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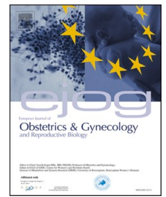

Full length article

'Breastfeeding exclusivity, difficulties, and support in the first days after hospital discharge: A correlational study'

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A R T I C L E I N F O

Keywords:
Exclusive breastfeeding
Breastfeeding support
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A B S T R A C T

Objective: Global breastfeeding rates are not optimal, and the early postpartum period represents a critical time for breastfeeding initiation. The Baby-Friendly Hospital Initiative endeavours to provide mothers with evidence-based breastfeeding support in birth hospitals. This study examined factors associated with breastfeeding exclusivity and breastfeeding difficulties in the first days after being discharged from Baby-Friendly designated hospital. The adequacy of breastfeeding support and maternal preferences for optimal support were also reported.

Study design: A non-experimental correlational study was conducted between May 2021 and October 2022. A total of n = 80 breastfeeding mothers completed a semi-structured questionnaire within two weeks of discharge from Baby-Friendly hospital in Finland. The questionnaire included demographic and obstetric background information and six questions on breastfeeding exclusivity, breastfeeding difficulties, and breastfeeding support. Descriptive statistical analysis and multivariate binary logistic regression analysis were performed.

Results: The mean age of the mothers was 30.6 years (SD 5.4), and half of the mothers were primiparas (49 %). Most mothers gave birth vaginally (85 %) to a full-term infant (84 %). Most (85 %) had made some prenatal plans for breastfeeding, and the median planned duration of breastfeeding was 12 months. Half of the infants (53 %) received supplemental milk while in the hospital. Most mothers (81 %) were exclusively breastfeeding after hospital discharge. Mothers whose infants received supplemental milk in the hospital had an increased odds of non-exclusive breastfeeding (aOR 16.5 [CI 95 % 1.7–156.7], p 0.015). Approximately one-third of the mothers (39 %) experienced breastfeeding difficulties. Primiparous mothers had increased odds of experiencing breastfeeding difficulties (aOR 3.41 [CI 95 % 1.2–9.8], p 0.023). Mothers who received adequate postnatal breastfeeding support in birth hospital had decreased odds of experiencing breastfeeding difficulties (aOR 0.16 [CI 95 % 0.03–0.8], p 0.026). Mothers were mainly satisfied with breastfeeding support, although timelier access to support was preferred after hospital discharge.

Conclusion: Adequate in-hospital postnatal breastfeeding support, including avoidance of non-medical supplementation, contributes to successful breastfeeding after hospital discharge in terms of more exclusive breastfeeding and fewer breastfeeding difficulties. Primiparous mothers need emphasized support to mitigate breastfeeding difficulties. Timelier access to breastfeeding support after discharge is needed.

Introduction

It is often argued that "breast is best" because breastfeeding contributes to numerous health benefits for both infant and mother. However, breastfeeding rates in both high- and low-income countries indicate that WHO recommendations for optimal breastfeeding practices (e.g., six months of exclusive breastfeeding) are not being met [1]. In many high-income countries, most mothers initiate breastfeeding; however, many unintentionally discontinue breastfeeding in the first weeks after birth [1,2]. Today, mother-infant dyads are being discharged from birthhospitals earlier than ever before [2,3], meaning that more breastfeeding support is needed from community maternity services once the breastfeeding dyad is discharged from hospital [2,4]. Hospital discharge represents a critical period for breastfeeding continuation. New mothers may experience concerns about their competence and confidence in breastfeeding their infants [5]. Higher levels of breastfeeding stress [6] and breastfeeding problems are likely to be common in the first days and weeks after birth than later in the

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postpartum period [7,8]. Recognizing and responding to infant cues, for example, are among the new skills to which a new mother must adapt to [9]. Mothers often experience breastfeeding problems, such as perceived low milk supply and difficulties with infant latching on or sucking [4,7,10]. Lack of adequate and appropriate help for breastfeeding problems can lead to unresolved problems and early cessation of breastfeeding [11,12]. In addition, breastfeeding problems are associated with lower maternal satisfaction with the breastfeeding experience [14,10].

Successful breastfeeding requires quality breastfeeding support in birth hospitals and community health services, especially in the early postpartum period [4,12]. Timely access to continued professional support after hospital discharge is essential to mitigate breastfeeding problems [7,13–16]. Sensitive and individualized breastfeeding support is considered important from the perspective of breastfeeding mothers [14,17,18]. Proactive breastfeeding support is more likely to be effective than support that relies on mothers' initiation. This highlights the importance of professional breastfeeding support provided through planned and continuous visits [19,20].

The Baby-Friendly Hospital Initiative (BFHI) provides evidence-based, high standard support for breastfeeding in facilities offering care for pregnant women, mothers, and newborns. The Ten Steps to Successful Breastfeeding (Ten Steps) are a set of evidence-based breastfeeding support practices that establish the core of the initiative. The importance of timely access to continued breastfeeding support after hospital discharge is emphasized in step 10, which requires that facilities "coordinate discharge so that parents and their infants have timely access to ongoing support and care" [21]. Birth hospitals struggle to implement this step, although it is an important factor in successful continuation of breastfeeding after discharge [22,23].

In Finland, breastfeeding is considered the normative standard; almost all mothers initiate breastfeeding; however, the rate of exclusive breastfeeding drops to 57 % during the first month, although most infants (94 %) are at least partially breastfed. The duration of exclusive breastfeeding falls short of WHO recommendations, with only 26 % of infants being exclusively breastfed at five months [24]. Maternal and child health services in Finland are publicly funded and available to all pregnant mothers and children under the age of seven. The coverage of these free services is high, with almost all mother–child dyads receiving care at child health clinics [25]. Child health clinics are run by public health nurses and are an important source of formal antenatal and postnatal support and counseling on infant feeding [26].

Given the importance of the early postpartum period for breastfeeding, it is important to examine breastfeeding exclusivity, difficulties and breastfeeding support in the first days after hospital discharge. The primary aim of this study was to examine factors associated with breastfeeding exclusivity and breastfeeding difficulties in the first days after discharge from a Baby-Friendly designated hospital. The secondary aim was to report on the adequacy of breastfeeding support and mothers' preferences for optimal breastfeeding support after hospital discharge.

Methods

Study design

A non-experimental correlational study was conducted. A correlational design was chosen to examine the strength and direction of the relationship between the selected variables in a nonexperimental setting [27]. The STROBE reporting guideline was followed [28].

Setting

The study was conducted in eight child health clinics in a southwestern municipality in Finland. A total of 816 mothers gave birth in the selected municipality during the study period. The participating mothers gave birth in a public birth hospital with 1400 annual births in 2022. Antenatal breastfeeding support is provided to mothers at maternal and child health clinics, and postnatal support is provided at birth hospital and at child health clinics after hospital discharge.

Antenatal breastfeeding support

One-on-one antenatal breastfeeding support is provided to mothers during their visits to maternal and child health clinics. Families are also offered free antenatal family coaching classes, including breastfeeding sessions, through their local maternal-child health clinic. Breastfeeding support includes written and oral information about breastfeeding, practical help, but also emotional reassurance and support for breastfeeding.

Postnatal breastfeeding support in birth hospital

Midwife-led care is provided in the postnatal units. The average length of postnatal hospital stay is 2 – 3 days, which is similar to the national level in Finland [3]. The hospital was designated Baby-friendly and Neo-Baby-friendly in 2019. BFHI designation indicates that breastfeeding support in the hospital is consistent with BFHI practices, such as early skin-to-skin contact and early initiation of breastfeeding. Mothers and their infants are supported to breastfeed on demand and to avoid non-medically indicated supplements and pacifiers. Breastfeeding support practices comply with the International Code of Marketing of Breast-milk Substitutes (The Code). [29]. The most common medically indicated reasons for in-hospital supplementation include infant hypoglycemia, jaundice, infection, and inadequate weight gain. Although BFHI designated, non-medically indicated supplementation is also allowed in the hospital. Non-medical reasons for supplementation include e.g., maternal request and fussy infant. Supplementation can be either donor human milk or infant formula, but donor human milk is the primary supplement given to infants. In accordance with the BFHI policy, mothers are informed about the risks of supplementing with infant formula.

Breastfeeding support after hospital discharge

All mothers in the selected community receive a postnatal home visit from their public health nurse (PHN) within one week of hospital discharge, providing practical and informational support for breastfeeding. After discharge, families are also encouraged to contact the birth hospital or child-health clinic via telephone in case needed. In addition, families are entitled to additional breastfeeding support and counseling services provided by lactation clinics located either in the birth hospital or in the child health clinics. During the first year after birth, families have regular visits to child health clinics, which include one-on-one breastfeeding support and counseling. In Finland, exclusive breastfeeding is considered the primary method of infant feeding during the first four months of life until the introduction of solid foods, and this is emphasized in breastfeeding support.

Participants

Convenience sampling was used to select mothers for the study. We aimed to recruit n = 100 mothers, as this covered > 10 % of the mothers who gave birth in the selected region during the study period.

Inclusion criteria were as follows:

1) Finnish-speaking mother who gave birth to a healthy, term (≥37 weeks of gestation), normal-weight infant(s) without major congenital anomalies.
2) The mother was discharged from the birth hospital with the infant(s).
3) Mother visited a child health clinic in the selected region, and gave informed consent to participate.

We excluded mothers who were discharged later than one week after birth and mothers who did not breastfeed.

Questionnaire

A paper-based, semi-structured, self-report questionnaire was developed for the study. The questionnaire was developed within the research team, which consisted of two nurse researchers with experience in the research area, a midwife, and a public health nurse. Relevant literature and the national breastfeeding strategy [30] guided the development of the questionnaire.

The questionnaire included background information on 1) maternal sociodemographic characteristics (age, education, marital status, parity) and health (smoking), 2) birth and infant (mode of birth, gestational age of infant, date of birth, use of pacifier and in-hospital supplementation and maternal reported reasons for supplementation), and 3) breastfeeding (duration of previous breastfeeding, self-rated prenatal preparation for breastfeeding on a scale of (poor) 1–10 (good), and prenatal plans for breastfeeding yes/no and planned duration of breastfeeding in months).

Breastfeeding exclusivity, difficulties and support were assessed with six semi-structured questions (Table 1). Exclusive breastfeeding was defined as an infant receiving only the mother's own breast milk, either from the breast or by hand expression or pumping, with no other liquid or solid foods, excluding vitamin D or oral medications. This definition was used because it is consistent with the national definition of exclusive breastfeeding [24,31].

Data collection

Data was collected between May 2021 and October 2022. PHNs recruited eligible mothers within two weeks of hospital discharge. Eligible mothers were informed verbally and in writing by their PHN during the postpartum home visit or at their first postpartum visit to the child health clinic. Mothers who agreed to participate in the study signed an informed consent form and returned it along with the questionnaire in a sealed envelope to their PHN.

Table 1
Breastfeeding exclusivity, support and difficulties.

Outcome	Scale
Breastfeeding exclusivity	
Are you breastfeeding your baby?	1 = yes, exclusively, 2 = yes, partially, 3 = no.
Breastfeeding support	
Did you receive adequate breastfeeding support a) during pregnancy b) postnatally at birth hospital and c) after discharge from hospital?	1 = fully disagree, 2 = disagree, 3 = agree 4 = fully agree
Did you receive support for breastfeeding after discharge from hospital – If yes, please describe the sources from which you received the support.	1 = yes, 2 = no
When would you prefer to receive breastfeeding support?	a) whenever needed (24/7) b) within the next business day c) scheduled visits with PHN are sufficient.
Where would you prefer to receive breastfeeding support from?	a) visit to child health clinic b) home visit by PHN or lactation specialist c) visit to lactation clinic d) phone contact e) text or WhatsApp messages f) chat g) smartphone application
Breastfeeding difficulties	
Have you experienced breastfeeding difficulties? - If so, please describe the difficulties you have had.	1 = yes 2 = no

PHN Public health nurse.

Ethical considerations

The study received ethical approval from the Human Sciences Ethics Committee of the University of Turku on April 14, 2021 (statement 9/2021) and was approved by the City of Pori on April 8, 2021.The questionnaire was carefully worded to take into account the sensitivity of the topic and to avoid feelings of guilt or pressure related to breastfeeding.

Data analysis

Data were statistically analyzed using IBM SPSS Statistics for Windows, version 27.0. Armonk, NY: IBM Corp. Descriptive statistics were presented as frequencies, percentages, medians, and interquartile ranges. The three 4-point Likert scale items were transformed into binary categorical variables defining breastfeeding support as either adequate (4 = strongly agree, 3 = agree) or inadequate (1 = strongly disagree, 2 = disagree).

Univariate binary logistic regression was performed to describe the association between the selected variables and 1) non-exclusive breastfeeding and 2) breastfeeding difficulties. Statistically significant ($p < 0.1$) variables from the univariate analysis were included in a multivariate binary logistic regression analysis to examine which variables were statistically significant (<0.05) associated with 1) non-exclusive breastfeeding and 2) breastfeeding difficulties when adjusted for the other variables in the model.

Open-text descriptions were classified and quantified and then presented as frequencies and percentages.

Results

Participating mothers

A total of n = 80 mothers participated in the study within two weeks of hospital discharge. The mean age of the mothers was 30.6 years (SD 5.4), and half of the mothers were primiparas (49 %). Most mothers gave birth vaginally (85 %) to a full-term infant (84 %). Most mothers (85 %) had made some prenatal plans for breastfeeding, and the median planned duration of breastfeeding was 12 months. Half of the infants (53 %) received supplemental milk (donor or formula) while in the hospital. (Table 2.) Reasons (n = 41) for supplementation reported by mothers in open-ended responses included medically indicated reasons (n = 18, 44 %) (e.g., infant hypoglycemia, jaundice, infection, or inadequate weight gain), perceived inadequate milk supply (n = 17, 41 %), and other reasons (n = 6, 15 %) (e.g., breastfeeding related pain, mother's request, fussy infant).

Breastfeeding exclusivity

All mothers breastfed their infants after hospital discharge and most of them (n = 65, 81 %) exclusively. Multivariate analysis showed that in-hospital supplementation was associated with non-exclusive breastfeeding after adjustment for other variables in the model (parity, breastfeeding support, breastfeeding difficulties). Mothers whose infants received supplemental milk in the hospital had increased odds of non-exclusive breastfeeding compared with mothers whose infants did not receive supplemental milk (aOR 16.5 [CI 95 % 1.7–156.7], p 0.015). (Table 3.).

Adequacy of breastfeeding support

Prenatal breastfeeding support in child health clinics and postnatal breastfeeding support in hospital was considered adequate by the majority (n = 66, 83 %). After discharge from hospital, half of the mothers (n = 40, 51 %) had received breastfeeding support and most of them (n = 33, 83 %) considered the support adequate to their needs (Table 4).

Table 2
Background characteristics of the participating mothers (n = 80).

Variable	n (%)
Maternal age (year), mean (SD)	30.6 (5.4)
Education	
Comprehensive school	1 (1.3)
Secondary school	34 (42.5)
University degree	45 (56.2)
Marital status	
Married/partner	77 (96.3)
Parity	
Primipara	39 (48.8)
Smoking	
No	68 (85.0)
Yes, but not during pregnancy	12 (15.0)
Type of birth	
Vaginal	68 (85.0)
Gestational age of infant (weeks) (n = 77)	
Full-term (39 – 42)	65 (84.4)
In-hospital supplementation	
Yes	42 (52.5)
Previous duration of BF[a] (months), median (Q1-Q3)	15 (6 – 27)
Made prenatal plans for BF[b]	
Yes	68 (85.0)
Planned duration of BF (months), median (Q1-Q3) (n = 42)	12 (6 – 12)
Self-rated prenatal preparation for BF (scale 1 – 10), median (Q1-Q3)	8 (4 – 8)

BF Breastfeeding
[a] Only multiparas (n = 41) included.
[b] Planned to at least try breastfeeding.

Public health nurses in child health clinics (n = 18, 47 %) and in lactation clinics (n = 15, 39 %) were the most reported sources of breastfeeding support. Few mothers (n = 5, 13 %) reported receiving support from other sources such as significant others, peer support, or the Internet.

Maternal preferences of breastfeeding support

Half of the mothers (n = 39, 50 %) preferred to have regularly scheduled visits with the PHN, while the other half (n = 39, 50 %) preferred to have support available more quickly, such as immediately (24/7) or within the next business day. Most mothers (n = 66, 83 %) preferred to receive breastfeeding support during their child health clinic visit. Digitally facilitated breastfeeding support methods, such as chat and smartphone applications, were preferred by the minority. (Table 4.).

Breastfeeding difficulties

Approximately one-third of the mothers (n = 31, 39 %) experienced breastfeeding difficulties after hospital discharge, and n = 29 of them described the breastfeeding difficulties. Difficulties included too little or too much milk (n = 15, 52 %), finding good positions for breastfeeding (n = 11, 38 %), infant not latching or sucking properly (n = 9, 31 %), knowing how to initiate or wean from supplementation (n = 4, 14 %), and pain during breastfeeding (n = 3, 10 %). Multivariate analysis showed that primiparas (aOR 3.41 [CI 95 % 1.2–9.8], p 0.023) had increased odds of experiencing breastfeeding difficulties than multiparas. Mothers who perceived postnatal breastfeeding support in the hospital as adequate had decreased odds of experiencing breastfeeding difficulties (aOR 0.16 [CI 95 % 0.03–0.8], p 0.026) compared with mothers who perceived postnatal support as inadequate (Table 5).

Table 3
Association between selected variables and non-exclusive breastfeeding.

Variable	Crude odds ratio (95 % CI)	p*	Adjusted odds ratio (95 % CI)	p**
Maternal age (≤35 vs. > 35 years)	0.91 (0.225–3.680)	0.896	–	–
Parity (primipara vs. multipara)	5.63 (1.448–21.889)	**0.013**	1.857 (0.371–9.308)	0.451
Education (low vs. high) [a]	0.83 (0.264–2.595)	0.746	–	–
Type of birth (vaginal vs. caesarean)	0.386 (0.099–1.508)	0.171	–	–
In-hospital supplementation (yes vs. no)	18.50 (2.294–149.169)	**0.06**	16.523 (1.742–156.709)	**0.015**
Planned duration of BF (≤12 months vs. > 12 months)	2.556 (0.490–13.329)	0.266	–	–
Prenatal preparation for BF (poor vs. good) [b]	1.253 (0.407–3.861)	0.694	–	–
Prenatal BF support was adequate (yes vs. no)	0.500 (0.133–1.887)	0.306	–	–
Postnatal BF support in hospital was adequate (yes vs. no)	1.472 (0.293–7.401)	0.639	–	–
Received BF support (yes vs. no)	3.319 (0.955–11.535)	**0.059**	4.636 (0.914 –23.512)	0.064
Breastfeeding difficulties (yes vs. no)	2.864 (0.903–9.086)	**0.074**	1.005 (0.207–4.894)	0.995

p*<0.1.
p**<0.05.
[a] no university degree vs university degree.
[b] ≤ 8 vs > 8 (scale 1 – 10).

Table 4
Adequacy of breastfeeding support during perinatal period and preferences regarding the optimal timing and sourcing of breastfeeding support after hospital discharge.

Outcome	n (%)
Breastfeeding support was reported as adequate	
Antenatal support (n = 80)	
Yes	66 (82.5)
Postnatal support at birth hospital (n = 80)	
Yes	66 (82.5)
Support after hospital discharge (n = 40) [a]	
Yes	33 (82.5)
Preferred timing for BF support (n = 78)	
Whenever needed (24/7)	19 (24.4)
Within the next business day	20 (25.6)
Scheduled visits with PHN are sufficient.	39 (50.0)
Preferred sources of BF support (n = 80) [b]	
Visit to child health clinic	66 (82.5)
Home visit by PHN or lactation specialist	38 (47.5)
Visit to lactation clinic (hospital/child health clinic)	34 (42.5)
Phone contact	30 (37.5)
Text-/WhatsApp messages	18 (22.5)
Chat	17 (21.3)
Smartphone application	13 (16.3)

PHN Public health nurse.
BF Breastfeeding.
[a] Missing values n = 40 (did not receive breastfeeding support after hospital discharge).
[b] Mothers were instructed to select as many options as they wanted.

Table 5
Association between selected variables and mother experiencing breastfeeding difficulties.

Variable	Crude odds ratio (95 % CI)	*p**	Adjusted odds ratio (95 % CI)	*p***
Maternal age (≤35 vs. > 35 years)	1.096 (0.354–3.398)	0.873	–	–
Parity (primipara vs. multipara)	2.775 (1.088–7.075)	**0.033**	3.410 (1.189–9.782)	**0.023**
Education (low vs. high) [a]	0.550 (0.217–1.391)	0.207	–	–
Type of birth (vaginal vs. caesarean)	1.350 (0.370–4.932)	0.650	–	–
In-hospital supplementation (yes vs. no)	1.721 (0.687–4.311)	0.246	–	–
Exclusive BF (yes vs. no)	0.349 (0.110–1.108)	0.074	0.693 (0.154–3.123)	0.633
Prenatal breastfeeding support was adequate (yes vs. no)	0.191 (0.054–0.680)	0.010	0.393 (0.082–1.892)	0.244
Postnatal breastfeeding support was adequate (yes vs. no)	0.121 (0.030–0.482)	**0.003**	0.160 (0.032–0.806)	**0.026**

$p^* < 0.1$.
$p^{**} < 0.05$.
[a] no university degree vs university degree.

Discussion

This study examined factors associated with breastfeeding exclusivity and breastfeeding difficulties in the first days after discharge from a Baby-Friendly designated hospital in Finland, as well as the adequacy of perinatal breastfeeding support and mothers' preferences for optimal breastfeeding support. The results showed that exclusive breastfeeding was common, but in-hospital supplementation decreased the odds of exclusive breastfeeding. Primiparous mothers had more breastfeeding difficulties. Maternal perception of adequate postnatal in-hospital breastfeeding support was associated with fewer difficulties. Participating mothers were mostly satisfied with the adequacy of breastfeeding support throughout the perinatal period, although timelier access to support was preferred by half of the mothers.

The exclusive breastfeeding rate after hospital discharge in this study can be considered high and in line with the national rate in Finland [24]. The high rate of exclusive breastfeeding can be explained by the fact that the data were collected only two weeks after hospital discharge. Most mothers had made some plans for breastfeeding and the average planned duration of breastfeeding was 12 months, suggesting a positive attitude towards breastfeeding. Finland, among other Nordic countries, may represent countries that have a breastfeeding-friendly public health strategy (e.g., long paid maternity leave and publicly funded maternity care) and thus are successful in protecting breastfeeding in their societies [32], although there are limitations.

The association between in-hospital supplementation and non-exclusive breastfeeding after discharge is concerning. Step 6 of the Ten Steps mandates that "birthing facilities provide no foods or fluids other than human milk to breastfed newborns unless medically indicated" [21]. Adherence to this step is considered key to successful breastfeeding [22]. Irrespective of the Baby-Friendly status of the hospital, the use of supplementary milk was common in this study; more than half of the infants received supplementation in the hospital and several non-medically indicated reasons for supplementation were reported by mothers, suggesting that hospital's compliance with Step 6 may not be optimal [21]. Donor milk was given primarily as a supplement according to hospital policy, but this was not confirmed in this study. It is worth noting that the WHO definition of exclusive breastfeeding includes the use of donor human milk [21]. Mothers have previously reported high levels of in-hospital supplementation in some BFHI designated hospitals, although lower than in not Baby-Friendly certified hospitals [33]. This raises concerns about the sustainability of BFHI implementation in designated hospitals [21]. Ongoing post-designation monitoring is needed to ensure Ten Steps-compliant breastfeeding support for mothers [21,23,33].

Uncontrolled and non-medically indicated in-hospital supplementation can lead to decreased breastfeeding after hospital discharge [31,34], as shown in this study. Clinical trials [35–37] have shown that early supplementation has no adverse effect on breastfeeding when rigorous trial procedures are followed. Results from trials may not be applicable to clinical reality, where supplementation is often unlimited, uncontrolled, and medically unnecessary. Therefore, to promote successful breastfeeding, supplementation should be limited to medical indications and accompanied by appropriate breastfeeding support and counseling [31]. Given the high rates of in-hospital supplementation and short postnatal hospital stays, adequate breastfeeding support and counseling after hospital discharge is important, especially if the infant is receiving supplementation and the mother wishes to pursue exclusive breastfeeding. Consequently, mothers need appropriate help and support from professionals to wean their infants safely from supplementation.

Formal breastfeeding support was an important source of breastfeeding support for mothers, which was expected as support from health professionals plays an important role for new mothers in Western cultures [32,4]. Maternal preferences for optimal breastfeeding support showed that mothers valued face-to-face support over remote support. Maternal preferences for traditional face-to-face support may also be due to limited exposure to digital alternatives. Face-to-face counseling is known to be more effective than telephone counseling [10], but remote breastfeeding support may be a good alternative when face-to-face support is not available [38]. Many mothers preferred timelier access to breastfeeding support than scheduled visits to the child health clinic could provide [4]. Perhaps digital alternatives could be a fit option for providing immediate breastfeeding help and support. Given the importance of effective breastfeeding support, maternal acceptance and satisfaction with remote breastfeeding support needs to be further investigated [38].

Experiencing breastfeeding difficulties was common [7,8,11]. Primiparous mothers experienced more difficulties compared to multiparous mothers, indicating that primiparous mothers are a vulnerable group and need more support for breastfeeding after hospital discharge [2,6,21]. A recent study showed an association between in-hospital breastfeeding difficulties and increased formula supplementation, suggesting that mitigating breastfeeding difficulties through appropriate breastfeeding support is important to reduce the need for formula supplementation [39]. It is also important to consider that unresolved breastfeeding difficulties that contribute to a negative breastfeeding experience may affect subsequent breastfeeding [21].

Adequate postnatal breastfeeding support in the hospital seemed to prevent breastfeeding difficulties at home. The quality of postnatal care has a strong influence on breastfeeding success [32]. Although mothers were mostly satisfied with postnatal breastfeeding support in hospital, postnatal wards are often considered busy places, leaving many mothers unsatisfied with breastfeeding support [40–42]. Lack of appropriate and adequate breastfeeding support from professionals in postnatal units have been reported in previous studies [42–44] and care in these units has been reported to result in unmet maternal expectations and needs [40]. Mothers have reported receiving conflicting information about breastfeeding from health professionals. There may also be differences in health professionals' competence (e.g., attitudes toward breastfeeding) to provide quality support, and this may affect whether mothers receive adequate breastfeeding support. In addition, dissatisfaction with support may be higher among mothers with complex breastfeeding support needs [42]. Shifting postnatal care from busy hospitals to the home can provide more one-on-one breastfeeding support for mothers. Early postnatal home visits based on mother's individual needs, may be

a good option, as these visits increase maternal satisfaction with care and are likely to encourage more mothers to breastfeed exclusively [45].

Strengths and limitations

To our knowledge, this is the first study in recent years to report on factors associated with breastfeeding exclusivity and breastfeeding problems, as well as the adequacy of breastfeeding support and maternal preferences for support after discharge from a Baby-Friendly designated hospital in Finland. The study provided current and clinically relevant knowledge on breastfeeding exclusivity, difficulties, and support after hospital discharge. This study has limitations. First, the use of a validated instrument for data collection and power analysis would have provided more robust results. The use of a questionnaire based on maternal self-report and recall may be subject to bias. Second, we were unable to achieve our a priori sample size due to lack of time and resources. The sample size was small, which increased the risk of type II error. In addition, the sample may not represent those who were in the minority (e.g., mothers who gave birth by caesarean section and single mothers) and mothers who were excluded from the study (non-breastfeeding mothers and mothers who did not speak fluent Finnish). The mothers gave birth in a Baby-Friendly designated hospital with only 1400 annual births, which limits the generalizability of the results to larger hospitals and hospitals without Baby-Friendly designation. Importantly, the views of midwives and public health nurses should also be explored to gain a full understanding of mothers' needs for breastfeeding support in the early days after hospital discharge.

Conclusions

Adequate in-hospital postnatal breastfeeding support, including avoidance of non-medical supplementation, contributes to successful breastfeeding after hospital discharge in terms of more exclusive breastfeeding and fewer breastfeeding difficulties. Primiparous mothers need emphasized support to reduce breastfeeding difficulties after hospital discharge. Timelier access to formal face-to-face breastfeeding support should be ensured for mothers after hospital discharge.

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CRediT authorship contribution statement

Jaana Lojander: Writing – original draft, Visualization, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Anna Axelin:** Writing – review & editing, Validation, Supervision, Methodology, Conceptualization. **Hannakaisa Niela-Vilén:** Writing – review & editing, Validation, Supervision, Resources, Project administration, 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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