeding practice	Facebook groups and parenting platforms for breastfeeding support throughout New Zealand Volunteer peers and healthcare professionals as moderators in one of the Facebook groups mentioned; no other specific information on the presence and roles of them in other support groups	Qualitative, face-to-face interviews and telephone interviews, $n = 30$ mothers recruited from the lower North Island of New Zealand	23 multiparous mothers, of which 22 with previous breastfeeding experience Isolation after childbirth with unmet informational needs and stigmatization A virtual community with shared experiences in breastfeeding, reassurance, indirect reciprocity; easily accessible and available all the time; reliable sources of information and advice Empowerment of self and others
Black et al. (2020), Ireland	To investigate the experiences of women using a Facebook group for breastfeeding support	A Northern Ireland local breastfeeding support peer group on Facebook led by volunteer peer supporters, experienced breastfeeding mothers and International Board-Certified Lactation Consultant	Qualitative, semistructured interviews, $n = 8$ primiparous women	Normalization of breastfeeding and its challenges, indirect reciprocity, being comfortable to ask questions; easy access and availability; tailored and costless resource Confidence and empowerment in breastfeeding practices; goals extended through the online support
Bridges (2016), Australia	To advance understanding of the experiences of mothers using the closed Facebook groups and how these mothers find and share breastfeeding support and information	Australia breastfeeding Association's online breastfeeding support groups on Facebook, moderated by trained volunteer peer supporters	Qualitative, online in-depth interviews and focus group interviews, $n = 23$ women	Difficulty accessing face-to-face support because of sleep deprivation and pressure in terms of time and resource after childbirth, flexibility A virtual community for breastfeeding mothers with shared experiences, normalization of breastfeeding and its challenges, indirect reciprocity, confidentiality; access to immediate help when mothers need it, easy access via mobile devices; access to both factual and experiential information, advice and support in breastfeeding Confidence and empowerment after involvement in the online support groups
Cavalcanti et al. (2019), Brazil	To assess the impact on the duration of exclusive breastfeeding of a	A breastfeeding peer support group on Facebook for mothers who delivered	Quantitative, randomized controlled trial, $n = 251$	Multiparous mothers occupied 52.8% in the intervention group (IG)

TABLE 2 (Continued)

Author(s), year, country	Aims/objectives	Description of online breastfeeding support groups/intervention/peer supporters	Methodological approach, data collection, number of participants/postings	Relevant findings
	participatory intervention using an online social network	healthy term babies at a university hospital in the Northeast Brazil The research team members (nurses, nutritionists, paediatricians, etc.) available to answer to the questions and two nutritionists as coordinators	(intervention $n = 123$, control $n = 128$)	and 50% in the control group (CG) Higher exclusive breastfeeding percentages in women in the IG throughout 6 months postpartum, the follow-up period: at the sixth month of follow-up, the proportions of exclusive breastfeeding were 33.3% in the IG and 8.3% in the CG ($p < 0.001$) Longer breastfeeding duration in the IG: median exclusive breastfeeding duration was 149 days in the IG and 86 days in the CG ($p < 0.0001$)
Clapton-Caputo et al. (2020), Australia	To understand the expectations and experiences of women who access social media groups when exclusively expressing breast milk	A Facebook group for women who exclusively express breast milk and live in Australia No information on the administrators or moderators of the group	Qualitative, semistructured interview, $n = 10$ mothers	Lack of in-person social support, lacked understanding, unmet informational needs; unmet informational needs from their health care professionals Shared experiences, emotional support from the community, reassurance, indirect reciprocity; timely support; information and advice more beneficial than those from health care professionals, reliable and tailored Empowerment; extended or achieved breastfeeding goals
Herron et al. (2015), UK	To conceptualize online breastfeeding support	A breastfeeding forum on netmums.com, with national-wide members throughout the United Kingdom No information on the administrators or moderators of the group	Mixed method, a concept analysis, testing of tentative components from the concept analysis through online observation of postings, $n = 126$ (consisting of 1230 messages), and online-based interviews, $n = 12$ mothers	Inadequate face-to-face support, unmet informational needs, unsupportive family members and friends; unsatisfactory support from health care professionals, contradictory and discouraging advice from health care professionals; difficulty accessing face-to-face breastfeeding support in regard to time and resource, convenience accessing

(Continues)

TABLE 2 (Continued)

Author(s), year, country	Aims/objectives	Description of online breastfeeding support groups/intervention/peer supporters	Methodological approach, data collection, number of participants/postings	Relevant findings
				online breastfeeding peer support Normalization of breastfeeding and its challenges, indirect reciprocity, easier to discuss issues related to breastfeeding because of anonymity; easily accessible and available all the time; tailored information Breastfeeding goals extended or achieved
Jackson and Hallam (2020), UK	To describe the mothers' experiences of health care interventions during the transition from breastfeeding an infant to a toddler	Local and international breastfeeding support groups in social media for women who were currently breastfeeding or had recent experience at least one child over the age of 12 months in Derbyshire, UK No information on the administrators or moderators of the group	Qualitative, semistructured interviews, $n = 24$ women	A lack of breastfeeding support from health care professionals Shared experiences in breastfeeding, reassurance, normalization of breastfeeding and its challenges, indirect reciprocity; access to help all the time; resource from a variety of people with lived experience, information beneficial than health care professionals Empowerment of self and others; breastfeeding perception changed as something to be proud of
Niela-Vilén et al. (2015), Finland	To describe the perceptions of breastfeeding mothers of preterm infants based on the postings in peer support group discussions in social media	A closed Facebook breastfeeding peer support group for mothers of preterm infants born in a hospital in Finland, moderated by a midwife and three voluntary peer supporters with no special training	Qualitative, postings, $n = 30$ mothers of preterm infants, 305 posted messages	21 first-time mothers with no previous breastfeeding experiences Unmet informational needs, a lack of skill regarding breastfeeding their premature babies; contradictory advice from health care professionals, discouragement to breastfeed premature babies by health care professionals Shared experiences, indirect reciprocity; accessibility and availability Empowerment of self
Niela-Vilén et al. (2016), Finland	To examine whether an Internet-based peer support intervention influences the duration of	A closed Facebook peer support group in social media for mothers who delivered preterm infants	Quantitative, randomized controlled trial, $n = 124$ mothers (intervention $n = 60$, control $n = 64$)	Limited rates of participation (73%) in the online support group in

TABLE 2 (Continued)

Author(s), year, country	Aims/objectives	Description of online breastfeeding support groups/intervention/peer supporters	Methodological approach, data collection, number of participants/postings	Relevant findings
	breastfeeding or breast milk expression or maternal breastfeeding attitude compared with routine care in mothers of preterm infants	in a hospital in Finland, moderated by a midwife and three voluntary peer supporters with no special training		the intervention group (IG) The median breastfeeding duration: 3 months in IG and 4.3 months in the control group (CG) No statistically significant effect of the intervention on the duration of breastfeeding or expressing breast milk or maternal breastfeeding attitude
Regan and Brown (2019), UK	To explore women's experiences of breastfeeding, their motivations for accessing online breastfeeding support and their experiences of using online support	Social media groups and online forums of local parenting and breastfeeding support in the United Kingdom No information on the administrators or moderators of the group	Qualitative, semistructured interview, $n = 14$ mothers	Isolation after childbirth because of no close family or no one with breastfeeding experiences nearby, unsatisfactory support from their partners; insufficient support from their health care professionals, for example, a lack of specific training on breastfeeding or contradictory advice; difficulty accessing face-to-face breastfeeding support because of physical exhaustion and pressure in time and resource Shared experiences, emotional support, reassurance, normalization of breastfeeding; indirect reciprocity; available all the time; resource from a variety of mothers, tailored support Limitations in regard to judgement, polarized debate and lack of regulation
Robinson, Davis, et al. (2019), USA	To describe (1) the experiences of African American mothers who participate in breastfeeding support groups on Facebook and (2) the breastfeeding beliefs, practices and outcomes for this population of mothers	Six breastfeeding support groups on Facebook that promoted breastfeeding and provided support among African American mothers across the United States, administered by licensed lactation professionals and moderated by mothers	Qualitative, online focus group interviews, $n = 22$ primiparous African American mothers	Shared social/cultural understanding and experiences, normalization of breastfeeding and its challenges, indirect reciprocity; accessibility and availability; resource from lived experience of a variety of mothers Empowerment of self and others; extended

TABLE 2 (Continued)

Author(s), year, country	Aims/objectives	Description of online breastfeeding support groups/intervention/peer supporters	Methodological approach, data collection, number of participants/postings	Relevant findings
				breastfeeding goals or duration, comfort with public breastfeeding Negative aspects regarding perceived negative tone and receiving harsh comments
Robinson, Lauckner, et al. (2019), USA	To identify the sources of breastfeeding support for mothers participating in support groups on Facebook and to explore a possible mechanism by which support received on social network site leads to behavioural outcomes among breastfeeding mothers	Facebook breastfeeding support groups for African American mothers across the United States, administered by licensed lactation professionals and moderated by mothers	Quantitative, cross-sectional, online survey, $n = 277$ primiparous African American mothers	The highest amount of breastfeeding support from Facebook support groups, in comparison with other sources of support Facebook breastfeeding peer support significantly correlated with intended breastfeeding duration
Skelton et al. (2018), USA	To leverage mothers' attitudes and behaviours of social media usage to understand effects on breastfeeding outcomes	One pro-breastfeeding support group on Facebook with over 6300 members throughout the United States, administered by IBCLCs and peer supporters with no professional training but experiences in breastfeeding	Qualitative, online focus group discussions and interviews, $n = 29$ women	No support from family members and friends, stigmatization regarding their breastfeeding practice Shared experiences, emotional support from the community, normalization of breastfeeding and its challenges, indirect reciprocity, easier to discuss issues because of anonymity and confidentiality in the group; real-time and reliable information from other experienced mothers Empowerment; extended or achieved breastfeeding goals, change in perception regarding public breastfeeding
Skelton et al. (2020), USA	To explore utilization of an existing pro-breastfeeding Facebook group and how utilization influences breastfeeding-related knowledge, attitudes and behaviours	A pro-breastfeeding Facebook group with over 6300 members throughout the United States, administered by IBCLCs and peer supporters with no professional training but experiences in breastfeeding	Mixed method, online focus group discussions ($n = 21$) and individual interviews ($n = 12$), online questionnaire ($n = 314$)	Social isolation after childbirth Shared experiences, emotional support, normalization of breastfeeding and its challenges, indirect reciprocity, confidentiality; reliable resource 41% with previous experiences of breastfeeding 91.5% with breastfeeding initiated and 69%

TABLE 2 (Continued)

Author(s), year, country	Aims/objectives	Description of online breastfeeding support groups/intervention/peer supporters	Methodological approach, data collection, number of participants/postings	Relevant findings
				exclusively breastfed at 6 months 96.2% reported that the Facebook group motivated them to share breastfeeding-related knowledge. 98.4% said that the Facebook group helped mothers achieve breastfeeding outcomes

reassurance and normalization, indirect reciprocity and anonymity and confidentiality.

Eleven studies demonstrated that breastfeeding peer support took place in a virtual community for mothers with shared experiences. Online communities enabled geographically distant individuals who were previously unacquainted with each other to come together for a shared event on breastfeeding (Alianmoghaddam et al., 2019). Mothers, who felt isolated and unsupported, experienced a community where they were understood by others who were like-minded, experiencing similar challenges and encountering relatable problems (Alianmoghaddam et al., 2019; Bridges, 2016; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018, 2020). Mothers met others who had vast experiences of breastfeeding, asked questions on issues related to breastfeeding and received tailored solutions. By sharing common experiences, mother-to-mother support alleviated isolation and provided emotional support. In addition, shared experiences among breastfeeding mothers enabled mothers to feel a sense of bond, belonging, comfort and empowerment (Clapton-Caputo et al., 2020; Regan & Brown, 2019; Skelton et al., 2018, 2020).

Breastfeeding peer support groups in social media provided reassurance and normalized breastfeeding practices. Mothers were reassured by reading others' challenges and from advice by peers (Alianmoghaddam et al., 2019; Regan & Brown, 2019). For those who fed their children with expressed breast milk or breastfed beyond infancy, online support offered reassurance that their feeding practices were also valuable and beneficial to their children (Clapton-Caputo et al., 2020; Jackson & Hallam, 2020). In addition, online breastfeeding peer support disproved misconceptions (Black et al., 2020; Bridges, 2016; Herron et al., 2015; Jackson & Hallam, 2020; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018, 2020).

Indirect reciprocity was also dominant among the studies reviewed. Mothers who received support from the community were willing to help others; mothers who had previously gained support returned to or stayed in the groups to provide support to other novice mothers who were assumed to be experiencing similar trial-and-errors in their breastfeeding journey (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Herron et al., 2015; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018, 2020). Bridges (2016) noted that this act of offering support to other breastfeeding mothers is particularly important to sustain an online community in a healthy and productive way.

Mothers in the groups reported they felt a strong sense of confidentiality within the groups despite online breastfeeding support groups were composed mainly of strangers (Bridges, 2016; Skelton et al., 2018, 2020). The online breastfeeding community was a comfortable place to ask questions (Black et al., 2020), and the nature of anonymity in an online environment made it possible for mothers to freely discuss matters online (Herron et al., 2015; Skelton et al., 2018).

3.4.2 | Easy access and round-the-clock availability

Online breastfeeding peer support was easily accessible by anyone, anytime and anywhere, via mobile devices, such as mobile phones, tablets and/or laptops (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Herron et al., 2015; Niela-Vilén et al., 2015; Robinson, Davis, et al., 2019). In addition, mothers were able to access help and receive timely support from the groups whenever the support was needed, all day and all night. There was no limitation in terms of time or geographical distance. Immediacy of online breastfeeding peer support was emphasized; there was always someone online to help mothers, offering support the mothers needed (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Herron et al., 2015; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018). Being such a real-time resource, online breastfeeding peer support

TABLE 3 Results of quality appraisal using the Mixed Methods Appraisal Tool version 2018

Author(s), year	Component	Quality criteria	Yes	No	Cannot tell
Alianmoghaddam et al. (2019)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
Black et al. (2020)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
Bridges (2016)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
Cavalcanti et al. (2019)	Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?	✓		
		2.2. Are the groups comparable at baseline?	✓		
		2.3. Are there complete outcome data?	✓		
		2.4. Are outcome assessors blinded to the intervention provided?	✓		
		2.5. Did the participants adhere to the assigned intervention?	✓		
Clapton-Caputo et al. (2020)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
Herron et al. (2015)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
			✓		

TABLE 3 (Continued)

Author(s), year	Component	Quality criteria	Yes	No	Cannot tell
		1.3. Are the findings adequately derived from the data?			
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
	Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?	✓		
		5.2. Are the different components of the study effectively integrated to answer the research question?	✓		
		5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?			✓
		5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?			✓
		5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?	✓		
Jackson and Hallam (2020)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?		✓	
		1.4. Is there coherence between qualitative data sources, collection, analysis and interpretation?		✓	
Niela-Vilén et al. (2015)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?		✓	
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?		✓	
Niela-Vilén et al. (2016)	Quantitative randomized controlled trials	2.1. Is randomization appropriately performed?	✓		
		2.2. Are the groups comparable at baseline?	✓		
		2.3. Are there complete outcome data?	✓		
		2.4. Are outcome assessors blinded to the intervention provided?	✓		
		2.5. Did the participants adhere to the assigned intervention?		✓	
Regan and Brown (2019)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
			✓		

TABLE 3 (Continued)

Author(s), year	Component	Quality criteria	Yes	No	Cannot tell
		1.3. Are the findings adequately derived from the data?			
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
Robinson, Davis, et al. (2019)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
Robinson, Lauckner, et al. (2019)	Quantitative	4.1. Is the sampling strategy relevant to address the research question?	✓		
		4.2. Is the sample representative of the target population?	✓		
		4.3. Are the measurements appropriate?	✓		
		4.4. Is the risk of nonresponse bias low?			✓
		4.5. Is the statistical analysis appropriate to answer the research question?	✓		
Skelton et al. (2018)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
Skelton et al. (2020)	Qualitative	1.1. Is the qualitative approach appropriate to answer the research question?	✓		
		1.2. Are the qualitative data collection methods adequate to address the research question?	✓		
		1.3. Are the findings adequately derived from the data?	✓		
		1.4. Is the interpretation of results sufficiently substantiated by data?	✓		
		1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation?	✓		
	Quantitative	4.1. Is the sampling strategy relevant to address the research question?		✓	
		4.2. Is the sample representative of the target population?		✓	
		4.3. Are the measurements appropriate?	✓		
		4.4. Is the risk of nonresponse bias low?			✓
			✓		

TABLE 3 (Continued)

TABLE 3 (Continued)

Author(s), year	Component	Quality criteria	Yes	No	Cannot tell
		4.5. Is the statistical analysis appropriate to answer the research question?			
	Mixed methods	5.1. Is there an adequate rationale for using a mixed methods design to address the research question?	✓		
		5.2. Are the different components of the study effectively integrated to answer the research question?	✓		
		5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted?	✓		
		5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?	✓		
		5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?			✓

was regarded as invaluable to breastfeeding mothers who were in need (Skelton et al., 2018), and mothers felt that they were not alone in their breastfeeding journey with the help of online peer support (Jackson & Hallam, 2020).

3.4.3 | Resource from lived experience

Mothers appreciated factual or evidence-based information and advice from a variety of peers and professionals with extensive experience in breastfeeding, either directly or indirectly. (Bridges, 2016; Jackson & Hallam, 2020; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018) and considered the information and advice to be more beneficial than those from the HCPs with less experience (Clapton-Caputo et al., 2020; Jackson & Hallam, 2020). Mothers expressed their trust over the information and advice provided by their peers (Alianmoghaddam et al., 2019; Clapton-Caputo et al., 2020; Skelton et al., 2018, 2020). Online breastfeeding peer support was tailored to mothers with specific circumstances. Peer supporters provided relevant and specific information with references (Black et al., 2020; Clapton-Caputo et al., 2020; Herron et al., 2015; Regan & Brown, 2019). In addition, online breastfeeding peer support enabled mothers to access advice from peers and professionals for free (Black et al., 2020).

3.5 | Effects of online breastfeeding peer support

3.5.1 | Empowerment of self and others

One of the effects of online breastfeeding peer support was empowerment of self and others. Mothers gained self-confidence and became empowered as they involved themselves in online

breastfeeding support communities, through the activities of reading others' experiences, asking questions, receiving support and commenting on others' posts (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Robinson, Davis, et al., 2019; Skelton et al., 2018). In addition, mothers who were empowered enough were willing to make others empowered in their breastfeeding journey, giving advice and supporting them to continue breastfeeding (Alianmoghaddam et al., 2019; Jackson & Hallam, 2020; Robinson, Davis, et al., 2019).

3.5.2 | Changes in breastfeeding outcomes and perceptions

Online breastfeeding peer support brought changes in breastfeeding outcomes and perceptions among breastfeeding mothers. Seven studies addressed that the breastfeeding goals were extended or achieved (Black et al., 2020; Clapton-Caputo et al., 2020; Herron et al., 2015; Robinson, Davis, et al., 2019; Robinson, Lauckner, et al., 2019; Skelton et al., 2018, 2020). However, the effect of online breastfeeding peer support on the duration of breastfeeding was inconsistent. Four studies specifically mentioned the duration of breastfeeding as the outcome; the breastfeeding duration was reported to be extended in an RCT by Cavalcanti et al. (2019) and two qualitative studies by Robinson, Davis, et al. (2019) and Skelton et al. (2018), whereas in an RCT conducted on mothers with premature babies (Niela-Vilén et al., 2016), online breastfeeding peer support had no statistically significant effect on the breastfeeding duration. The study of Cavalcanti et al. (2019) is an RCT and distinguished from the other two qualitative studies in that the researchers encouraged mothers' participation in an online breastfeeding peer support group in the planned context and measured the effectiveness. The rates of exclusive breastfeeding

TABLE 4 Themes of online breastfeeding peer support

Categories	Themes		Details, references
Motivations to seek online breastfeeding support	Isolation as a breastfeeding mother		- Lack of in-person social support network (Clapton-Caputo et al., 2020; Herron et al., 2015; Regan & Brown, 2019; Skelton et al., 2020) - Lack of understanding (Clapton-Caputo et al., 2020) - Lack of support or unsatisfactory support from partners, family members, friends or others (Herron et al., 2015; Regan & Brown, 2019; Skelton et al., 2018) - Unmet informational needs (Alianmoghaddam et al., 2019; Clapton-Caputo et al., 2020; Herron et al., 2015; Niela-Vilén et al., 2015) - Lack of skill (Niela-Vilén et al., 2015) - Stigmatization (Alianmoghaddam et al., 2019; Skelton et al., 2018)
	Unmet support needs from health care professionals		- Lack of breastfeeding support (Jackson & Hallam, 2020; Regan & Brown, 2019) - Lack of knowledge (Clapton-Caputo et al., 2020; Herron et al., 2015) - Lack of specific training (Herron et al., 2015; Regan & Brown, 2019) - Contradictory advice (Herron et al., 2015; Niela-Vilén et al., 2015; Regan & Brown, 2019) - Discouragement to breastfeed premature babies (Herron et al., 2015; Niela-Vilén et al., 2015)
	Preference for online breastfeeding support		- Difficulty accessing face-to-face breastfeeding support ✓ Physically exhausted (Regan & Brown, 2019) ✓ Sleep deprivation (Bridges, 2016; Regan & Brown, 2019) ✓ Pressure in terms of time and resource (Bridges, 2016; Herron et al., 2015; Regan & Brown, 2019) - Convenience (Herron et al., 2015) - Flexibility (Bridges, 2016)
Attributes of online breastfeeding support	A virtual community for breastfeeding mothers	Shared experiences in breastfeeding	- Shared experiences among breastfeeding mothers who were or had been in a similar situation (Alianmoghaddam et al., 2019; Bridges, 2016; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018, 2020) - Emotional support from the community (Clapton-Caputo et al., 2020; Regan & Brown, 2019; Skelton et al., 2018; Skelton et al., 2020)
		Reassurance and normalization	- Reassurance (Alianmoghaddam et al., 2019; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Regan & Brown, 2019) - Normalization of breastfeeding and its challenges (Black et al., 2020; Bridges, 2016; Herron et al., 2015; Jackson & Hallam, 2020; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018, 2020)
		Indirect reciprocity	Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Herron et al., 2015; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018, 2020

TABLE 4 (Continued)

Categories	Themes		Details, references
		Anonymity and confidentiality	- Easier to discuss things online because of anonymity (Herron et al., 2015; Skelton et al., 2018) - Being comfortable to ask questions (Black et al., 2020) - Confidentiality (Bridges, 2016; Skelton et al., 2018, 2020)
	Easy access and round-the-clock availability		- Easy access via mobile devices regardless of time and location (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Herron et al., 2015; Niela-Vilén et al., 2015; Robinson, Davis, et al., 2019) - Access to help and timely support, unlimited by time and geographical distance (Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Herron et al., 2015; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018)
	Resource from lived experience		- From a variety of people (Jackson & Hallam, 2020; Regan & Brown, 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018) - Factual/evidence based and experiential (Bridges, 2016; Jackson & Hallam, 2020; Robinson, Davis, et al., 2019) - Beneficial than health care professionals (Clapton-Caputo et al., 2020; Jackson & Hallam, 2020) - Reliable (Alianmoghaddam et al., 2019; Clapton-Caputo et al., 2020; Skelton et al., 2018, 2020) - Tailored (Black et al., 2020; Clapton-Caputo., 2020; Herron et al., 2015; Regan & Brown, 2019) - Costless (Black et al., 2020)
Effects of online breastfeeding support	Empowerment of self and others		Alianmoghaddam et al., 2019; Black et al., 2020; Bridges, 2016; Clapton-Caputo et al., 2020; Jackson & Hallam, 2020; Niela-Vilén et al., 2015; Robinson, Davis, et al., 2019; Skelton et al., 2018
	Changes in breastfeeding outcomes and perceptions		- Changes in breastfeeding outcomes Breastfeeding goals ✓ Extended or achieved (Black et al., 2020; Clapton-Caputo et al., 2020; Herron et al., 2015; Robinson, Davis, et al., 2019; Robinson, Lauckner, et al., 2019; Skelton et al., 2018, 2020) Breastfeeding duration ✓ Extended (Cavalcanti et al., 2019; Robinson, Davis, et al., 2019; Skelton et al., 2018) ✓ No effect (Niela-Vilén et al., 2016) Exclusive breastfeeding rates ✓ Increased (Cavalcanti et al., 2019) - Changes in breastfeeding perception Breastfeeding as something to be proud of (Jackson & Hallam, 2020) Comfort with public breastfeeding (Robinson, Davis, et al., 2019; Skelton et al., 2018)

in the study by Cavalcanti et al. (2019) also increased after participating in an online breastfeeding peer support group.

Online breastfeeding peer support brought a change in breastfeeding perceptions in mothers as well. Mothers perceived breastfeeding as something to be proud of (Jackson & Hallam, 2020) and public breastfeeding into something to be comfortable with (Robinson, Davis, et al., 2019; Skelton et al., 2018).

4 | DISCUSSION

This review presents an overview of the evidence regarding mothers' online breastfeeding peer support experiences using the methodology of integrative review, which enabled a more comprehensive understanding by synthesizing various studies with different study designs and populations.

A large proportion of the included studies were targeted at certain groups of mothers, such as those who were exclusively expressing, breastfeeding beyond their child's infancy and breastfeeding preterm infants. The reason these groups of mothers sought online support was mainly due to a lack of understanding from their social network, including their family members and HCPs. These mothers belonged to a group of socially marginalized breastfeeding practice. For example, mothers who fed their babies with expressed breast milk said that their behaviour was not regarded as a norm in society (Clapton-Caputo et al., 2020). Support networks in-person would have provided limited breastfeeding support due to a small number of members. A handful of them, even in a group of breastfeeding mothers, were able to obtain informational and emotional support tailored to their situation from mothers who had similar experiences through an online peer support network (Moorhead et al., 2013; Niela-Vilén et al., 2014; Yamashita et al., 2020). As a result, breastfeeding support groups have instilled confidence in mothers and normalized their breastfeeding practices, which had a positive effect on their breastfeeding outcomes.

Mothers turned online for support when support from HCPs was unsatisfactory. HCPs, who work in maternity care in particular, need to develop in-depth knowledge and skills related to breastfeeding management (McGuire, 2014). HCPs, despite their theoretical expertise, often lacked the latest knowledge and experience in breastfeeding and were not ready to address the needs of breastfeeding mothers (de Almeida et al., 2015; Radzyminski & Callister, 2015). Several studies have found that mothers appreciated support from non-HCPs who had experiences in breastfeeding (Balogun et al., 2016; McFadden et al., 2017; O'Connor et al., 2011; Pate, 2009). Resources from HCPs, such as information and allocated time, have been reported to be limited. They often provide evidence-based information but tend to provide information that does not take into account the mother's individual circumstances (Blixt et al., 2019). Training targeting HCPs should be implemented to ensure that evidence-based and sensible breastfeeding support is delivered to mothers.

Independence from limitations surrounding geography and time is a major characteristic of online breastfeeding support. Mothers can give or receive breastfeeding support regardless of time and where they resided. Mothers in a similar situation developed a close network with others and shared their experiences from anywhere without leaving their home (Bartholomew et al., 2012). In addition, peer support can be expanded to diverse population groups regardless of age, education, race, ethnicity or locality (Moorhead et al., 2013), which is also a beneficial characteristic of online breastfeeding support. Due to the COVID-19 pandemic, local breastfeeding support group meetings have been cancelled or are being moved online. Mothers, according to a recent study by Brown and Shenker (2021), have struggled to get support and had many barriers with breastfeeding. Overcoming the difficulties of the current situation with the advantage of online breastfeeding peer support seems to be an alternative.

Online breastfeeding peer support groups are highly valued with many benefits; however, negative aspects still exist. A few studies have reported negative experiences of breastfeeding peer support in social media that included judgement, negative feedback, polarized debate, lack of regulation and unreliability of information (Entwistle et al., 2011; Jackson & Hallam, 2020; Naslund et al., 2016; Niela-Vilén et al., 2014; Regan & Brown, 2019; Robinson, Davis, et al., 2019). In particular, the possibility of inaccuracy of the information posted online may become problematic when verifying the information (Jackson & Hallam, 2020; Moorhead et al., 2013). Therefore, the importance of moderation in online peer support groups is emphasized to ensure the validity and reliability of information (Clapton-Caputo et al., 2020; Moorhead et al., 2013; Niela-Vilén et al., 2014; Robinson, Davis, et al., 2019; Skelton et al., 2020). In this review, studies that focused on the role of moderators in online support groups were few, which is consistent with a previous finding by Coulson and Greenwood (2012) that pointed out a lack of understanding of the roles of moderators in online support groups. Further research is necessary to explore the roles of moderators and the effectiveness of moderation or facilitation from professionals or laypeople within online peer support groups (Coulson & Greenwood, 2012; Eysenbach et al., 2004).

Effects associated with breastfeeding peer support in social media were predominantly positive in this review. However, its effectiveness remains inconclusive because of the limited number of empirical studies, such as RCTs in the area reviewed. RCTs are considered the gold standard for determining the effectiveness of health care interventions (Grove et al., 2012). Thus, there is a need for high-quality research in online breastfeeding peer support with this methodology.

In five out of 11 qualitative studies, experiences surrounding online breastfeeding peer support were analysed based on theories from sociology and psychology. Of the two RCTs included, none of the interventions were based on theories. As theoretical knowledge can be used to guide the development of an intervention and provide direction in the design of the study and testing procedures (Grove et al., 2012), a systemic intervention needs to be developed and tested based on appropriate theories (Craig et al., 2008) to ensure that evidence-based breastfeeding peer support is provided in social media.

4.1 | Limitations

First, there is a generalizability issue related to participants. Women who participated in the studies may have high online competence, which may indicate that women with less online competence may be excluded. Second, representativeness of the samples in each study is limited. Most studies recruited participants through social media except a few. Therefore, in the case of mothers who had already experienced negative aspects of online breastfeeding peer support, it is highly likely that they had removed themselves from the group, which might limit the scope of experiences of online breastfeeding peer support. There is also a possibility that the findings of this review might be further improved by including non-English publications.

4.2 | Implications for practice and research

It is significant that this review has provided baseline data and evidence for supplementing and improving the current breastfeeding peer support system for breastfeeding mothers. However, the evidence is still insufficient due to a lack of empirical research designs of the included studies. More rigorous research is warranted not only in Asia but also in non-North American and non-Northwestern European countries. If theory-based interventions using RCTs are conducted, more evidence-based research and practice would be possible.

5 | CONCLUSIONS

This review synthesized the evidence of mothers' experiences of online breastfeeding peer support to provide baseline data and evidence to supplement and improve the current breastfeeding peer support system. Breastfeeding mothers sought online peer support when they felt isolated, lacked professional support or preferred online than offline support. Online breastfeeding peer support was characterized as a virtual community, with easy access, availability and a wealth of resources from actual experiences of mothers. It empowered breastfeeding mothers and resulted in changes in breastfeeding outcomes and perceptions.

Considering that breastfeeding is a critical piece of optimal maternal and child health, we believe this paper would contribute to enhancing breastfeeding practice by providing insights into the mother's online breastfeeding peer support experience. There is no doubt that online breastfeeding peer support is an increasing phenomenon that provides a unique form of support supplementing other methods of support, and it should be further developed and tested through research. More empirical studies on the effectiveness of online breastfeeding peer support with a rigorous design are necessary.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

CONTRIBUTIONS

HM conceived the research question. HM and KW created the search strategy. HM conducted the search. HM and KW conducted the study selection and data extraction. HM and KW contributed to data interpretation and involved in writing and editing. KW approved the final article.

DATA AVAILABILITY STATEMENT

Data in this study were a reanalysis of existing data, which are openly available at locations cited in the reference section.

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REFERENCES

Alianmoghaddam, N., Phibbs, S., & Benn, C. (2019). "I did a lot of Googling": A qualitative study of exclusive breastfeeding support through social media. *Women and Birth*, *32*(2), 147–156. https://doi.org/10.1016/j.wombi.2018.05.008

Balogun, O. O., O'Sullivan, E. J., McFadden, A., Ota, E., Gavine, A., Garner, C. D., Renfrew, M. J., & MacGillivray, S. (2016). Interventions for promoting the initiation of breastfeeding. *Cochrane Database of Systematic Reviews*, *11*. https://doi.org/10.1002/14651858.CD001688.pub3

Bartholomew, M. K., Schoppe-Sullivan, S. J., Glassman, M., Kamp Dush, C. M., & Sullivan, J. M. (2012). New parents' Facebook use at the transition to parenthood. *Family Relations*, *61*(3), 455–469. https://doi.org/10.1111/j.1741-3729.2012.00708.x

Black, R., McLaughlin, M., & Giles, M. (2020). Women's experience of social media breastfeeding support and its impact on extended breastfeeding success: A social cognitive perspective. *British Journal of Health Psychology*, *25*(3), 754–771. https://doi.org/10.1111/bjhp.12451

Blixt, I., Johansson, M., Hildingsson, I., Papoutsi, Z., & Rubertsson, C. (2019). Women's advice to healthcare professionals regarding breastfeeding: "Offer sensitive individualized breastfeeding support"—An interview study. *International Breastfeeding Journal*, *14*(1), 51. https://doi.org/10.1186/s13006-019-0247-4

Bridges, N. (2016). The faces of breastfeeding support: Experiences of mothers seeking breastfeeding support online. *Breastfeeding Review*, *24*(1), 11–20.

Brown, A., & Shenker, N. (2021). Experiences of breastfeeding during COVID-19: Lessons for future practical and emotional support. *Maternal & Child Nutriton*, *17*(1), e13088. https://doi.org/10.1111/mcn.13088

Cavalcanti, D. S., Cabral, C. S., de Toledo Vianna, R. P., & Osório, M. M. (2019). Online participatory intervention to promote and support exclusive breastfeeding: Randomized clinical trial. *Maternal & Child Nutrition*, *15*(3), e12806. https://doi.org/10.1111/mcn.12806

Centers for Disease Control and Prevention. (2019). Breastfeeding. https://www.cdc.gov/breastfeeding/about-breastfeeding/why-it-matters.html

Chowdhury, R., Sinha, B., Sankar, M. J., Taneja, S., Bhandari, N., Rollins, N., Bahl, R., & Martines, J. (2015). Breastfeeding and maternal health outcomes: A systematic review and meta-analysis. *Acta Pædiatrica (Oslo)*, *104*(467), 96–113. https://doi.org/10.1111/apa.13102

Clapton-Caputo, E., Sweet, L., & Muller, A. (2020). A qualitative study of expectations and experiences of women using a social media support group when exclusively expressing breastmilk to feed their infant. *Women and Birth*. https://doi.org/10.1016/j.wombi.2020.06.010

Coulson, N. S., & Greenwood, N. (2012). Families affected by childhood cancer: An analysis of the provision of social support within online support groups. *Child: Care, Health and Development*, 38(6), 870–877. https://doi.org/10.1111/j.1365-2214.2011.01316.x

Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I., & Petticrew, M. (2008). Developing and evaluating complex interventions: The new Medical Research Council guidance. *BMJ*, 337.

de Almeida, J. M., Luz, S. D. A. B., & Ued, F. D. V. (2015). Support of breastfeeding by health professionals: Integrative review of the literature. *Revista Paulista de Pediatria (English Edition)*, 33(3), 355–362. https://doi.org/10.1016/j.rppede.2015.06.016

Dennis, C.-L. (2002). Breastfeeding peer support: Maternal and volunteer perceptions from a randomized controlled trial. *Birth (Berkeley, Calif.)*, 29(3), 169–176. https://doi.org/10.1046/j.1523-536X.2002.00184.x

Entwistle, V. A., France, E. F., Wyke, S., Jepson, R., Hunt, K., Ziebland, S., & Thompson, A. (2011). How information about other people's personal experiences can help with healthcare decision-making: A qualitative study. *Patient Education and Counseling*, 85(3), e291–e298. https://doi.org/10.1016/j.pec.2011.05.014

Eysenbach, G., Powell, J., Englesakis, M., Rizo, C., & Stern, A. (2004). Health related virtual communities and electronic support groups: Systematic review of the effects of online peer to peer interactions. *BMJ*, 328(7449), 1166. https://doi.org/10.1136/bmj.328.7449.1166

Grove, S. K., Burns, N., & Gray, J. (2012). *The practice of nursing research: Appraisal, synthesis, and generation of evidence*. Saunders/Elsevier.

Herron, M., Sinclair, M., Kernohan, W. G., & Stockdale, J. (2015). Tapping into authentic presence: Key components arisingfrom a concept analysis of online breastfeeding support. *Evidence Based Midwifery*, 13(3), 76–83.

Hong, Q. N., Pluye, P., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M.-C., & Vedel, I. (2018). Mixed Methods Appraisal Tool (MMAT), version 2018. http://mixedmethodsappraisaltoolpublic.pbworks.com/

Hongo, H., Green, J., Shibanuma, A., Nanishi, K., & Jimba, M. (2019). The influence of breastfeeding peer support on breastfeeding satisfaction among Japanese mothers: A randomized controlled trial. *Journal of Human Lactation*, 36(2), 337–347. https://doi.org/10.1177/0890334419869601

Jackson, J. E., & Hallam, J. (2020). Against all odds—Why UK mothers' breastfeeding beyond infancy are turning to their international peers for emotional and informative support. *Health Care for Women International*, 1–17. https://doi.org/10.1080/07399332.2020.1744147

Jolly, K., Ingram, L., Khan, K. S., Deeks, J. J., Freemantle, N., & MacArthur, C. (2012). Systematic review of peer support for breastfeeding continuation: Metaregression analysis of the effect of setting, intensity, and timing. *BMJ*, 344, d8287. https://doi.org/10.1136/bmj.d8287

Kaunonen, M., Hannula, L., & Tarkka, M. (2012). A systematic review of peer support interventions for breastfeeding. *Journal of Clinical Nursing*, 21(13–14), 1943–1954. https://doi.org/10.1111/j.1365-2702.2012.04071.x

McFadden, A., Gavine, A., Renfrew, M. J., Wade, A., Buchanan, P., Taylor, J. L., Veitch, E., Rennie, A. M., Crowther, S. A., & Neiman, S. (2017). Support for healthy breastfeeding mothers with healthy term babies. *Cochrane Database of Systematic Reviews*, 2. https://doi.org/10.1002/14651858.CD001141.pub5

McGuire, S. (2014). Centers for disease control and prevention. 2013. Strategies to prevent obesity and other chronic diseases: The CDC guide to strategies to support breastfeeding mothers and babies. Atlanta, GA: US Department of Health and Human Services, 2013.

Advances in Nutrition, 5(3), 291–292. https://doi.org/10.3945/an.114.005900

Meedya, S., Fahy, K., & Kable, A. (2010). Factors that positively influence breastfeeding duration to 6 months: A literature review. *Women and Birth: Journal of the Australian College of Midwives*, 23(4), 135–145. https://doi.org/10.1016/j.wombi.2010.02.002

Moorhead, S. A., Hazlett, D. E., Harrison, L., Carroll, J. K., Irwin, A., & Hoving, C. (2013). A new dimension of health care: Systematic review of the uses, benefits, and limitations of social media for health communication. *Journal of Medical Internet Research*, 15(4), e85. https://doi.org/10.2196/jmir.1933

Naslund, J. A., Aschbrenner, K. A., Marsch, L. A., & Bartels, S. J. (2016). The future of mental health care: Peer-to-peer support and social media. *Epidemiology and Psychiatric Sciences*, 25(2), 113–122. https://doi.org/10.1017/S2045796015001067

Niela-Vilén, H., Axelin, A., Melender, H., Löyttyniemi, E., & Salanterä, S. (2016). Breastfeeding preterm infants—A randomized controlled trial of the effectiveness of an Internet-based peer-support group. *Journal of Advanced Nursing*, 72(10), 2495–2507. https://doi.org/10.1111/jan.12993

Niela-Vilén, H., Axelin, A., Melender, H., & Salanterä, S. (2015). Aiming to be a breastfeeding mother in a neonatal intensive care unit and at home: A thematic analysis of peer-support group discussion in social media. *Maternal & Child Nutrition*, 11(4), 712–726. https://doi.org/10.1111/mcn.12108

Niela-Vilén, H., Axelin, A., Salanterä, S., & Melender, H.-L. (2014). Internet-based peer support for parents: A systematic integrative review. *International Journal of Nursing Studies*, 51(11), 1524–1537. https://doi.org/10.1016/j.ijnurstu.2014.06.009

O'Connor, M. E., Brown, E. W., & Lewin, L. O. (2011). An Internet-based education program improves breastfeeding knowledge of maternal–child healthcare providers. *Breastfeeding Medicine*, 6(6), 421–427. https://doi.org/10.1089/bfm.2010.0061

Odom, E. C., Li, R., Scanlon, K. S., Perrine, C. G., & Grummer-Strawn, L. (2013). Reasons for earlier than desired cessation of breastfeeding. *Pediatrics (Evanston)*, 131(3), e726–e732. https://doi.org/10.1542/peds.2012-1295

Pate, B. (2009). A systematic review of the effectiveness of breastfeeding intervention delivery methods. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 38(6), 642–653. https://doi.org/10.1111/j.1552-6909.2009.01068.x

Radzyminski, S., & Callister, L. C. (2015). Health professionals' attitudes and beliefs about breastfeeding. *The Journal of Perinatal Education*, 24(2), 102–109. https://doi.org/10.1891/1058-1243.24.2.102

Raj, V. K., & Plichta, S. B. (1998). The role of social support in breastfeeding promotion: A literature review. *Journal of Human Lactation*, 14(1), 41–45. https://doi.org/10.1177/089033449801400114

Regan, S., & Brown, A. (2019). Experiences of online breastfeeding support: Support and reassurance versus judgement and misinformation. *Maternal & Child Nutrition*, 15(4), e12874. https://doi.org/10.1111/mcn.12874

Robinson, A., Davis, M., Hall, J., Lauckner, C., & Anderson, A. K. (2019). It takes an e-village: Supporting African American mothers in sustaining breastfeeding through Facebook communities. *Journal of Human Lactation*, 35(3), 569–582. https://doi.org/10.1177/0890334419831652

Robinson, A., Lauckner, C., Davis, M., Hall, J., & Anderson, A. K. (2019). Facebook support for breastfeeding mothers: A comparison to offline support and associations with breastfeeding outcomes. *Digital Health*, 5, 2055207619853397. https://doi.org/10.1177/2055207619853397

Shakya, P., Kunieda, M. K., Koyama, M., Rai, S. S., Miyaguchi, M., Dhakal, S., Sandy, S., Sunguya, B. F., & Jimba, M. (2017). Effectiveness of community-based peer support for mothers to improve their breastfeeding practices: A systematic review and meta-analysis. *PLoS One*, 12(5), e0177434. https://doi.org/10.1371/journal.pone.0177434

Skelton, K., Evans, R., & LaChenaye, J. (2020). Hidden communities of practice in social media groups: Mixed methods study. *JMIR Pediatrics and Parenting*, *3*(1), e14355. https://doi.org/10.2196/14355

Skelton, K., Evans, R., LaChenaye, J., Amsbary, J., Wingate, M., & Talbott, L. (2018). Exploring social media group use among breastfeeding mothers: Qualitative analysis. *JMIR Pediatrics and Parenting*, *1*(2), e11344. https://doi.org/10.2196/11344

Sriraman, N. K., & Kellams, A. (2016). Breastfeeding: What are the barriers? Why women struggle to achieve their goals. *Journal of Women's Health (Larchmont, N.Y. 2002)*, *25*(7), 714–722. https://doi.org/10.1089/jwh.2014.5059

Sudfeld, C. R., Fawzi, W. W., & Lahariya, C. (2012). Peer support and exclusive breastfeeding duration in low and middle-income countries: A systematic review and meta-analysis. *PLoS One*, *7*(9), e45143. https://doi.org/10.1371/journal.pone.0045143

Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing*, *52*(5), 546–553. https://doi.org/10.1111/j.1365-2648.2005.03621.x

World Health Organization. (2018). World Breastfeeding Week 2018. https://www.who.int/news-room/commentaries/detail/world-breastfeeding-week-2018

World Health Organization. (2020). Infant and young child feeding. https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding/

Yamashita, A., Isumi, A., & Fujiwara, T. (2020). Online peer support and well-being of mothers and children: Systematic scoping review. *Journal of Epidemiology*, JE20200079. https://doi.org/10.2188/jea.JE20200079