



**TURUN  
YLIOPISTO**  
UNIVERSITY  
OF TURKU

**MATERNAL PERSPECTIVES ON  
POSTNATAL BREASTFEEDING  
SUPPORT: INTEGRATING  
PERCEPTIONS FOR A  
MOTHER-FRIENDLY TEN  
STEPS FRAMEWORK**

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Jaana Lojander





**TURUN  
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# **MATERNAL PERSPECTIVES ON POSTNATAL BREASTFEEDING SUPPORT: INTEGRATING PERCEPTIONS FOR A MOTHER-FRIENDLY TEN STEPS FRAMEWORK**

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*To my children Leo, Alex and Marta*

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JAANA LOJANDER: Maternal Perspectives on Postnatal Breastfeeding

Support: Integrating Perceptions for a Mother-Friendly Ten Steps

Framework

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## ABSTRACT

Integrating a maternal perspective into breastfeeding support is important for improving the quality and relevance of the support provided, which may, in turn, enhance breastfeeding outcomes. The aim of this study was to examine mothers' perceptions of postnatal breastfeeding support and factors associated with exclusive breastfeeding. Furthermore, the study investigated the impact of the Baby-Friendly Hospital Initiative (BFHI) on breastfeeding support. The findings were integrated into the Ten Steps framework, thereby incorporating a maternal perspective.

The study comprised four sub-studies. A cross-sectional study examined mothers' (n=160) perceptions of breastfeeding support in a non-Baby-Friendly hospital. An integrative literature review synthesized the existing literature on mothers' perceptions of breastfeeding support in Baby-Friendly hospitals. A quasi-experimental study compared mothers' perceptions of breastfeeding support before (n=162) and after (n=163) implementation of BFHI, and a correlational study investigated the continuation of breastfeeding among postpartum mothers (n=80) following discharge from a Baby-Friendly hospital.

Breastfeeding support in the immediate and early postnatal period was of great significance, contributing to exclusive breastfeeding. Early skin-to-skin contact and breastfeeding initiation were common practices, but further support did not meet mothers' needs. A family-centered care approach, which fosters parenting self-efficacy, was identified important in the promotion of exclusive breastfeeding. The implementation of BFHI improved breastfeeding support from the maternal perspective. After hospital discharge, mothers preferred more timely face-to-face breastfeeding support from professionals.

The results provided evidence for improvements needed in postnatal breastfeeding support to make it more mother-friendly. Implementation of BFHI in accordance with the needs of the mother and a family-centered approach is recommended to ensure evidence-based breastfeeding support and to promote breastfeeding.

**KEYWORDS:** breastfeeding, breastfeeding support, postpartum mothers, Baby-Friendly Hospital Initiative, Ten Steps to Successful Breastfeeding

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## TIIVISTELMÄ

Äitien näkökulman sisällyttäminen imetystukeen on tärkeää, jotta imetystuen laatua ja siten imetyksen toteutumista voidaan parantaa. Tutkimuksen tarkoituksena oli kuvata äitien näkemyksiä ammattilaisten tarjoamasta synnytyksen jälkeisestä imetystuesta ja täysimetykseen yhteydessä olevia tekijöitä. Lisäksi tutkimuksessa kuvattiin Vauvamyönteisyysohjelman vaikutusta imetyksen tukemiseen sairaalassa. Tulokset integroitiin Kymmenen askelta onnistuneeseen imetykseen-käytäntöihin suosituksina äitimyönteisemmän imetystuen toteuttamiseksi.

Tutkimus sisälsi neljä osatutkimusta. Poikkileikkaustutkimuksessa kuvattiin äitien (n=160) näkemyksiä imetystuesta ei-vauvamyönteisessä synnytyssairaalassa. Integriivisessa kirjallisuuskatsauksessa koottiin yhteen aiempi tutkimusnäyttö äitien näkemyksistä imetystuesta vauvamyönteisiksi sertifioituissa sairaaloissa. Kvasikokeellisessa tutkimuksessa verrattiin äitien näkemyksiä sairaalan imetystuesta ennen (n=162) Vauvamyönteisyysohjelman käyttöönottoa ja sen jälkeen (n=163). Korrelatiivisessa tutkimuksessa selvitettiin vauvamyönteisestä sairaalasta kotiutuneiden äitien (n=80) imetyksen toteutumista.

Imetystuella oli keskeinen merkitys täysimetyksen toteutumisessa. Varhainen ihokontakti ja ensi-imetys toteutuivat hyvin, mutta vuodeosastolla toteutunut imetystuki oli riittämätöntä eikä aina vastannut äitien tarpeita. Perhekeskeinen hoito synnytyssairaalassa ja vanhemmuuden minäpystyvyyden vahvistaminen ovat tärkeitä tekijöitä täysimetyksen edistämiseksi. Vauvamyönteisyysohjelman käyttöönotto paransi imetystukea sairaalassa. Sairaalasta kotiutumisen jälkeen äidit toivoivat, että kasvotusten toteutettavaa imetystukea olisi ammattilaisten taholta saatavilla nykyistä oikea-aikaisemmin.

Tulosten perusteella synnytyksen jälkeistä imetystukea voidaan kehittää äitimyönteisemmäksi. Vauvamyönteisyysohjelman käyttöönotto, joka huomioi äitien yksilölliset tarpeet ja perhekeskeisen toteutuksen, on suositeltavaa näyttöön perustuvan imetystuen varmistamiseksi ja imetyksen edistämiseksi.

AVAINSANAT: imetys, imetystuki, synnyttäneet äidit, Vauvamyönteisyysohjelma, Kymmenen askelta onnistuneeseen imetykseen

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# Abbreviations

aOR	Adjusted Odds Ratio
BFHI	Baby-Friendly Hospital Initiative
BFCI	Baby-Friendly Community Initiative
BSE	Breastfeeding Self-Efficacy
BSS-R	Birth Satisfaction Scale-Revised
FCC	Family-Centered Care
IBCLC	International Board Certified Lactation Consultant
IQR	Interquartile Range
NEC	Necrotizing Enterocolitis
Neo-BFHI	Baby-Friendly Hospital Initiative for Neonatal Wards
NICU	Neonatal Intensive Care Unit
PAR	Participatory Action Research
PHN	Public Health Nurse
PSE	Parenting Self-Efficacy
REDCap	Research Electronic Data Capture
SD	Standard Deviation
SDG	Sustainable Development Goals
SRIM	Self-Reported Insufficient Milk Supply
SSC	Skin-To-Skin Contact
Ten Steps	Ten Steps To Successful Breastfeeding
UNICEF	United Nations Children's Fund
WHO	World Health Organization
$\chi^2$	Chi-Squared

# List of Original Publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals:

- I Lojander J., Axelin A., Tekay A., Heinonen S., Polkko S., Lehti L., Kolari T., Niela-Vilén H. 2025. The association between exclusive breastfeeding and quality of care and maternal factors in a tertiary maternity hospital in Finland: a cross-sectional study. *Manuscript*.
- II Lojander J., Mäkelä H., Niela-Vilén H. Maternal perceptions and experiences of breastfeeding support in Baby-Friendly hospitals: An integrative review. *International Journal of Nursing Studies Advances*. 2022, 4, 100–105.
- III Lojander J, Axelin A, Bergman P, Niela-Vilén H. Maternal perceptions of breastfeeding support in a birth hospital before and after designation to the Baby-Friendly Hospital Initiative: A quasi-experimental study. *Midwifery*. 2022, 110, 103350.
- IV Lojander J, Axelin A, Niela-Vilén H. 'Breastfeeding exclusivity, difficulties, and support in the first days after hospital discharge: A correlational study'. *Eur J Obstet Gynecol Reprod Biol*. 2024, 296, 76–82.

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# 1 Introduction

Before becoming a mother, I had no idea that breastfeeding was so fulfilling and nurturing. It is one of the most rewarding feelings I have experienced in my life; to be able to feed my child, to help establish what it needs to live. Breastfeeding is a very intimate, symbiotic experience shared between mother and child. The joy and satisfaction that comes from successful breastfeeding was an important part of early motherhood for me, as it is for many mothers. In my personal experience, each time a mother gives birth, there is a new transition to go through. Learning how to feed my child was an important part of coping and getting to the "other side" of this transition.

Learning to breastfeed should not be the responsibility of the mother alone (Pérez-Escamilla et al., 2023). How mothers are supported when feeding their infants can make a profound difference, not only for mothers and families, but for society as a whole (Schmied et al., 2011, Gavine et al., 2022). With this in mind, it is important to know how mothers perceive the breastfeeding support they are provided with in order to identify areas for improvement. Increased maternal satisfaction with breastfeeding support may ultimately lead to improved breastfeeding outcomes (Schmied et al., 2011). The World Health Organization (WHO) recommends early initiation of breastfeeding (within an hour after birth), six months of exclusive breastfeeding and continued breastfeeding for two years (WHO 2017). The health and environmental benefits of breastfeeding and breastmilk are well established and relevant in both low- and high-income countries. It has been estimated that by increasing the rate of breastfeeding, 823,000 child deaths and 20,000 deaths from breast cancer could be prevented each year (Victora et al., 2016). Furthermore, breastfeeding contributes to several United Nations' Sustainable Development Goals (SDG), including the reduction of poverty (SDG 1), improvement of nutrition (SDG 2), enhancement of good health and well-being (SDG 3), expansion of education (SDG 4), promotion of inclusive economic growth (SDG 8), and reduction of inequalities (SDG 10) (Rollins et al., 2016). These vital benefits of breastfeeding can only be achieved through access to breastfeeding-supportive maternity care, and only if all mothers receive appropriate, high-quality breastfeeding support from healthcare professionals (Rollins et al., 2016; Pérez-Escamilla et al., 2023).

Providing mothers with breastfeeding information, practical assistance, and emotional support facilitates breastfeeding and ensures better health outcomes for both mother and child. Failing to provide a mother with adequate and appropriate support can easily result in premature and unintended discontinuation of breastfeeding (McFadden et al., 2017; Chang et al., 2019) as well as maternal feelings of failure, inadequacy, and isolation (Thomson et al., 2015).

Breastfeeding support is a process that should begin early in pregnancy and continue through weaning. However, the initial hours, days, and weeks are of particular significance in establishing and maintaining breastfeeding. Professional breastfeeding support for new mothers is of critical importance during this period (McFadden et al., 2019; McLelland et al., 2015). One in ten mothers report negative breastfeeding experiences in the early postnatal period. More than a third of mothers have low breastfeeding self-efficacy and a quarter show a decline in breastfeeding self-efficacy from late pregnancy to the early postnatal period (Nilsson et al., 2020). Breastfeeding support often fails to support mothers to breastfeed (Schmied et al., 2011; McInnes & Chambers 2008) and few resources are devoted to the value of mothers and breastfeeding (McInnes & Chambers 2008). The postnatal period has often been described as "*at the bottom of the pecking order*" compared to other aspects of perinatal care (Byrom et al., 2021). Suboptimal breastfeeding rates (Victora et al., 2016) and high levels of undesired breastfeeding cessation (Odom et al., 2013; Perrine et al., 2012) indicate the need to improve breastfeeding support in societies globally. In Finland, breastfeeding rates have improved in recent decades, however, the use of supplements in maternity hospitals is relatively common and only 50% of mothers are exclusively breastfeeding at four months postpartum (Ikonen et al., 2020).

To promote and facilitate breastfeeding support in maternity hospitals, WHO and UNICEF launched the Baby-Friendly Hospital Initiative (BFHI) in 1991. The initiative is based on the Ten Steps to Successful Breastfeeding (Ten Steps), which are evidence-based practices implemented in maternity hospitals to provide high-quality breastfeeding support to mothers and newborns (WHO 2018). Evidence shows that the initiative has a positive impact on breastfeeding outcomes, although this is less clear in resource-rich settings where breastfeeding is considered the norm. Little is known about breastfeeding support in Baby-Friendly hospitals from a maternal perspective, indicating a current gap in the literature.

The aim of this study was to examine mothers' perceptions of postnatal breastfeeding support and factors associated with exclusive breastfeeding. Furthermore, the study investigated the impact of the Baby-Friendly Hospital Initiative (BFHI) on breastfeeding support. The findings were integrated into the Ten Steps framework, thereby incorporating a maternal perspective. The study was conducted within the field of nursing science.

## 2 Review of the Literature

This study focuses on mothers' perceptions of postnatal breastfeeding support from healthcare professionals in maternity hospitals and after discharge. The following literature review aims to describe the relevant concepts of this study in order to provide a thorough background of the topic. The section begins with an exploration of breastfeeding and breastfeeding support. It then describes the Baby-Friendly Hospital Initiative (BFHI) and the Ten Steps. Two systematic searches were conducted in May 2024 in three databases (PubMed, CINAHL, and Cochrane Reviews) to review the literature related to postnatal breastfeeding support, maternal perceptions of the support, BFHI, and the Ten Steps (See Appendix 1 for the search terms used and the results of the database searches). Both qualitative and quantitative studies published in English between 2014 and 2024 were considered, with a focus on high-quality, peer-reviewed articles and systematic reviews to ensure methodological rigor and relevance to current practice. In addition, relevant literature was retrieved from the reference lists of the articles or through manual searches. References have also been made to documents provided by the WHO and the Finnish Institute of Health and Welfare. In this study, the terms "breastfeeding" and "mother" are used to refer to the phenomenon and population studied, for the purpose of clarity, and because these terms apply to the majority. However, it must be acknowledged that not all 'breastfeeding mothers' identify themselves as such and that gender-neutral terms such as 'parent' and 'chestfeeding' may be more appropriate (Pezaro et al., 2024).

### 2.1 Breastfeeding

While there is no clear consensus on an accurate definition, breastfeeding (nursing, chestfeeding) is often defined as feeding an infant with the mother's breast milk. This can be done directly from the breast or by expressing (pumping out) milk from the breast and feeding through a bottle (cup, or a feeding tube) (Noel-Weiss et al., 2012; WHO 2017). Exclusive breastfeeding refers to an infant receiving only breast milk directly from the mother's breast in addition to partially or completely receiving breast milk from a bottle with no other liquid or solid foods, excluding vitamin D or oral medications.

Most mothers are able to breastfeed their infants and most infants are able to suckle at the breast, hence true medical contraindications are rare (e.g., infants with classic galactosemia, mothers with untreated brucellosis, or suspected or confirmed Ebola virus, and maternal substance use) (AAP 2021). Even premature infants are able to breastfeed. An infant's ability to breastfeed is individual (Nyqvist 2008). However, breastfeeding is usually established by approximately 32 weeks postmenstrual age, when the infant is ready to coordinate sucking, swallowing, and breathing (Foster et al., 2016).

### 2.1.1 Health benefits of breastfeeding

The process of breastfeeding encompasses much more than the simple transfer of breast milk from mother to infant. Suckling from a breast is a fundamental element of infant nurturing. There are significant differences between direct breastfeeding and the use of a bottle, cup, or spoon to provide breast milk, suggesting that direct breastfeeding has better outcomes for infant health and development compared to other feeding methods (Pérez-Escamilla et al., 2023; Noel-Weiss et al., 2012). Direct breastfeeding can also contribute to longer breastfeeding duration compared to other methods (Briere et al., 2016). Breastfeeding should therefore be viewed as a multifaceted phenomenon that includes biological, psychological, and social elements (Modak et al., 2023; Dykes 2006). Breastfeeding is associated with positive psychological outcomes by helping to establish a strong maternal bond and improving maternal self-confidence, mediated by oxytocin and prolactin. These hormonal effects also reduce the risk of postpartum depression and anxiety. Secure attachment and emotional well-being, facilitated by maternal interaction during breastfeeding, have a positive impact on optimal neurodevelopment and cognitive-emotional development in infants (Modak et al., 2023).

The health benefits of breastfeeding and breastmilk have been well researched and include several advantages for both mother and child (Victora et al., 2016). The composition of human milk is considered the standard of human infant nutrition and is important for optimal infant growth and development (Ballard & Morrow 2013). Breastfeeding for longer is associated with lower incidence of early childhood infections (e.g., otitis media), dental malocclusion, and reduced risk of obesity and diabetes later in life (Victora et al., 2016). Breastfeeding also promotes infant neurodevelopment (Belfort 2017) and better cognitive outcomes, such as higher intelligence (Horta et al., 2015), and lower risk of developing attention-deficit/hyperactivity disorder and conditions on the autism spectrum (Bar et al., 2016). For preterm infants, especially very low birth weight infants, human milk is an excellent source of health benefits, reducing the incidence of necrotizing enterocolitis (NEC), late onset sepsis, chronic lung disease,

retinopathy of prematurity, and neurodevelopmental disorders (Parker et al., 2021).

Breastfeeding also benefits the mother. Early initiation of breastfeeding facilitates recovery from childbirth through oxytocin release and reduces the risk of postpartum hemorrhage (Saxton et al., 2015). Breastfeeding promotes the mother-infant bond and reduces physiological stress for both mother and infant through the release of oxytocin, prolactin, and other metabolites (Pérez-Escamilla et al., 2023). Long-term breastfeeding may protect against breast and ovarian cancer and type 2 diabetes. Increased exclusive and predominant breastfeeding is also associated with longer periods of lactational amenorrhea, which has implications for birth spacing, primarily in low-income countries.

### 2.1.2 Global breastfeeding practices and determinants of breastfeeding

Only about half of infants begin breastfeeding within the first hour of life, and in most countries, exclusive breastfeeding rates at the recommended six months are less than 50%. In low-income countries, the lack of early initiation and low rates of exclusive breastfeeding represent significant challenges. The practice of prelacteal feeds is prevalent in low- and middle-income countries, with one in three infants receiving a liquid other than breast milk as their first feed (Pérez-Escamilla et al., 2023). In high-income countries, the main challenge is the short duration of exclusive breastfeeding and continued breastfeeding (Victora et al., 2016; Vaz et al., 2021). Many high-income countries do not have a standard methodology for monitoring their breastfeeding indicators, making it difficult to assess progress in breastfeeding practices in these countries. Regardless of data limitations, breastfeeding trends have shown improvements in exclusive breastfeeding, any breastfeeding at six months, and continued breastfeeding at 12 months (Vaz et al., 2021).

Infant feeding is strongly associated with health inequalities and is most influenced by structural determinants of health rather than individual choices (Rollins et al., 2016). Determinants of breastfeeding are categorized into three levels in a conceptual model by Rollins et al. (2016): structural, setting, and individual. The model outlines the components of an enabling environment for breastfeeding at each of these levels. The structural level encompasses breastfeeding determinants at the sociocultural and market context at the population level. It refers to distal and unidirectional factors such as social trends, advertising, and media the population is uniformly exposed. The setting level refers to health systems and services, family and community, workplace and employment factors. Factors at this level include the influence of healthcare professionals and hospital practices such as mother-infant



separation. In addition, family attitudes, preferences, and experiences with breastfeeding may influence breastfeeding decisions and practices. The individual level refers to individual factors such as mother and infant characteristics and the mother-infant relationship. Maternal intention to breastfeed, attitudes towards breastfeeding, and confidence in breastfeeding are individual factors that determine breastfeeding practices. In addition, health determinants such as smoking, depression, weight and obesity are important determinants of breastfeeding and affect a large number of mothers. Many of the breastfeeding determinants can be addressed through appropriate interventions to improve breastfeeding outcomes in societies (Rollins et al., 2016).

### 2.1.3 Maternity care and breastfeeding in Finland

In Finland, 43,000 infants were born in 2023. The total fertility rate in Finland has been on a downward trend from 1.80 to 1.32 children per woman over the past decade and is now the lowest in the Nordic countries (Nordic Statistics Database 2023). The majority of births (99.2%) occur in hospitals (n=23). Maternity hospitals have been centralized into larger units over the past two decades, during which time the number of maternity hospitals has decreased from 31 to the current 23. At present, there are five university hospitals responsible for providing tertiary-level care for high-risk pregnancies (births <32 weeks of gestation, small for gestational age, and very small fetuses <1500 g) and 18 local or central hospitals providing secondary-level care. Maternity hospitals in Finland are mandated to have a volume of at least 1000 births annually and to be on call for obstetric emergencies at all times (Vilkko et al., 2023). There are currently no midwife-led birth units in Finland, nor are home births a common practice, although the number of home births has risen in recent years. The current rate of caesarean births in Finland is 20.1% of all births, the highest level in the country's history. The average length of postnatal hospital stay is 2.6 days (Official Statistics of Finland 2023). After hospital discharge, there is often a home visit by a public health nurse within 7–14 days. Early discharge (6–24 hours postpartum) is offered to low-risk mother-infant dyads in many hospitals, supplemented by additional midwife or outpatient visits after discharge (Hakulinen et al., 2017; Ikonen & Hakulinen 2019).

Public maternity services in Finland are publicly funded and therefore free of charge to mothers who reside in Finland. Pregnant mothers usually have between 11 and 15 appointments with a public health nurse and a doctor during their pregnancy. Attending a maternity clinic is required to qualify for maternity benefits (Ministry of Social Affairs and Health 2023). Community-based maternal and child health clinics have a long tradition of providing antenatal and postnatal care, including breastfeeding support, to primiparous and multiparous mothers in Finland. The vast

majority of mothers (99.7%) use the services of their local maternal and child health clinic where care is provided primarily by public health nurses (PHNs) (Riihinen et al., 2021).

Breastfeeding for the first four to six months is considered the standard method of infant feeding in Finland. The national recommendations encourage exclusive breastfeeding until the introduction of solid foods, which should occur gradually starting at four months (Ikonen et al., 2020). The proportion of infants who are breastfed and exclusively breastfed has increased during recent decades (Ikonen et al., 2020). Mothers in Finland have a positive attitude towards breastfeeding and most pregnant mothers intend to breastfeed, although many consider it important for their partner to be equally involved in feeding the infant (Laanterä et al., 2010). Most mothers initiate breastfeeding in maternity hospitals and are breastfeeding at the time of hospital discharge (Hakala et al., 2021). However, at two months, only half (54%) of infants are exclusively breastfed, indicating that further improvement is still necessary to meet the WHO recommendations. Mothers have rated the quality of care in maternity hospitals in Finland as good (Kortet et al., 2021). However, breastfeeding support has been consistently reported as inadequate by postpartum mothers (e.g., Kortet et al., 2021; Antila et al., 2024).

Breastfeeding support in maternity hospitals in Finland varies. Differences between hospitals have been reported in the resources allocated to breastfeeding promotion (e.g., breastfeeding coordinators) and breastfeeding education among healthcare professionals, although the overall level of education in maternity hospitals was found to be good. There is a current need to harmonize breastfeeding support recommendations and practices at the national level to ensure equal access to evidence-based breastfeeding support in the country (Ikonen & Hakulinen 2019). In general, policies and practices regarding in-hospital supplementation are liberal, and more than half of infants (55%) receive supplemental milk in maternity hospitals (Ikonen et al., 2023), which can be both donor and formula milk (Hakala et al., 2021). Young maternal age, low education, single marital status, and smoking are associated with lower breastfeeding rates in Finland. Furthermore, primiparity has been found to be associated with a lower rate of exclusive breastfeeding compared to multiparous mothers (Ikonen et al., 2020).

## 2.2 Breastfeeding support

Breastfeeding support can be provided by healthcare professionals, peer supporters, family members, and significant others (Bengough et al., 2022; McFadden et al., 2019). In this study, the focus is on postnatal breastfeeding support provided by healthcare professionals (midwives, nurses, and public health nurses). This subchapter describes breastfeeding support provided by healthcare professionals,

postnatal breastfeeding support, and mothers' perceptions of postnatal breastfeeding support provided by healthcare professionals.

### 2.2.1 Professional breastfeeding support

Breastfeeding support is a complex concept that refers to providing emotional, practical, informational, and social support to meet mothers' dynamic needs related to breastfeeding (Bengough et al., 2022). A variety of trained healthcare professionals (e.g., midwives, maternal and child health nurses, physicians, lactation consultants) can provide professional breastfeeding support (McFadden et al., 2017; Dykes 2006; Schmied et al., 2011). Support can be provided in a variety of ways (face-to-face or remote, reactive or proactive) and settings (hospital or community). In addition, breastfeeding support can be provided antenatally or postnatally and can be ongoing or one-time (McFadden et al., 2017; Schmied et al., 2011). Ideally, breastfeeding support begins during pregnancy and continues until the mother is no longer breastfeeding (McFadden et al., 2017).

Healthcare professionals are a key group of breastfeeding support providers and play an essential role in promoting, protecting and supporting breastfeeding. Healthcare professionals' attitudes, knowledge and skills play an important role in the breastfeeding support they provide to mothers and families (Dykes 2006; Ekström & Thorstensson 2015) and can significantly impact the quality of care and support provided (Ekström & Thorstensson 2015). A notable lack of knowledge regarding breastfeeding among health practitioners, accompanied by ambivalent attitudes, low levels of skill, and a lack of confidence have been identified in the literature. For example, it has been observed that healthcare professionals lack comprehensive knowledge regarding the prevention and management of breastfeeding difficulties (Yang et al., 2018; Gavine et al., 2022). Knowledge about breastfeeding appears to be lacking among some healthcare professionals who are not commonly involved in breastfeeding support, such as physicians (e.g., obstetricians, pediatricians, general practitioners) (Cross-Barnet et al., 2012; Dykes 2006). A lack of adequate and appropriate professional breastfeeding support is an important contributor to early cessation of breastfeeding (McFadden et al., 2017; McInnes & Chambers 2008).

### 2.2.2 Postnatal breastfeeding support

The postnatal period refers to the time after childbirth. The immediate postnatal period is defined as the initial 24 hours following childbirth, while the early postnatal period refers to the second postnatal day up to seven days, and the late postnatal period from days 8 through 42 after childbirth (WHO 2010). Traditionally, the

immediate postnatal period is spent in hospital, while the early and late postnatal period extend to the time after hospital discharge. The immediate and early postnatal period are critical for initiating breastfeeding and establishing a good foundation for breastfeeding continuation. The majority of mothers require and benefit from some degree of breastfeeding support or reassurance (McFadden et al., 2017). This section reviews what is known about the effectiveness of postnatal breastfeeding support interventions in hospitals and after discharge, mainly in the light of evidence from systematic reviews. The interventions in these systematic reviews often had multiple components in addition to breastfeeding support alone, were delivered in different ways, and varied in setting from hospitals to home and community settings. Some interventions focused on providing evidence of practical support or support from lactation consultants and counsellors. A common goal of these interventions is to provide breastfeeding support primarily to healthy mothers with healthy term infants.

Effective breastfeeding support services are to be offered as a routine component of antenatal or postnatal care by qualified healthcare professionals, including continuous scheduled visits tailored to the context and needs of the mothers (McFadden et al., 2017). The most recent Cochrane review and meta-analysis showed that breastfeeding support interventions that focus on breastfeeding support alone (as opposed to interventions that include other elements) are effective in reducing the number of mothers who stop breastfeeding prematurely at four different times: any breastfeeding at 6 months, exclusive breastfeeding at 6 months, any breastfeeding at 4–6 weeks, and exclusive breastfeeding at 4–6 months. Evidence on the effectiveness of interventions that include elements other than breastfeeding support ('breastfeeding plus' interventions) was unclear. This review also looked at maternal satisfaction with the support or care as an outcome, but there was no consistency in the results. In addition, there was no difference whether support was provided by a healthcare professional, a peer supporter, or a combination of the two. Similarly, no differences were observed between different methods, such as face-to-face, technology, or both (Gavine et al., 2022).

Another systematic review (Hannula et al., 2008) found that, among professional breastfeeding support in-hospital interventions (individual counselling, hands-on and hands-off teaching, and written materials) in maternity hospitals, practical breastfeeding support using a hands-off technique combined with motivational encouragement to support mothers' self-efficacy was most effective for promoting exclusive breastfeeding. An example of a successful practical intervention in the early postnatal period is the implementation of the Thompson Method. Its implementation was associated with improved breastfeeding trends at hospital discharge and reduced the risk of exclusive breastfeeding discontinuation at three months among mothers who were exclusively breastfeeding at discharge. The

Thompson method refers to a specific method of breastfeeding and is described as follows: *"the method includes cradle position and hold, mouth-to-nipple alignment, baby-led connection and seal, maternal fine-tuning for symmetry, and leisurely duration."* (Allen et al., 2023).

Breastfeeding support and counselling provided by an International Board Certified Lactation Consultant (IBCLC) increased any breastfeeding at postpartum discharge and at three months postpartum for mothers with gestational diabetes. However, no difference in exclusive breastfeeding rates was observed between the groups (Griffin et al., 2021). Similarly, a systematic review provided evidence of the positive impact of the use of lactation consultants and counsellors to provide postnatal breastfeeding support in both hospital and community settings. Breastfeeding initiation, any breastfeeding and exclusive breastfeeding rates were positively influenced by the use of lactation consultants and lactation counsellors compared to standard breastfeeding support (Patel & Patel 2015).

The length of postnatal stay varies across settings and countries, but the general trend is a decrease in recent decades and that mother-infant dyads are being discharged earlier (Jones et al., 2021). Evidence regarding optimal discharge timing is not consistent (Yonemoto et al., 2021; Jones et al., 2021; Cheng et al., 2019; Benahmed et al., 2017) and early discharge (less than 24/48 hours) appears to have no significant impact on the likelihood of women breastfeeding at six weeks postpartum (Jones et al., 2021). However, the period following hospital discharge represents a critical transition in which the provision of breastfeeding support shifts from the hospital setting to community-based services. Considering the rapid decline in exclusive breastfeeding rates after the first weeks and months in particular (Victora et al., 2016), post-discharge breastfeeding support and promotion are needed.

Home visits, telephone support, and breastfeeding centers combined with peer support were considered beneficial following hospital discharge (Hannula et al., 2008). However, it is unclear what the optimal frequency, timing, and duration of postnatal home visits after hospital discharge should be to best improve breastfeeding outcomes, although some evidence suggests that increasing the frequency of home visits may lead to improved exclusive breastfeeding rates (Yonemoto et al., 2021). Postnatal breastfeeding support interventions provided through four to eight contacts have been estimated to increase exclusive breastfeeding at 4–6 weeks (Gavine et al., 2022). For example, additional weekly telephone support from healthcare professionals for primiparous mothers in Hong Kong (Fu et al., 2014) and proactive telephone counselling from lactation consultants during the first months postpartum (Fan et al., 2023) showed positive effects on exclusive breastfeeding rates. In addition, an additional face-to-face contact with a healthcare professional in the first four weeks postpartum was beneficial to reducing

breastfeeding cessation by 4–6 weeks compared with mothers who received standard care. However, when comparing other types of contact with healthcare professionals during the first month after hospital discharge (home visit versus clinic visit or telephone contact), no differences in breastfeeding outcomes were found (Brodribb et al., 2020).

It is important to identify mothers at increased risk of early breastfeeding cessation in order to target these specific groups with intensive support. Studies have identified lower maternal education, smoking, and preterm birth (Quinlivan et al., 2015; Lechosa-Muñiz et al., 2020), primiparity (Hackman et al., 2015; Cato et al., 2017), and caesarean delivery (e.g., Rollins et al., 2016; Cato et al., 2017; Liu et al., 2022) as common factors associated with an increased risk of early breastfeeding cessation. However, caesarean delivery may not pose a risk to timely breastfeeding initiation or exclusive breastfeeding if adequate breastfeeding support is provided (Rollins et al., 2016).

In conclusion, there is clear evidence that mothers require adequate and appropriate breastfeeding support during the postnatal period. However, the optimal method for providing such support remains uncertain. Due to wide variation in definitions of breastfeeding, standard care, outcome measures, and timing of data collection, the conduct of high-quality meta-analyses and the transferability of results is challenging (Gavine et al., 2022; Brodribb et al., 2020). This establishes the foundation for future research that should focus on the development of a consistent approach to providing support to all mothers in all settings (Rollins et al., 2016; Gavine et al., 2022). Moreover, further work is required on the implementation and quality improvement of breastfeeding support, rather than effectiveness studies. In future intervention studies, the synthesis of qualitative evidence, data on process evaluation, and the cost-effectiveness of existing interventions should be a priority (Gavine et al., 2022; Brodribb et al., 2020). Regular monitoring of breastfeeding practices and periodic population-level assessments are also needed to provide data on current breastfeeding trends and identify gaps (Rollins et al., 2016).

### 2.2.3 Mothers' perceptions of postnatal professional breastfeeding support

Mothers' perceptions of postnatal breastfeeding support provide valuable information about the quality of support and highlight potential shortcomings. Including mothers' views in research recognizes their position as important in breastfeeding (Kronborg et al., 2015; Tully et al., 2017; McInnes & Chambers 2008). Breastfeeding support forms an important part of postnatal care in maternity care. However, mothers often rate postnatal care poorly compared to antenatal or

intrapartum care (Malouf et al., 2019; Schmied & Bick 2014). Incorporating a maternal perspective is essential for improving the quality of breastfeeding support (Sacks & Langlois 2016; Lavender 2016; Edmonds et al., 2021). This section focuses on reviewing literature on maternal perceptions and experiences of postnatal professional breastfeeding support.

All studies were conducted in resource-rich settings in Westernized countries. Consequently, they reflect the views of mothers living in such parts of the world and within that specific cultural context. Breastfeeding support settings varied from hospital to community settings and often included both primiparous and multiparous mothers. Most of the studies had a qualitative design or used qualitative data taken from a larger study (Grattan et al., 2024; Zimmerman et al., 2022; Thomson et al., 2022; Edmonds et al., 2021; Miller & Wojnar 2019; Kronborg et al., 2015; Thomson et al., 2015). Data collection methods included structured or semi-structured interviews (Zimmerman et al., 2022; Vidović Roguljić & Zakarija-Grković 2023; Thomson et al., 2022; Whelan & Kearney 2015; Thomson et al., 2015), in-depth interviews (Miller & Wojnar 2019; Burns et al., 2016; Lagan et al., 2014), surveys (Grattan et al., 2024; Edmonds et al., 2021; Pearsall et al., 2022; Kronborg et al., 2015), and audio-recorded observations of midwife-mother interactions around breastfeeding (Burns et al., 2016). Two of the studies were qualitative literature reviews (McInnes & Chambers 2008; Schmied et al., 2011), and one was a systematic review including qualitative, quantitative, and mixed-methods studies (Malouf et al., 2019).

In the early days and weeks of breastfeeding, mothers report that they need emotional and practical support from professionals (McInnes & Chambers 2008). Mothers value the authentic and emotional presence of healthcare professionals when providing breastfeeding support (Schmied et al., 2011; Miller & Wojnar 2019; Gianni et al., 2020; Kronborg et al., 2015) with a facilitative style that includes accurate but realistic information shared in a proactive and encouraging manner (Schmied et al., 2011; Tully et al., 2017). Ongoing support from a professional indicating confidence in the mother's ability to breastfeed is seen as helpful from the mother's perspective (Kronborg et al., 2015; McInnes & Chambers 2008). Building strong relationships between healthcare providers and mothers is essential for effective postnatal support. Trust, consistent care, emotional support, and personalized interventions are key components of a supportive relationship that can prevent common problems such as conflicting advice and unsupportive care (McInnes & Chambers 2008). The emotional aspects of inpatient postnatal breastfeeding support play a critical role in achieving breastfeeding goals and improving mothers' overall postpartum experience. By fostering empathy, respect, and personalized care, professionals can create a supportive environment that promotes successful breastfeeding practices (Pearsall et al., 2022).

Mothers' dissatisfaction with postnatal breastfeeding support is often reported, and the reality of breastfeeding support falls short of their expectations and needs (e.g., Vidović Roguljić & Zakarija-Grković 2023; Zimmerman et al., 2022; Malouf et al., 2019; Tully et al., 2017). Mothers perceive conflicting, inadequate, or inaccurate advice regarding breastfeeding (e.g., how often to breastfeed or when to use supplemental milk) (Schmied et al., 2011; Whelan & Kearney 2015; Miller & Wojnar 2019; Kronborg et al., 2015). Conflicting advice given with a didactic approach through non-supportive communication is perceived common but undesirable by mothers (Schmied et al., 2011; Tully et al., 2017; Vidović Roguljić & Zakarija-Grković 2023).

Mothers' experiences during their postnatal hospital stay influence infant feeding practices. For instance, timely access to breastfeeding support from healthcare professionals when requested and the provision of understandable information are associated with exclusive breastfeeding during hospitalization (Tully et al., 2022). Mothers have reported that they receive too little breastfeeding support and too late, which causes them distress and leads them to request infant formula (Vidović Roguljić & Zakarija-Grković 2023). In addition, interactions with healthcare professionals, quality of maternal or infant care, and maternal feelings about care were identified as the most and least favorable aspects of their hospital stay. In particular, delays in care and infant feeding experiences have been identified as the worst aspects of the care from a maternal perspective (Edmonds et al., 2021). Mothers' perceptions of a lack of proactively offered breastfeeding support, rushed interactions, and busy healthcare professionals are consistently reported in studies (Malouf et al., 2019; Tully et al., 2017; McInnes & Chambers 2008). Effective breastfeeding support is facilitated by adequate time and accessibility, highlighting the need for systemic changes in the way support is provided (McInnes & Chambers 2008).

With regard to the provision of practical and informational breastfeeding support, mothers have reported receiving advice that is either inappropriate or lacking in evidence. This advice has included recommendations such as bottle-feeding, separating mothers from their infants, and feeding at specific times. Hands-on breastfeeding support has been described as physically intrusive, distressing, and embarrassing. Mothers prefer to be shown how to breastfeed their infants rather than having the infants attached to them. Some mothers have reported that breastfeeding information is either too technical or unrealistic, thus unhelpful. The dissemination of practical advice that is not tailored to the mother's specific needs may have adverse consequences (McInnes & Chambers 2008).

It is important to acknowledge that not all mothers want to breastfeed or may breastfeed only partially. Some mothers have experienced pressure to breastfeed from healthcare professionals. Breastfeeding support that undermines or blames



the mother or makes her feel pressured to breastfeed is perceived as damaging by mothers (Schmied et al., 2011). Some mothers experience stress and feelings of inadequacy or shame as a result of being pressured to breastfeed by healthcare providers (Grattan et al., 2024; Lagan et al., 2014; Burns et al., 2016; Thomson et al., 2015). This perception may result from well-intentioned but overly optimistic breastfeeding support that does not consider individual circumstances and maternal preferences. Mothers may view midwives as not being allowed to discuss or provide information about formula feeding, which can leave mothers feeling uninformed and unsupported if they choose not to breastfeed (Lagan et al., 2014). Mothers who choose to combine breastfeeding and bottle feeding may encounter disapproval from healthcare professionals, which can negatively impact their feeding experience and confidence. The construction of a satisfactory relationship between healthcare professionals and mothers may facilitate the provision of individualized information to assist mothers in making informed feeding choices (McInnes & Chambers 2008).

Poor maternal perceptions and experiences regarding postnatal breastfeeding support indicate a need for substantial changes in maternity care philosophies. These changes should focus on creating a more supportive, comprehensive, and relationship-focused approach to breastfeeding that addresses both the physical and emotional needs of mothers and infants (Burns et al., 2016; McInnes & Chambers 2008). Given the need to improve breastfeeding rates at strategic, policy, and practice levels in societies globally, the focus of breastfeeding support should shift to providing more women- and family-centered support. Providing comprehensive information about breastfeeding and support for all mothers, including those who choose not to breastfeed, is critical to ensuring that all mothers receive the support and respect they need for their feeding choices (Lagan et al., 2014). It is necessary to address the maternal perceptions of barriers to adequate breastfeeding support, including professionals' lack time and mothers' access to appropriate support. To fulfil maternal breastfeeding intentions, improvements in the structures of care and multilevel interventions are required (Thomson et al., 2022).

## 2.3 Ten Steps to successful breastfeeding support

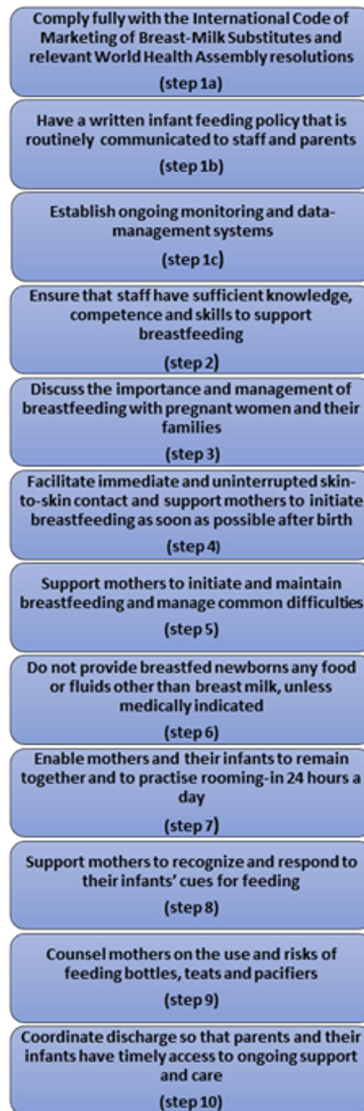
Systems-level changes have the potential to improve breastfeeding support for mothers by developing the structures and culture of care (Rollins et al., 2016; Pérez-Escamilla 2016). An important multi-level and structured program to improve breastfeeding and breastfeeding support in maternity care settings is the Baby-Friendly Hospital Initiative (BFHI) (WHO 2018). This chapter introduces the BFHI and the Ten Steps and their evidence base as an alternative to postnatal breastfeeding support in maternity hospitals.

### 2.3.1 Baby-Friendly Hospital Initiative

The BFHI is a global health initiative launched in 1991 by WHO and UNICEF with the objective of protecting, promoting, and supporting breastfeeding. The BFHI is based on the implementation of the Ten Steps to Successful Breastfeeding (Ten Steps) (Figure 1) and the International Code of Marketing of Breast-milk Substitutes (the Code), a set of recommendations and guidelines developed by WHO and UNICEF to promote breastfeeding by regulating the marketing and distribution of breast-milk substitutes and related products (WHO 1981).

The implementation of BFHI is a multifaceted and complex process in the organization which includes policy changes, educating and training healthcare professionals, and ongoing monitoring and evaluation of the hospital's infant feeding and care practices and policies. To become BFHI designated, a hospital must fully implement the Ten Steps and comply with the Code. The Baby-Friendly designation is awarded based on internal and external evaluations of how the required policies and practices are implemented. External assessments of a hospital's compliance with the Ten Steps should be conducted at least every 5 years, but ideally on a more frequent basis (WHO 2018). The implementation of BFHI typically relies on a careful strategy, extensive collaboration among stakeholders, and a committed management team to facilitate the process (Schmied et al., 2014).

The BFHI has been implemented in almost all countries, although its global coverage remains limited. In 2017, it was estimated that only 10% of infants worldwide were born in BFHI designated facilities (WHO 2018). In Finland, 30% (n=7) of all maternity hospitals are currently BFHI designated. Of these, only one is a tertiary level hospital. BFHI accreditation is granted based on the results of an external audit conducted by a national committee coordinated by the Finnish Institute of Health and Welfare (Finnish Institute for Health and Welfare 2024).



**Figure 1.** Ten steps to successful breastfeeding (WHO 2018).

### 2.3.2 Baby-Friendly breastfeeding support

Hospital practices and policies play a key role in supporting and promoting breastfeeding. The Ten Steps serve as a framework for maternity hospitals to provide evidence-based and effective support to mothers (Figure 1) and are interconnected evidence-based practices, meaning that each step supports and enhances the effectiveness of the others. This interconnectedness ensures a comprehensive approach to supporting breastfeeding in maternity hospitals. For example, early SSC

and initiation of breastfeeding (step 4) improves exclusive breastfeeding (step 6). Similarly, the practice of rooming-in (step 7) can improve infant feeding on demand (step 8), which can lead to improved rates of exclusive breastfeeding (step 6) by reducing the infant's need for supplementation. Difficulties in implementing one step may affect the following steps, highlighting the importance of full implementation to ensure successful and safe breastfeeding support for all mother-infant dyads (WHO 2018; Pérez-Escamilla 2016).

The Ten Steps were revised in 2018 to incorporate the latest evidence-based recommendations to improve the effectiveness of breastfeeding support, and to improve the usability of the framework by clarifying and simplifying language and concepts (WHO 2018). As a result of the revision, the steps were divided into two main categories: 1) critical management procedures (steps 1–2) and 2) key clinical practices (steps 3–10). This was to better align with current evidence and the realities of clinical practice, and to ensure that both institutional processes and individual care practices are aligned and designed to best support breastfeeding (WHO 2018; Aryeetey & Dykes 2018).

A systematic review found that hospital adherence to the Ten Steps has a positive effect on breastfeeding outcomes in the short, medium, and long term. An association was also found between the number of BFHI steps women were exposed to and the likelihood of better breastfeeding outcomes in terms of early breastfeeding initiation, exclusive breastfeeding at hospital discharge, any breastfeeding and exclusive breastfeeding duration (Pérez-Escamilla 2016). However, the most effective impact on breastfeeding practices can only be achieved when all the steps are implemented collectively (WHO 2018). It is important to note that the studies conducted thus far on the effectiveness of BFHI have methodological limitations. Additionally, there is significant heterogeneity in the definitions of measured outcomes (e.g., exclusive breastfeeding), designs, methods, analyses, and results of the studies. This makes it difficult to draw firm conclusions about the effectiveness of BFHI. In particular, the long-term outcomes of breastfeeding in resource-rich settings are not clear (Pérez-Escamilla 2016; Howe-Heyman & Lutenbacher 2016; Fallon et al., 2019; Fair et al., 2021; Walsh et al., 2023).

There is only little qualitative evidence of mothers' experiences being exposed to the Ten Steps. A meta-synthesis of five qualitative studies of mothers' experiences of Ten Steps practices concluded that the steps may create idealistic perceptions of breastfeeding, fail to meet mothers' individual needs, and create negative emotional experiences related to infant feeding. It was also found that breastfeeding support in BFHI settings may fall short of important aspects of support, such as addressing breastfeeding challenges and providing sufficient information about formula feeding, resulting in a mismatch between maternal expectations and the experienced reality. Further assessment of how breastfeeding support in Baby-Friendly settings

is experienced by mothers in resource-rich settings is also needed to ensure that breastfeeding support meets the mental, emotional, and practical needs of all mothers (Fallon et al., 2019).

### 2.3.2.1 Critical management procedures to support breastfeeding (steps 1–2)

#### Hospital policies and staff competency

Step 1a-1c requires that facilities “*comply fully with the International Code of Marketing of Breast-milk Substitutes (the Code) and relevant World Health Assembly resolutions (1a), have a written infant feeding policy that is routinely communicated to staff and parents (1b), and establish ongoing monitoring and data-management systems (1c)*”. The objective of these steps is to ensure that healthcare facilities adhere to ethical marketing practices, have clear and effective policies, and continuously monitor and improve their practices based on data. Adherence to the Code promotes unbiased breastfeeding support, free from conflicts of interest, to ensure that healthcare professionals and mothers are not influenced by the marketing of breast milk substitutes. A written infant feeding policy ensures that all healthcare professionals are aware of and adhere to standardized practices, providing consistent information and support to mothers. The policy is used as a guide for training and practice to ensure that everyone is aware of the importance of breastfeeding and the institution's commitment to supporting breastfeeding. Continuous monitoring and data management allow facilities to track breastfeeding rates, identify areas for improvement, and ensure compliance with BFHI (WHO 2018).

Step 2 mandates facilities to “*ensure that staff have sufficient knowledge, competence and skills to support breastfeeding*”. Training healthcare professionals is a critical aspect of this initiative, as it provides them with the knowledge, skills, and consistency required to provide effective breastfeeding support to mothers. Training ensures that all healthcare professionals are aware of the facility's breastfeeding policy and their role in its implementation. Trained healthcare professionals are more likely to provide consistent and evidence-based messages to mothers, reducing confusion and reinforcing the importance of breastfeeding (WHO 2018).

### 2.3.2.2 Key clinical practices to support breastfeeding (steps 3–10)

#### Antenatal breastfeeding education

Step 3 states “*discussing the importance and management of breastfeeding with the pregnant woman and her family*”, meaning that facilities should provide counselling on the importance of breastfeeding and its benefits to pregnant women and their families. In settings where antenatal care is organized by primary healthcare facilities (e.g., maternal-child health clinics), collaboration between the maternity hospital and the primary healthcare facility is needed to ensure that mothers recognize the importance of breastfeeding and know what to expect of maternity facility care at the time of childbirth and after (WHO 2018). There is no consensus regarding the optimal approach to educating pregnant women about breastfeeding. Research indicates that the most efficacious interventions integrate education with support for pregnant mothers and their partners or families. However, the quality of the studies and how the participants were defined make it challenging to recommend a single intervention over another (Wouk et al., 2017).

#### Early skin-to-skin contact and initiation of breastfeeding

Step 4 advises “*facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.*” Skin-to-skin contact (SSC) is defined as the placement of the infant's naked body on the mother's abdomen, and it is recommended for at least one hour. This practice facilitates the infant's natural rooting reflex and enables them to search for the breast and suckle. SSC is recommended for all mother-infant dyads, irrespective of the mode of delivery or gestational age. It is well documented that skin-to-skin contact is particularly beneficial for infants who have been born prematurely or have low birth weights. Immediate SSC and early initiation of breastfeeding are interrelated and should ideally occur in a continuum. It is important that mothers be instructed on the techniques required to ensure their infants are able to latch and suckle effectively (WHO 2018; Moore et al., 2016).

Early and uninterrupted SSC between mother and infant is beneficial to the dyad and to breastfeeding. SSC has a beneficial impact on the physiological adaptation of the infant to extra-uterine life, preventing hypothermia, and facilitating the colonization of the neonatal microbiome. Furthermore, SSC has been shown to promote the stability of the infant's cardio-respiratory system. However, further evidence is necessary to ascertain the dose-response relationship and optimal timing for initiating SSC (Moore et al., 2016). Early SSC and breastfeeding initiation are

also associated with reduced risk of neonatal mortality (Li et al., 2022; Smith et al., 2017; Khan et al., 2015).

The implementation of immediate SSC has been demonstrated to result in improved breastfeeding outcomes such as increased likelihood of exclusive breastfeeding at hospital discharge and at one month to six months postpartum (Karimi et al., 2020; Moore et al., 2016). SSC and early initiation of breastfeeding also benefits the mother. For example, these practices help reduce postpartum hemorrhage (Saxton et al., 2015) and increase maternal breastfeeding self-efficacy in both primiparous and multiparous women (Koskinen et al., 2014). Furthermore, these early practices are crucial for establishing an adequate milk supply. A significant proportion of mothers cease breastfeeding due to the perception of an inadequate milk supply (Pérez-Escamilla et al., 2023). Therefore, it is evident that the initiation of breastfeeding at an early stage is of paramount importance for the establishment of a milk supply.

### Practical support for breastfeeding and managing common breastfeeding difficulties

Step 5 recommends to “*support mothers to initiate and maintain breastfeeding and manage common difficulties*”. The objective of this step is to provide mothers with the practical skills required to manage common breastfeeding difficulties. Support should also include emotional and motivational support and be provided in a manner that is tailored to the individual needs of the mother, with particular attention paid to primiparous mothers and mothers undergoing caesarean delivery who may require additional support (WHO 2018).

In the early postnatal period, mothers often encounter common challenges with latching, pain, or concerns about adequate milk supply (Feenstra et al., 2018; McFadden et al., 2017; Mäkelä et al., 2022; Gianni et al., 2019). The provision of timely and skilled support for mothers is an essential element in the prevention and resolution of breastfeeding difficulties that may result in the cessation of breastfeeding. Approximately 60% of mothers who ceased breastfeeding did so at an earlier point than they had intended (Odom et al., 2013). Mothers with breastfeeding difficulties are at risk of beginning supplementation early, and those whose infants receive supplementation may need more intensive support prior to hospital discharge to achieve exclusive breastfeeding by discharge (Bentley et al., 2017).

Breastfeeding difficulties leading to the unintentional early cessation of breastfeeding can also cause emotional distress and feelings of disappointment to the mother (McFadden et al., 2017; Thomson et al., 2022; Gianni et al., 2020). Interestingly, breastfeeding difficulties with a previous child are a common

contributor to exclusive formula feeding in subsequent pregnancies, suggesting the importance of adequate support during the first breastfeeding experience (Barnes et al., 2021). It is vital that mothers have sufficient time and access to individualized support from healthcare professionals in order to manage breastfeeding difficulties (Hall et al., 2014). The objective of Step 5 is to address this need in order to facilitate the continuation of, and maternal confidence with, breastfeeding (WHO 2018).

### Exclusive breastfeeding

Step 6 mandates the following: “*do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated*”. The aim is to encourage mothers to breastfeed exclusively and to discuss the risks associated with giving the infant any food or fluid other than breast milk. Supplemental foods and fluids should only be given for medically indicated reasons. Initiation of supplementation should not be based on a lack of resources, time, or knowledge, but on assessment of signs of adequate breastfeeding. Mothers who wish to partially breastfeed or exclusively formula feed should be counselled on the importance of breastfeeding and encouraged to establish breastfeeding before introducing formula milk if they intend to partially breastfeed along with formula feeding. Mothers who wish to exclusively feed formula also need to be counselled on cue-based feeding and instructed in the safe preparation and storage of formula (WHO 2018).

Compliance has shown step 6 to be important, likely reflecting the adequacy of other steps' implementation. Low compliance with step 6 is associated with poorer breastfeeding outcomes (Pérez-Escamilla 2016). It is well documented that the implementation of this step is associated with higher exclusive breastfeeding rates (e.g., Shing et al., 2022; Bentley et al., 2017; Bookhart et al., 2023). Optimal breast milk production is often negatively affected by giving the infant additional foods or fluids in the first few days after birth. Supplemented infants feed less efficiently from the breast, which can easily lead to inadequate milk production and supply and eventually the discontinuation of breastfeeding (WHO 2018).

### Keeping the dyad together and learning infant cues

Step 7 recommends that “*mothers and their infants be allowed to stay together and practice rooming-in 24 hours a day*”, and step 8, “*support mothers to recognize and respond to their infants' cues for feeding*”. Rooming-in refers to keeping the mother and infant together both day and night. This promotes mother-infant proximity, which is also important to meet the goal of Step 8 – to support mothers in recognizing infant cues for feeding, comfort, and closeness, including mothers who are not breastfeeding (Jaafar et al., 2016; WHO 2018). Cue-based feeding (baby-led



feeding) refers to feeding the infant based on cues and demand. This allows the infant to control milk intake to best meet their needs and requires close contact between mother and infant. An alternative feeding approach is scheduled feeding, which means that breastfeeding is timed and limited in terms of frequency and duration (Fallon et al., 2016). Rooming-in and cue-based feeding both promote a more caring and nurturing mother-infant relationship and increase the mother's confidence in caring for and breastfeeding her infant. Mother-infant separation may have a negative effect on the frequency of breastfeeding and thus milk supply, whereas mother-infant proximity is likely to lead to more frequent breastfeeding and increased mother-infant bonding. Separation may also be a contributor to maternal stress and anxiety and suboptimal infant brain development (Flacking et al., 2012). However, separation for the purpose of the mother's recovery from childbirth may also improve milk production (Jaafar et al., 2016; Fallon et al., 2016).

There is a lack of evidence from randomized or quasi-randomized controlled trials (RCTs) examining the effect of rooming-in (versus separation) and cue-based feeding (versus scheduled feeding), so it is unclear which practices should be supported (Jaafar et al., 2016; Fallon et al., 2016). However, conducting RCTs under these conditions is ethically questionable (Fallon et al., 2016). Incorporating a relationship-based approach that emphasizes the mother-infant relationship in breastfeeding, rather than a nutrition-based approach, can have long-term benefits for both mothers and infants. This holistic approach to breastfeeding support emphasizes the emotional, psychological, and social aspects of breastfeeding, strengthening the mother-infant bond and promoting better health outcomes (Burns et al., 2016). Infant crying, fussy behavior, and short night-time sleep are often associated with normal adaptation to the postnatal environment but are misinterpreted as signs of feeding problems (Pérez-Escamilla et al., 2023).

A mother's ability to learn to recognize infant behaviors and cues is important for on-demand breastfeeding to provide a good foundation for breastfeeding continuity. Self-reported insufficient milk supply (SRIM) is a major contributor to the introduction of formula feeding and early cessation of breastfeeding worldwide (Pérez-Escamilla et al., 2023). It is often associated with difficulty reading the infant's cues and not knowing whether the infant is satisfied or not, further leading to the introduction of formula (Pérez-Escamilla et al., 2023; Vidović Roguljić & Zakarija-Grković 2023). In addition, the interpretations of healthcare professionals regarding infant behavior during breastfeeding can have a significant impact on a mother's perceptions and responses to it (Burns et al., 2016). SRIM can be addressed through adequate breastfeeding support, which increases the mother's self-efficacy in recognizing the infant's cues and needs and in feeding the infant (Pérez-Escamilla et al., 2023; Liu et al., 2023; Kronborg et al., 2015).

## Avoiding pacifiers and teats

Step 9 states “*counsel mothers on the use and risks of feeding bottles, teats and pacifiers*”. This step is intended to ensure that mothers are informed of the risks associated with the above feeding methods and pacifiers as they may interfere with effective sucking, especially when breastfeeding is not yet established. Because of the physiological differences between bottle-feeding and breastfeeding, the use of bottles and teats may cause breastfeeding difficulties. The use of a pacifier may also interfere with the mother's ability to recognize the infant's cues, leading to delays in feeding (WHO 2018).

The most recent Cochrane review and meta-analysis found that pacifier use did not negatively affect the prevalence or duration of breastfeeding in healthy infants up to four months postpartum. Furthermore, there is a lack of robust evidence to assess short-term breastfeeding difficulties and the long-term effects of pacifiers on infant health (Jaafar et al., 2016). The use of a pacifier may also be justified under certain conditions, such as in premature infants, low birth weight infants, or infants who require oral stimulation for optimal development, as it facilitates non-nutritive sucking which has numerous benefits. Pacifiers and non-nutritive sucking can be used to comfort a fussy infant, relieve pain during procedures when breastfeeding or SSC is not possible, and reduce the risk of sudden infant death syndrome (Foster et al., 2016; Lubbe et al., 2017; WHO 2018.)

## Support at hospital discharge

Step 10 recommends to “*coordinate discharge so that parents and their infants have timely access to ongoing support and care.*” This aims to manage hospital discharge so that mothers and families have access to continued and appropriate breastfeeding support and other postnatal care. This means that mothers are informed about sources of breastfeeding support and know where and to whom to turn for help and support in infant feeding. A post-discharge contact with a healthcare professional should preferably be arranged within two to four days of discharge to assess breastfeeding. This step also highlights the importance of linkages between maternity hospitals and community-based support, such as primary healthcare centers, breastfeeding clinics and peer support groups. Breastfeeding support after hospital discharge is needed to help mothers continue breastfeeding and to manage potential difficulties that are common in the early and late postnatal period before milk production and supply are established and stabilized (WHO 2018). Community support is essential to sustaining breastfeeding outcomes over time, and implementation of the tenth step has been shown to be positively associated with breastfeeding continuation (Perez-Escamilla et al., 2016).

### 2.3.3 Baby-friendly Hospital Initiative for Neonatal Wards (Neo-BFHI)

The Neo-BFHI is an extension of the original BFHI designed specifically for neonatal units, including neonatal intensive care units (NICUs). It addresses the special needs of preterm and sick infants and their families and aims to create an environment that supports breastfeeding and mother-infant bonding in these settings (WHO 2020; Maastrup et al., 2022). A group of experts from the Nordic countries and Canada developed and published the evidence-based Neo-BFHI recommendations over a decade ago, in 2009–2015. The recommendations provide breastfeeding practices applicable to all levels of neonatal care. In addition to adherence to the Ten Steps and the Code, Neo-BFHI includes three guiding principles: 1) healthcare professionals' attitudes toward mothers must focus on the individual mother and her situation, 2) the facility must provide family-centered care supported by the environment, and 3) the health system must ensure continuity of care from pregnancy through the postnatal period (Nyqvist et al., 2012; Maastrup et al., 2022).

A large cross-sectional study including 917 neonatal units in 36 countries reported relatively high overall compliance with Neo-BFHI recommendations, suggesting that neonatal units worldwide are well prepared to implement Neo-BFHI. Adherence to the Code was particularly good regardless of country income level. Recommendations related to family-centered care, skin-to-skin contact, and breastfeeding/lactation initiation were among the practices with higher compliance in high-income countries compared to middle- and low-income countries. Neonatal units in Baby-Friendly hospitals had higher scores than units in non-Baby-Friendly hospitals, reflecting the positive impact of BFHI practices on all units in a hospital. Low compliance with allowing mothers and infants to stay together 24 hours a day was observed (step 7), but there was large variation between countries. Findings of the study were limited to the perspectives of healthcare professionals, suggesting that the perspectives of mothers and families on Neo-BFHI also need to be explored (Maastrup et al., 2019).

## 2.4 Research gap and contribution of this study

The research gap in this topic is twofold. First, more studies are needed that measure mothers' perceptions of how postnatal breastfeeding support and breastfeeding related care is delivered and how it affects exclusive breastfeeding, particularly in a resource-rich setting where breastfeeding is the norm and initiation rates are high. The low rates of maternal and infant morbidity and mortality in Finland (Finnish Institute of Health and Welfare 2023) indicate high quality perinatal care, but studies on mothers' perceptions of postnatal breastfeeding support are scarce. Considering

the high prevalence of in-hospital supplementation, maternal dissatisfaction with postnatal breastfeeding support, and the short duration of exclusive breastfeeding, research on this topic is warranted.

Second, the current literature lacks studies on the impact of BFHI implementation on breastfeeding support in the above-mentioned population. Conducting studies in this specific population is important to better understand the potential contribution of BFHI to breastfeeding support from a maternal perspective (Fair et al., 2021; Hakala et al., 2021; Brodribb et al., 2013; Fallon et al., 2019). In addition, there is limited knowledge about how breastfeeding continues after discharge from a Baby-Friendly hospital and how mothers perceive breastfeeding support after discharge. The BFHI and implementation of the Ten Steps is considered a high standard of breastfeeding support and facilities are encouraged to implement the steps to improve breastfeeding outcomes. In addition, BFHI has been considered "mother-unfriendly," focusing too much on meeting breastfeeding goals rather than respecting mothers' individual decisions concerning infant feeding (Schmied et al., 2014; Fallon et al., 2019). Given this, there is a need to understand mothers' perceptions of breastfeeding support in Baby-Friendly hospitals. Looking at the initiative and Ten Steps from mothers' perspectives is fundamental and provides an important basis for critical evaluation of them.

Overall, the inclusion of the mother's perspective in breastfeeding research may ultimately lead to greater acceptance of, and satisfaction with, breastfeeding support in practice. Addressing mothers' needs and preferences can significantly improve the overall postnatal experience. Identifying potential barriers to breastfeeding support will facilitate tailoring support to the specific needs and concerns of individual mothers. Addressing the research gaps can contribute to the development of more effective, comprehensive and evidence-based breastfeeding support practices and policies suitable in this specific population. This is likely to improve breastfeeding rates and have a positive impact on maternal and child health and well-being. Including mothers' perspectives in research is in itself a statement that mothers matter and that their perspectives are valued and needed. It is evident that this will also have a beneficial effect on the child's health and well-being, as well as on the mother-child bond.

# 3 Aims

The aim of this study was to examine mothers' perceptions of postnatal breastfeeding support and factors associated with exclusive breastfeeding. Furthermore, the study investigated the impact of the Baby-Friendly Hospital Initiative (BFHI) on breastfeeding support. The findings were integrated into the Ten Steps framework with the objective of incorporating a maternal perspective. The study includes three main research questions and four original publications (Sub-studies I–IV).

The research questions are described below:

1. How is breastfeeding supported in a non-Baby-Friendly hospital from a maternal perspective? (Sub-study I)
  - a. What is the incidence of early skin-to-skin contact (SSC) and early initiation of breastfeeding?
  - b. How do mothers perceive breastfeeding support in postnatal wards?
  - c. How do quality of care and maternal factors associate with breastfeeding?
  
2. How do mothers perceive breastfeeding support in Baby-Friendly hospitals? (Sub-studies I–IV)
  - a. How do mothers perceive breastfeeding support in Baby-Friendly hospitals? (Sub-studies II and III)
  - b. How does the implementation of BFHI impact breastfeeding support in the hospital? (Sub-study III)
  - c. How does breastfeeding support compare between Baby-Friendly and non-Baby-Friendly hospitals? (Sub-studies I–IV)

3. How is breastfeeding continued after discharge from a Baby-Friendly hospital? (Sub-study IV)
  - a. What is the rate of exclusive breastfeeding?
  - b. What breastfeeding difficulties do mothers report?
  - c. What are mothers' perceptions of breastfeeding support?

## 4 Materials and Methods

### 4.1 Methodological approaches

This study was conducted within the paradigms of post-positivism and pragmatism (Weaver & Olson 2006) to address the complexity of breastfeeding and breastfeeding support, which are multifaceted concepts that require a more holistic and flexible approach. A multimethod approach was chosen for this study. This means that more than one method was used to adequately address the study aims (Martha et al., 2007).

The study consists of three quantitative Sub-studies (I, III, IV) and one integrative literature review (Sub-study II). Sub-studies I and IV collected both quantitative and descriptive qualitative data (open-ended responses), although the emphasis was on quantitative data. A summary of the designs, settings, samples, and data collection methods is provided in Table 1.

**Table 1.** Sub-studies and methods in brief.

Sub-study Research question	Design	Setting	Sample	Data collection and analysis
<b>Sub-study I</b> (10/2022–1/2023) How is breastfeeding supported in a non-Baby-Friendly hospital from a maternal perspective?	Cross-sectional study	A non-Baby-Friendly hospital	n=160 mothers	An online survey, statistical analysis, inductive content analysis
<b>Sub-study II</b> (10/2021) How do mothers perceive breastfeeding support in Baby-Friendly hospitals?	Integrative literature review	Baby-Friendly hospitals	Literature on maternal perceptions and experiences of breastfeeding support in Baby-Friendly hospitals	A systematic literature search conducted in electronic databases, inductive content analysis
<b>Sub-study III</b> (4/2017–8/2019) How do mothers perceive breastfeeding support in Baby-Friendly hospitals?	Quasi-experimental study (pretest-posttest)	A Baby-Friendly hospital (pre- and post BFHI implementation)	n=325 mothers (pretest group, n = 162, posttest group, n = 163)	A paper questionnaire, statistical analysis
<b>Sub-study IV</b> (5/2021–10/2022) How is breastfeeding continued after discharge from a Baby-Friendly hospital?	Correlational study	Two weeks after hospital discharge from a Baby-Friendly hospital	n=80 mothers	A paper questionnaire, statistical analysis

## 4.2 Designs, settings, and samples

### Sub-study I

A cross-sectional study with quantitative and qualitative data was conducted between October 2022 and January 2023. The study examined maternal perceptions of breastfeeding support and quality of care in a tertiary maternity hospital in Finland. In addition, the association between perceived quality of care and maternal factors with breastfeeding exclusivity was examined. The study was conducted as part of a larger research project to explore and improve perinatal care in public maternal and child health clinics and a maternity hospital.

The study hospital was a maternity hospital that provides care for 8,200 births annually. Postnatal care is provided in two hospital units and a patient hotel unit for low-risk mothers. Family rooms are available for the mother's support person to stay.



Midwives and auxiliary nurses provide care in postnatal units. The average length of postnatal hospital stay is two days.

The sample size was calculated a priori based on a power analysis using the Birth Satisfaction Scale-Revised (BSS-R) instrument (Hollins & Martin 2014). A sample size of 139 was required to have 80% power to detect a medium effect at a significance level of  $\alpha = .05$ .

Convenience sampling was used to select participants for the study. Mothers who delivered one or more term infants (gestational age  $\geq 37$  weeks), were discharged with the infant from the study hospital, and received care at the public maternal-child health clinic in the area were considered eligible for the study. Mothers with insufficient knowledge of Finnish, Swedish or English were excluded.

A total of 160 postpartum mothers participated in the study at a median of 17 days postpartum. Median postnatal hospital stay was two days. The majority of mothers (86%) were highly educated (university degree) and had a good or very good perceived economic status (87%). More than half (59%) of the participating mothers were primiparous. Most mothers had spontaneous onset of labor (62%) and vaginal delivery (79%). Almost all mothers (96%) had some plans to breastfeed, and many (713%) had prenatal plans to exclusively breastfeed the infant.

## Sub-study II

An integrative literature review was conducted in 2021, following the methodology of Whitemore and Knafl (2005), to synthesize existing research on mothers' perceptions and experiences of breastfeeding support in Baby-Friendly hospitals. A secondary objective was to compare breastfeeding support between Baby-Friendly and non-Baby-Friendly hospitals. The review included 17 original studies published between 2006 and 2021 that described breastfeeding support from the mother's perspective in Baby-Friendly hospitals. Most of the included studies were from non-European countries, with the highest number from the USA ( $n=5$ ), Brazil ( $n=3$ ), Taiwan ( $n=2$ ) and others ( $n=3$ ). Four studies came from European countries: Italy, Switzerland, UK and Croatia ( $n=1$  each). The majority of studies ( $n=14$ ) used a quantitative approach, with cross-sectional ( $n=9$ ), cohort ( $n=3$ ) and quasi-experimental ( $n=2$ ) designs. Sample sizes in quantitative studies ranged from 100 to 6752 participants. Three studies had a qualitative design.

## Sub-study III

A quasi-experimental non-equivalent two-group (pretest-posttest) design was used to measure mothers' perceptions of breastfeeding support before (April-August 2017) and after (April-August 2019) implementation of BFHI. Mothers in the

posttest group were measured two months after the hospital was accredited the BFHI in February 2019. Sub-study III was registered with ClinicalTrials.gov under the number 0307-0041.

The study was conducted in the postnatal and neonatal units of a central maternity hospital in Finland. The hospital had 1700 annual births in 2017 and 1400 in 2019. The estimated sample size was set at 10% of the annual volume of births at the hospital. In the pretest group, mothers were provided with breastfeeding support that was not standardized, although the support was consistent with the Ten Steps practices such as immediate skin-to-skin contact, early initiation of breastfeeding, and rooming-in of the mother-infant dyad. Convenience sampling was used and the same inclusion criteria were applied to both groups. All mothers willing to participate were included in the study, regardless of parity or mode of birth. Poor Finnish language skills of the mother and admission of the infant to a higher level neonatal intensive care unit (level III) were exclusion criteria for participation (see participant flow-figure in Paper III).

A total of 325 mothers participated in the study: 162 in the pretest group and 163 in the posttest group. In both groups, most mothers were multiparous (56% and 58%, respectively), had a vaginal delivery (93% and 81%, respectively), and participated in the study from the postnatal ward (85% and 88%, respectively). Mothers in the posttest group were more educated ( $p = 0.016$ ) and had a lower rate of caesarean delivery (7% vs. 19%,  $p < 0.001$ ) than in the pretest group.

### Intervention: Implementation of BFHI

The BFHI implementation process at the study hospital began in January 2017 and continued for two years until the hospital received BFHI and Neo-BFHI designations in March 2019. As part of the implementation process, all healthcare professionals completed the WHO/UNICEF breastfeeding counselor course, either the full 20-hour course or a 6-hour update course. Other professionals working in the hospital (e.g., cleaning staff) completed a 2-hour training session. To facilitate successful implementation, carefully designed implementation plans were tailored to each unit. To ensure the complete implementation of the Ten Steps practices, hospital care was regularly reviewed to assess adequate progress of the implementation. An internal audit was conducted in December 2018. In February 2019, the Finnish Institute for Health and Welfare granted the hospital BFHI designation following an external audit (Mäkelä et al., 2021).

## Sub-study IV

A correlational study was conducted between May 2021 and October 2022 to investigate factors associated with breastfeeding exclusivity and difficulties in the early postnatal period after discharge from a Baby-Friendly hospital. The study also assessed the adequacy of breastfeeding support and the optimal conditions for such support, based on maternal perceptions.

The estimated sample size represented 10% of the total births ( $n=816$ ) in the municipality during the study period. A convenience sample of Finnish-speaking breastfeeding mothers who gave birth to one or more healthy, normal-weight infants without major congenital anomalies was included. These mothers received prenatal and postnatal care at eight child health clinics in a single municipality in Finland and delivered in a Baby-Friendly hospital, as described in Sub-study I. A total of 80 mothers participated in the study, of whom almost half (49%) were first-time mothers. The majority of participants (56%) were highly educated, with university degrees. Most mothers (85%) had vaginal deliveries and some prenatal plans for breastfeeding. The median planned duration of breastfeeding was 12 months.

## 4.3 Data collection and measurements

### Sub-study I

Midwives in postnatal units and public health nurses (PHNs) in child health clinics recruited postpartum mothers, up to 12 weeks postpartum, by providing written and verbal information about the study and distributing the Research Electronic Data Capture (REDCap) survey link and QR code via paper handouts or a digital patient and client portal for health services. Informed consent was obtained online from mothers at the beginning of the survey before participation and only participants who gave their consent to participate had access to the survey.

An online self-report survey was developed for the study, including a background section, three validated instruments, and self-developed questions. The survey included background questions on maternal factors, maternal sociodemographic background, prenatal, obstetric and postnatal characteristics, including parenting self-efficacy. Parenting self-efficacy was measured using the Parenting Self-Efficacy Scale (PSE) (Salonen et al., 2009) (Table 2).

The survey contained two binary questions (yes/no) to assess the prevalence of early SSC and initiation of breastfeeding and the perceived adequacy of breastfeeding support in the postnatal units. In addition, open-ended questions were posed about perceived reasons why early SSC or initiation of breastfeeding were not facilitated and about mothers' needs for breastfeeding support in the postnatal unit.

Quality of care was measured in terms of maternal satisfaction with birth experience (Birth Satisfaction Scale-Revised, BSS-R) (Hollins & Martin 2014) (Table 2), early initiation of breastfeeding, adequacy of breastfeeding support, quality of family-centered care (Digi Family-Centred Care: Parent (DigiFCC-P) (Axelin et al., 2020) (Tabel 2), and maternal satisfaction with overall care in the postnatal unit (scale: 1, not satisfied – 10, very satisfied).

Breastfeeding status (exclusive breastfeeding, partial breastfeeding, no breastfeeding) was measured with a structured question and referred to the mother's current breastfeeding status after hospital discharge. The same definition of exclusive breastfeeding was used in Sub-study IV.

**Table 2.** Validated instruments used in Sub-study I.

Instrument	Description	Scale
Birth Satisfaction Scale-Revised (BSS-R) (Hollins&Martin 2014)	BSS-R measures maternal satisfaction with labor and birth. The instrument has 10 items on a 5-point Likert scale (0–4) and includes three subscales: <ul style="list-style-type: none"> <li>• Quality of care provision (4 items)</li> <li>• Women's personal attributes (2 items)</li> <li>• Stress experienced during labor (4 items)</li> </ul> The scale has four reverse items that are converted when calculating the total score. A mean score is calculated for the items and higher scores indicate higher birth satisfaction.	(low satisfaction) 0–4 (high satisfaction)
Digi Family-Centered Care: Parent DIGIFCC-P (Axelin et al., 2020)	DIGIFCC-P measures perceived quality of family-centered care (FCC). The instrument was originally developed to measure FCC in the context of neonatal intensive care but was modified for this study to measure mothers' perceptions of the quality of FCC in postnatal units. <p>The instrument has nine items on a response scale from 1 to 7 (low quality – high quality), measuring the quality of family-centered care in the following domains:</p> <ol style="list-style-type: none"> <li>1) active listening by staff, 2) parent participation in infant care, 3) staff provision of individualized parent education, 4) parent participation in making decisions, 5) parents' trust in the staff with respect to infant care, 6) staff confidence in parents caring for their infant, 7) parents' participation in decisions concerning medical care, 8) information received from staff, and 9) emotional support provided by staff (Axelin et al., 2021).</li> </ol> A mean score is calculated for the items, and higher scores indicate higher quality FCC.	(low quality FCC) 1–7 (high quality FCC)
Parenting Self-Efficacy Scale (PSE) (Salonen et al., 2009)	PSE consists of 27 items measuring cognitive (11 items), affective (7 items), and behavioral (9 items) infant care tasks on a 6-point Likert scale (1 = "strongly disagree" to 6 = "strongly agree"). A mean score is calculated and higher scores indicate higher parenting self-efficacy.	(low parenting self-efficacy) 1–6 (high parenting self-efficacy)

## Sub-study II

A systematic literature search of five databases (PubMed, CINAHL, Cochrane, Scopus, and Web of Science) was conducted in October 2020, with an update in October 2021. The review included original, peer-reviewed studies published in English that focused on maternal perceptions and experiences of breastfeeding support in Baby-Friendly Hospital Initiative (BFHI) hospitals. In addition, studies comparing maternal perceptions of breastfeeding support between BFHI and non-BFHI hospitals were included. Titles (n=914), abstracts (n=226) and full texts (n=47) were screened, and two researchers (JL, HM) independently assessed the quality of 21 studies. Methodological quality was assessed using the Joanna Briggs Institute (JBI) critical appraisal tools specific to different study designs. To be included in the review, studies had to score at least 50% of the total JBI score. In the end, 17 studies were included in the review. The search terms used and the detailed process used to select the studies are described in Paper II.

## Sub-study III

In pretest and posttest groups, midwives and nurses in the postnatal and neonatal units recruited mothers one to two days after childbirth until 160 mothers were enrolled in the study. Written and verbal information about the study was provided to mothers prior to participation, and written informed consent was obtained for participation. Mothers completed a paper questionnaire and returned it in an envelope to a box on the ward before discharge. Recruitment of postpartum mothers was similar in both groups. Data in both groups was collected using a self-developed paper questionnaire that measured mothers' perceptions of postnatal breastfeeding support in the hospital. Higher scores indicated that breastfeeding support was more adherent to the Ten Steps.

The questionnaire contained 20 items, 15 of which were on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree) and five on a dichotomous yes/no scale. Sixteen items in the questionnaire were modified from the Ten Steps: Step 3 (information about the benefits of breastfeeding), Step 4 (early skin-to-skin contact and initiation of breastfeeding), Step 5 (practical support for managing breastfeeding and possible difficulties), Step 6 (healthcare professionals told mother why baby needed supplemental milk), Step 7 (rooming-in), Step 8 (cue-based feeding), Step 9 (use of pacifier), and Step 10 (continued support after hospital discharge). Four items in the questionnaire examined healthcare professionals asking the mother's wishes regarding breastfeeding, the role of the partner, and professional and congruent breastfeeding support provided to the mother. In addition, ten background questions were asked regarding maternal age, education, marital status, parity, total duration of all previous breastfeeding, planned duration of breastfeeding, infant gestational

age, mode of delivery, self-rated birth experience, and hospital ward. Data obtained from hospital records included information on intrapartum pain management, infant birth weight, and one-minute Apgar scores.

#### Sub-study IV

PHNs working in eight child health clinics recruited postpartum mothers within two weeks of hospital discharge. The PHNs provided both written and verbal information about the study, and informed consent was obtained from the mothers prior to their participation. Participating mothers were asked to return the completed questionnaire to the PHN in a sealed envelope within one month.

Data was collected using a self-developed paper questionnaire designed by the research team, which included researchers and nursing students with clinical and research expertise in breastfeeding support. The questionnaire was formulated based on the national breastfeeding strategy (Hakulinen et al., 2017) and other relevant literature. It consisted of six semi-structured questions addressing breastfeeding exclusivity (exclusive breastfeeding, partial breastfeeding, or no breastfeeding), breastfeeding difficulties, and the adequacy and preferences for breastfeeding support during days immediately after hospital discharge.

Mothers' perceptions of breastfeeding support during the perinatal period were measured using a 4-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). The national definition of exclusive breastfeeding (Ikonen et al., 2020) was applied, considering exclusive breastfeeding to occur when the infant received only the mother's own breast milk—either directly from the breast or through hand expression or pumping—without any other liquid or solid foods, except for vitamin D or oral medications.

The questionnaire also included background questions covering maternal sociodemographic characteristics (age, education, marital status, parity), health-related factors (smoking status), birth and infant characteristics (mode of birth, infant gestational age, date of birth, use of pacifier, in-hospital supplementation, and maternal-reported reasons for supplementation), as well as breastfeeding-related variables (duration of previous breastfeeding, self-rated prenatal preparation, and breastfeeding plans).

## 4.4 Data analysis

### Statistical analysis (Sub-studies I, III, and IV)

In Sub-study I, descriptive data was presented as frequencies, percentages, medians with interquartile ranges, or means with standard deviations. Continuous variables

were categorized using medians to improve the interpretability of odd ratios. Univariate binary logistic regression models were used to analyze factors associated with early skin-to-skin contact and early initiation of breastfeeding. To examine the associations between quality of care and maternal factors with breastfeeding exclusivity, an initial univariate binary logistic regression analysis was performed and statistically significant variables were included in the subsequent multivariate analysis. The associations between statistically significant variables were assessed to avoid collinearity in the following multivariate analysis. Multiple models were constructed that included non-conflicting factors and examined their interactions. The final model was selected by comparing the AIC and the likelihood ratio test. All tests were performed as two-tailed tests with a significance level of 0.05; values equal to or less than this threshold were considered statistically significant. Analyses were performed with SAS (version 9.4) for Windows. Mothers' open-text descriptions of barriers to early SSC and initiation of breastfeeding were classified and quantified and then presented as frequencies and percentages.

In Sub-study III, descriptive data was presented as frequencies, percentages, means and standard deviations (SDs), medians and interquartile ranges (IQRs), and ranges. T-tests, Pearson's chi-squared ( $X^2$ ) or Mann-Whitney U-tests were used to compare maternal and infant characteristics between the pre- and posttest groups. Medians and IQRs were used to present the data on the individual items of the questionnaire. To analyze the main outcome of the study (maternal perception of breastfeeding support), a sum variable was created by summing all items of the questionnaire and then dividing the sum score by the number of items. Due to the non-normal distribution of the sum variable in the posttest group, univariate non-parametric tests (Mann-Whitney U-test, Kruskal-Wallis F-test, Spearman's correlation) were used to examine differences within and between the pretest and posttest groups. Multiple linear regression analysis was performed to examine which maternal and infant characteristics were associated with the main outcome. In addition, multiple regression analysis was conducted on all data (both groups combined) to examine the significance of the mother's group when adjusted for confounding factors. Regression models for both groups and all data included variables that had a statistically significant association with the main outcome in univariate analysis (maternal age, duration of previous breastfeeding, number of children in the family, parity, gestational age and one-minute Apgar scores) or were selected based on previous studies (mode of birth). All tests were two-tailed and p-values  $<0.05$  were considered statistically significant. Statistical analyses were performed using IBM SPSS Statistics for Windows, v. 26.0. (Armonk, NY: IBM Corp.).

In Sub-study IV, descriptive data was summarized using frequencies, percentages, medians, and interquartile ranges. To assess the adequacy of

breastfeeding support, Likert-scale items were transformed into binary variables, categorizing support as either adequate or inadequate. Associations between the primary outcome variables—breastfeeding exclusivity and breastfeeding difficulties—and related factors were initially examined using univariate binary logistic regression analysis. Variables that were statistically significant ( $p < 0.1$ ) in the univariate analysis were subsequently included in a multivariate binary logistic regression analysis.

For the multivariate regression model examining breastfeeding exclusivity, the variables included were ‘parity’, ‘in-hospital supplementation’, ‘mother reported receiving breastfeeding support after hospital discharge’, and ‘presence of breastfeeding difficulties’. In the multivariate regression model for breastfeeding difficulties, the included variables were ‘parity’ and ‘adequacy of postnatal breastfeeding support received in the hospital’. In the multivariate analysis, a significance level of 0.05 was applied, with values at or below this threshold considered statistically significant. Statistical analyses were conducted using IBM SPSS Statistics for Windows, version 27.0 (Armonk, NY: IBM Corp.). Open-text responses were classified, quantified, and presented as frequencies and percentages.

### Qualitative analysis (Sub-studies I and II)

In Sub-study I, inductive content analysis (Elo & Kyngäs 2008; Graneheim et al., 2017) was applied to describe the maternal needs of postnatal breastfeeding support. Mothers' open-ended responses describing their breastfeeding support needs were considered the unit of analysis. Data was inductively organized into codes, subcategories, and main categories based on content. Similar content was merged into the same category. The analysis resulted in categories providing an overview of maternal needs for in-hospital postnatal breastfeeding support.

In Sub-study II, inductive content analysis was used to analyze the data following the framework of Whittemore and Knafl (2005), including data reduction, data display, data comparison, inference, and verification. First, included studies were read multiple times by two researchers and key findings related to mothers' perceptions or experiences of breastfeeding support were extracted. Other data extracted and reported included author(s), year of publication, country, aim and design of the study, data collection methods, number of participants, and comparison group (if applicable). Subgroup analysis was used to compare breastfeeding support between Baby-Friendly and non-Baby-Friendly hospitals. Studies with a comparative design reported descriptive data on hospital adherence to Ten Steps practices based on maternal perceptions. This comparative data was synthesized descriptively to describe differences in breastfeeding support between Baby-Friendly and non-Baby-Friendly hospitals.



## 4.5 Ethical considerations

Ethical approval for Sub-study I was obtained from the Helsinki and Uusimaa Hospital District Ethics Committee (statement 14534/2022) and for Sub-studies III and IV from the Human Sciences Ethics Committee of the University of Turku (statements 18/2017 and 9/2021). Research permissions were obtained from either the hospital district (Sub-study III) or the city administration (Sub-studies I and IV). Permission to use validated instruments (BSS-R and DigiFCC-P) was obtained from their original developers.

All Sub-studies were conducted in accordance with good scientific protocol (TENK 2023) and the Declaration of Helsinki. Data was collected and stored in accordance with the EU General Data Protection Regulation (GDPR, EU Regulation 2016/679) and the Data Protection Act (1050/2018). The data collected in Sub-studies III and IV was stored using REDCap software on the University of Turku server, which was password protected and accessible only to members of the research team.

All participants received written and verbal information about study participation and had the opportunity to contact the researchers for further questions before consenting to participate. Written informed consent was obtained prior to participation either on paper (Sub-studies III and IV) or online (Sub-study I). Participation was voluntary and participants were able to withdraw at any time without any impact on their care. Data was collected on mothers' perceptions of the care they were receiving, so it was important that mothers were able to share their honest perceptions without it affecting their care. To ensure privacy, mothers returned their questionnaires in sealed envelopes (Sub-studies III and IV) or completed an electronic survey (Sub-study I) to which only the researchers had access. All results were reported without the possibility of identifying the participant.

An important ethical aspect of this study relates to breastfeeding itself, which is a sensitive topic that evokes a variety of emotions. Mothers may feel guilty if they do not breastfeed, so the questionnaires developed for this study were designed to be as neutral as possible to avoid feelings of guilt or pressure to breastfeed. Because childbirth is a major life event with a strong emotional impact, mothers were recruited one to two days after delivery (Sub-studies I and III) or after hospital discharge (Sub-study IV) to avoid additional stress.

# 5 Results

## 5.1 Maternal perspectives on breastfeeding support in a non-Baby-Friendly hospital (Sub-study I)

This section describes the reported incidence of early SSC and breastfeeding initiation, barriers to these practices, and factors associated with early breastfeeding initiation. Furthermore, this section describes maternal perceptions regarding breastfeeding support and the association between quality of care and maternal factors with breastfeeding exclusivity.

### 5.1.1 Incidence of early SSC and initiation of breastfeeding

The majority of mothers had early SSC (90.4%, n=141) and early initiation of breastfeeding (75.6%, n=118) (Table 4). Mothers who underwent a caesarean delivery reported less early SSC (OR 10.73, 95% CI 3.34, 34.43, p<.0001) and initiation of breastfeeding (OR 9.72, 95% CI 4.06, 23.27, p<.0001) than those who had a vaginal delivery. Similarly, mothers who received post-caesarean care in the non-family post-operative unit reported less early SSC (OR 24.0, 95% CI 2.48, 232.03, p=0.006) and early initiation of breastfeeding (OR 9.3, 95% CI 1.6, 54.8, p=0.014) than those who received post-caesarean care in the family unit. Primiparous mothers (OR 0.39, 95% CI 0.17, 0.91, p=0.03) and mothers who did not have early SSC with their infant (OR 68.25, 95% CI 8.56, 543.99, p<.0001) were less likely than others to report early breastfeeding initiation.

A total of 35 mothers reported barriers to early SSC and breastfeeding initiation. The most commonly reported barriers were the infant's admission to the NICU (25.7%, n = 9) and the mother's need for a postnatal operation (20.0%, n=7) (Table 3).

**Table 3.** Barriers to early SSC and initiation of breastfeeding reported by mothers (n=35).

Barrier	n (%)
Infant's admission to NICU	9 (25.7)
Mother's postpartum operation	7 (20.0)
Hospital policy (infant not allowed to be in the post-op unit with mother)	6 (17.1)
Mother related reasons (e.g., mother was unwell)	7 (20.0)
Others (e.g., mother did not receive support or encouragement from healthcare professionals)	6 (17.1)

### 5.1.2 Breastfeeding support in postnatal wards

Half of mothers (50.0%, n=76) reported that support for breastfeeding in the postnatal units was inadequate (Table 4). A total of 65 mothers described their needs for breastfeeding support in the postnatal units. Needs were synthesized into three main categories: 1) practical breastfeeding support, 2) quality of breastfeeding support, and 3) supplemental infant feeding.

#### Practical breastfeeding support

Mothers needed more practical support to learn breastfeeding techniques, such as different breastfeeding positions. For many, there was a need for better support to help the infant latch on to the breast. Some were encouraged to use a nipple shield but longed for better guidance on how to use and wean from it. In particular, mothers whose infants had been transferred from the NICU to the postnatal unit wanted more practical support in establishing breastfeeding. Mothers wished they had been given guidance on how to increase their milk supply. Some felt that milk hand expression was recommended, but it was unclear to them why and how hand expression should be done.

*“I needed more support with the breastfeeding position, the latching of the baby, and the uncertainty of whether the baby was getting any milk from the breast.”*

Primipara, age 31, exclusively breastfeeding

#### Quality of breastfeeding support

Mothers noticed a lot of variability in the support they received, depending on who was guiding them, and wanted more consistent support for breastfeeding. Many received conflicting information about how much milk was enough or how much supplemental milk to give if needed. Conflicting advice from healthcare professionals created confusion and uncertainty. Mothers wanted proactive support without having to ask for it. Many felt that support depended on their initiative, which was particularly problematic for first-time mothers who did not know what to ask for. Mothers needed more one-on-one time and support but felt that healthcare professionals were too busy to meet their needs. Mothers' views on milk supply or desire for partial breastfeeding were sometimes ignored.

*“I didn't get support automatically, only when I asked for it, and even then it was very rushed.”* Primipara, age 28, partially breastfeeding

## Supplemental infant feeding

Mothers wanted more information about when supplementation is needed and how to supplement without compromising exclusive breastfeeding. Many wished that the protocol for supplementation had been more detailed. Partial breastfeeding was an intended option for a few mothers, and they wanted to know more about how to introduce supplemental milk alongside breastfeeding. Some mothers also wanted a clearer plan for weaning off supplements if they wanted to breastfeed exclusively. Many were discharged without a plan for how to continue infant feeding at home, causing uncertainty in their infant's feeding.

*“I wanted to know about the impact of supplemental milk given in the hospital on breastfeeding and information about how and when to wean from supplementation.”* Multipara, age 35, exclusively breastfeeding

### 5.1.3 Quality of care

The overall satisfaction with childbirth yielded a mean score of 2.8. The quality of family-centered care was rated with a mean score of 5.5, while mothers' satisfaction with postnatal care had a mean score of 6.8 (Table 4).

**Table 4.** Quality of care measured by the five quality indicators.

Quality measures	Mean (SD)
<b>Satisfaction with childbirth</b> Scale 0–4	2.8 (0.8)
<b>Quality of family-centered care</b> Scale 1–7	5.5 (1.2)
<b>Satisfaction with postnatal care</b> Scale 1–10	6.8 (2.9)
<b>Early initiation of breastfeeding (n, %)</b> Yes	118 (75.6)
<b>Mother received adequate breastfeeding support (n, %)</b> Yes	76 (50.0)

### 5.1.4 Factors associated with breastfeeding

Exclusive breastfeeding was practiced by 68% (n=100) of mothers. Delayed breastfeeding initiation, inadequate breastfeeding support, and poorer quality of family-centered care were associated with increased odds of non-exclusive breastfeeding. In addition, primiparity, lack of an exclusive breastfeeding plan, and lower parenting self-efficacy were associated with greater odds of non-exclusive breastfeeding (Table 5). Among these factors, the most significant predictor was the

combination of an exclusive breastfeeding plan and parenting self-efficacy. Mothers without an exclusive breastfeeding plan were more likely to practice non-exclusive breastfeeding compared to those with such a plan, while mothers with lower parenting self-efficacy were more likely to practice non-exclusive breastfeeding compared to those with higher parenting self-efficacy.

**Table 5.** Association between breastfeeding and quality of care measures and maternal factors (non-exclusive breastfeeding as the reference group).

<b>QUALITY OF CARE</b>	<b>Crude odds ratio (95% CI)</b>	<b>p-value</b>
Birth satisfaction (low vs. high) <sup>1</sup>	0.56 (0.28, 1.12)	0.10
Early BF initiation (no vs. yes)	2.20 (1.01, 4.82)	<b>0.05</b>
Mother received adequate BF support (no vs. yes)	2.05 (1.01, 4.16)	<b>0.05</b>
Mothers' perception of family-centered care (low quality FCC vs. high quality FCC) <sup>2</sup>	2.14 (1.05, 4.34)	<b>0.04</b>
Maternal satisfaction with postnatal care <sup>3</sup> (low vs high)	1.79 (0.89, 3.61)	0.10
<b>MATERNAL FACTOR</b>	<b>Crude odds ratio (95% CI)</b>	<b>p-value</b>
Maternal age ( $\leq 35$ vs. $> 35$ years)	1.19 (0.58, 2.44)	0.63
Parity (primipara vs. multipara)	2.94 (1.34, 6.43)	<b>&lt;.001</b>
Married/co-habiting (no vs. yes)	1.06 (0.19, 5.98)	0.95
Education (low vs. high) <sup>4</sup>	0.67 (0.25, 1.76)	0.41
Perceived economic status (good/very good vs. poor/very poor)	2.34 (0.86, 6.36)	0.10
Prenatal plan to exclusively breastfeed (no vs. yes)	6.44 (2.91, 14.24)	<b>&lt;.0001</b>
Labor onset (spontaneous vs. induced)	1.05 (0.51, 2.17)	0.89
Type of birth (vaginal vs. CS)	1.38 (0.59, 3.21)	0.46
Length of hospital postnatal stay ( $< 2$ vs $\geq 2$ days)	2.19 (0.59, 8.13)	0.24
Parenting self-efficacy (low vs. high) <sup>5</sup>	4.98 (2.36, 10.51)	<b>&lt;.0001</b>

<sup>1</sup> Birth satisfaction scale-revised (BSS-R) score ( $<$  median vs.  $\geq$  median)

<sup>2</sup> Family-centered care (FCC) score ( $<$  median vs.  $\geq$  median)

<sup>3</sup> Scale 1–10, higher scores indicate a higher level of satisfaction ( $<$  median vs.  $\geq$  median)

<sup>4</sup> No university degree vs. university degree

<sup>5</sup> Self-assessed parenting self-efficacy (PSE) score ( $<$  median vs.  $\geq$  median)

CS Caesarean delivery

BF Breastfeeding

## 5.2 Improving breastfeeding support through the BFHI (Sub-studies II–IV)

This section describes maternal perceptions of breastfeeding support in Baby-Friendly hospitals, the impact of the implementation of BFHI on breastfeeding support, and the differences in breastfeeding support between Baby-Friendly and non-Baby-Friendly hospitals.

## 5.2.1 Maternal perceptions and experiences

Based on the findings of the integrative literature review (Sub-study II), maternal perceptions of breastfeeding support in Baby-Friendly hospitals were examined primarily by the hospital's adherence to Ten Steps practices from a maternal perspective. The findings were sorted into six categories: 1) mothers provided with breastfeeding information, 2) early but interrupted skin-to-skin contact and initiation of breastfeeding, 3) varying practical support for breastfeeding, 4) avoiding unnecessary supplementary feeding and pacifier use, 5) rooming-in and encouraging breastfeeding on demand, and 6) continuity of support following hospital discharge.

**Breastfeeding information** was often provided to mothers (Chien et al., 2007; Ducharme-Smith et al., 2022; Hawkins et al., 2014; Marinelli et al., 2019; Souza et al., 2011). Written breastfeeding policies were often available (Chien et al., 2007; Mosher et al., 2016) and the importance of breastfeeding was communicated by hospital healthcare professionals (Chien et al., 2007; Mosher et al., 2016). Qualitative findings showed that breastfeeding support and information helped mothers feel confident about breastfeeding and responding to infant needs (Byrom et al., 2020). However, another qualitative study discovered that some mothers felt that breastfeeding information often only focused on the positive aspects of breastfeeding and did not adequately address breastfeeding challenges, such as breastfeeding an infant with jaundice, in advance (Chu et al., 2019).

**Early SSC** (Abolyan 2006; Brodribb et al., 2013; Marinelli et al., 2019; Souza et al., 2011; Spaeth et al., 2017; Zakarija-Grkovic et al., 2018) and **early initiation of breastfeeding** within one hour after birth were common practices in hospitals (Brodribb et al., 2013; Ducharme-Smith et al., 2022; Hawkins et al., 2014; Spaeth et al., 2017). However, early SSC was often interrupted, lasting only half an hour (Abolyan 2006; Souza et al., 2011; Sampaio et al., 2016; Zakarija-Grkovic et al., 2018).

**Practical support for breastfeeding**, such as help with infant's latching and expressions of wanting milk, was often provided to mothers (Abolyan, 2006; Chien et al., 2007; Ducharme-Smith et al., 2022; Hawkins et al., 2014; Marinelli et al., 2019; Souza et al., 2011; Spaeth et al., 2018; Zakarija-Grkovic et al., 2018). Mothers who exclusively breastfed perceived more support for breastfeeding than those who supplemented (Lewkowitz et al., 2019). While some mothers perceived adequate support for breastfeeding problems (Marinelli et al., 2019), a qualitative study found that mothers felt left alone with breastfeeding difficulties such as latch problems or perceived insufficient milk supply (Miller et al., 2018).

**Use of supplemental milk** (Abolyan 2006; Brodribb et al., 2013; Hawkins et al., 2014; Jung et al., 2019; Marinelli et al., 2019; Spaeth et al., 2017; Souza et al., 2011) and **pacifier use** (Abolyan 2006; Hawkins et al., 2014; Souza et al., 2011; Spaeth et al., 2018; Zakarija-Grkovic et al., 2018) were not common practices according to mothers. In the case of supplementation, almost all mothers received an explanation

of why their infant needed supplementation (Zakarija-Grkovic et al., 2018). However, findings from a qualitative study showed that mothers were not educated about the risks associated with supplementation and pacifiers were provided by healthcare professionals at mothers' requests. African American mothers also felt that steps 6 and 9 were not aligned with their cultural beliefs on infant care. They expressed a preference for feeding their infants with formula, using a pacifier to ensure the infant's autonomy from the mother, and the involvement of other family members in the infant's care (Miller et al., 2018). Three studies reported mothers receiving a gift pack of infant formula from healthcare professionals (Hawkins et al., 2014; Jung et al., 2019; Mosher et al., 2016).

**Rooming-in** (Abolyan 2006; Brodribb et al., 2013; Hawkins et al., 2014; Spaeth et al., 2017; Souza et al., 2011; Zakarija-Grkovic et al., 2018) and encouragement to **breastfeed the infant on demand** (Chien et al., 2007; Ducharme-Smith et al., 2022; Hawkins et al., 2014; Mosher et al., 2016; Souza et al., 2011; Spaeth et al., 2017) were common practices according to mothers. However, in one study, half of mothers received conflicting or no advice on how often to feed their infant (Zakarija-Grkovic et al., 2018). Mothers in a qualitative study reported receiving advice to schedule feeds based mainly on their infant's medical needs, such as low blood glucose levels (Miller et al., 2018).

**Continuity of support following hospital discharge** was often facilitated by providing mothers with a telephone number to call if they needed support with breastfeeding after discharge (Hawkins et al., 2014; Jung et al., 2019). Information about breastfeeding support groups was only provided to a minority of mothers (Chien et al., 2007; Mosher et al., 2016; Souza et al., 2011). Mothers who experienced breastfeeding challenges perceived that they were not adequately provided with contact information for postnatal community support after hospital discharge (Miller et al., 2018).

## 5.2.2 Impact of BFHI implementation

The implementation of BFHI in the study hospital improved breastfeeding support from a maternal perspective (Sub-Study III). The mothers in the posttest group (median 6.1, IQR 5.4–6.4) reported breastfeeding support to be more compliant with BFHI standards (Ten Steps) compared to mothers in the pretest group (median 5.0, IQR 4.2–5.8) ( $p < 0.001$ ). The majority of the breastfeeding support practices improved after the hospital became Baby-Friendly (Table 6).

Breastfeeding support improved significantly for multiparous mothers (median 4.6 vs 6.0,  $p < 0.001$ ) after the implementation of BFHI. In the pretest group, multiparas perceived breastfeeding support less compliant with the Ten Steps ( $p = 0.016$ ), but this was not found in the posttest group ( $p = 0.685$ ) when adjusted for

confounding factors. Only a moderate improvement in breastfeeding support was observed for mothers who had a caesarean delivery (median 5.2 vs 5.9,  $p=0.381$ ) or preterm birth (gestational age < 37 weeks) (median 4.9 vs 4.7,  $p=0.818$ ).

**Table 6.** Maternal perceptions of breastfeeding support in pretest and posttest groups (modified from original publication III).

Support practice	Pretest group	Posttest group	p-value <sup>2)</sup>
	Median (IQR)	Median (IQR)	
<b>7-point Likert-scale items<sup>1)</sup></b>			
Baby was allowed to crawl to the breast after the birth	7 (6–7)	7 (6–7)	<b>0.02</b>
Closeness to the baby was encouraged	7 (6–7)	7 (6–7)	0.14
Personal wishes regarding breastfeeding were asked	4 (3–6)	7 (6–7)	<b>&lt;0.001</b>
Breastfeeding on demand was encouraged	6 (5–7)	7 (6–7)	<b>&lt;0.001</b>
Reasons for supplementary milk were explained	6 (4–7)	7 (4–7)	0.19
Correct latching was checked	7 (6–7)	7 (6–7)	0.06
Different breastfeeding positions were instructed	5 (2.5–7)	6 (4.5–7)	<b>&lt;0.001</b>
How to maintain and increase lactation were discussed	5 (3–6)	6 (5–7)	<b>&lt;0.001</b>
Signs of insufficient milk supply were discussed	5 (2–6)	7 (5–7)	<b>&lt;0.001</b>
Possible breastfeeding problems were discussed	5 (2–6)	6 (5–7)	<b>&lt;0.001</b>
Breast self-care and prevention of mastitis were discussed	5 (2–7)	6 (5–7)	<b>&lt;0.001</b>
Partner was taken into account	4 (2–6)	5 (3–6)	<b>0.002</b>
Benefits of breastfeeding were discussed	5 (3–6)	6 (5–7)	<b>&lt;0.001</b>
Breastfeeding support was professional	6 (5–7)	7 (6–7)	<b>&lt;0.001</b>
Breastfeeding support was congruent	6 (4–7)	6 (5–7)	<b>&lt;0.001</b>
<b>Dichotomous items<sup>3)</sup></b>			
	n (%) Yes	n (%) Yes	p-value <sup>4)</sup>
Early initiation of breastfeeding took place within 1.5 hours of birth	134 (82.7)	135 (83.3)	0.88
Milk hand expression was taught	60 (37.3)	121 (75.6)	<b>&lt;0.001</b>
Baby used a pacifier	42 (25.9)	31 (19.0)	0.14
Sources of post-discharge breastfeeding support were discussed	101 (62.7)	139 (87.4)	<b>&lt;0.001</b>
Information about breastfeeding support groups was provided	59 (37.1)	102 (65.0)	<b>&lt;0.001</b>

<sup>1)</sup> 1 = strongly disagree, 7 = strongly agree

<sup>2)</sup> Mann-Whitney U-test

<sup>3)</sup> Yes/No

<sup>4)</sup> Pearson's chi-square ( $X^2$ )



### 5.2.3 Breastfeeding support in Baby-Friendly versus non-Baby-Friendly hospitals

The integrative literature review (Sub-study II) identified a total of 11 studies with a comparative design (Abolyan 2006; Brodribb et al., 2013; Chien et al., 2007; Ducharme-Smith et al., 2022; Hawkins et al., 2014; Jung et al., 2019; Marinelli et al., 2019; Mosher et al., 2016; Ortiz et al., 2011; Spaeth et al., 2017; Zakarija-Grkovic et al., 2018) that reported on differences in mothers' perceptions of breastfeeding support (hospital's compliance with the Ten Steps practices) between Baby-Friendly hospitals and non-Baby-Friendly hospitals. The main finding was that mothers in Baby-Friendly hospitals reported breastfeeding support that was more compliant to the Ten Steps than mothers in non-Baby-Friendly hospitals although the differences were not always substantial. In particular, mothers in Baby-Friendly hospitals reported better compliance with steps 6 (exclusive breastfeeding) and 9 (avoidance of pacifiers and bottles). Most mothers (82.5%, n=66) in a Baby-Friendly hospital perceived adequate breastfeeding support (Sub-study IV), while in a non-BFHI hospital only half (50.0%, n=76) of mothers perceived adequate breastfeeding support (Sub-study I).

## 5.3 Breastfeeding after hospital discharge (Sub-study IV)

This section describes the continuation of breastfeeding after hospital discharge from a Baby-Friendly hospital in terms of the exclusive breastfeeding, breastfeeding difficulties, and breastfeeding support.

### 5.3.1 Rate of exclusive breastfeeding

Following discharge from a Baby-Friendly hospital, 81% (n=65) of mothers exclusively breastfed their infants (Sub-study IV). Non-exclusive breastfeeding was associated with in-hospital supplementation, with mothers whose infants received supplemental milk in the hospital being more likely to engage in non-exclusive breastfeeding compared to those whose infants did not receive supplements (adjusted odds ratio [aOR] 16.5, 95% CI 1.7, 156.7, p=0.015). During their hospital stay, 53% (n=42) of infants received supplemental milk (human donor milk or infant formula). Reasons for supplementation as reported by mothers (n=41) included medically indicated reasons (44%, n=18), perceived inadequate milk supply (41%, n=17), and other reasons (15%, n=6) (pain, maternal request, or fussy infant).

### 5.3.2 Breastfeeding difficulties

After hospital discharge, 39% (n=31) of mothers experienced breastfeeding difficulties, with 29 describing them. Such difficulties included insufficient or

excessive milk (52%, n=15), difficulty finding comfortable breastfeeding positions (38%, n=11), improper infant latching or sucking (31%, n=9), concerns about initiation or discontinuation of supplementation (14%, n=4), and pain during breastfeeding (10%, n=3). The odds of experiencing breastfeeding difficulties were higher for primiparous women (aOR 3.41, 95% CI 1.2, 9.8, p=0.023). Maternal perception of adequate postnatal breastfeeding support in the maternity hospital was associated with decreased odds of breastfeeding difficulties after hospital discharge (aOR 0.16, 95% CI 0.03, 0.8, p=0.026).

### 5.3.3 Breastfeeding support

Half of mothers (51%, n=40) received breastfeeding support within the first week following hospital discharge, with the majority (83%, n=33) deeming the support they received as adequate. The primary source of this support was from healthcare professionals, including PHNs at child health clinics and healthcare professionals at lactation clinics, with the majority of mothers 86% (n=33) reporting these as their sources of support during the first week. Regarding preferences for breastfeeding support, half of mothers (50%, n=39) found regularly scheduled visits to child health clinics to be adequate. However, the other half (50%, n=39) expressed a preference for more immediate support, either available 24/7 or the next business day. Additionally, face-to-face breastfeeding support was preferred (83%, n=66) over remote methods, such as online chat or telephone.

## 5.4 Summary of the results

Most mothers reported early skin-to-skin contact and initiation of breastfeeding, but these practices were less likely among those who underwent caesarean section or were first-time mothers. Many mothers perceived inadequate breastfeeding support in the postnatal units. Non-exclusive breastfeeding was associated with primiparity, the absence of an antenatal plan for exclusive breastfeeding, delayed breastfeeding initiation, insufficient breastfeeding support, lower quality of family-centered care, and reduced parenting self-efficacy. The literature indicated that mothers in Baby-Friendly hospitals perceive breastfeeding support to align well with the Ten Steps practices. Comparatively, mothers in Baby-Friendly hospitals reported breastfeeding support more consistent with the Ten Steps than those in non-Baby-Friendly hospitals. The implementation of BFHI improved breastfeeding support, especially for multiparous mothers. Exclusive breastfeeding was common among mothers, while non-exclusive breastfeeding was linked to in-hospital infant supplementation. The most frequent difficulties encountered by mothers involved milk supply and finding proper breastfeeding positions, with primiparity and perceived inadequate in-hospital support increasing the likelihood of these challenges. Healthcare

professionals were the main source of breastfeeding support in the initial days and weeks post-discharge, and mothers preferred more timely access to face-to-face support. A summary of the main results is presented in Table 7.

**Table 7.** Research questions and main results in brief.

Research question	Main results
1) How is breastfeeding supported in a non-Baby-Friendly hospital from a maternal perspective?	<p>Early skin-to-skin contact and early initiation of breastfeeding were reported by most mothers:</p> <ul style="list-style-type: none"> <li>• Caesarean delivery and primiparity were associated with decreased odds of experiencing early skin-to-skin contact and breastfeeding initiation.</li> </ul> <p>Mothers perceived inadequate breastfeeding support in postnatal units:</p> <ul style="list-style-type: none"> <li>• Mothers needed more practical, one-on-one breastfeeding support provided proactively and with greater consistency.</li> </ul> <p>Non-exclusive breastfeeding was associated with:</p> <ul style="list-style-type: none"> <li>• primiparity</li> <li>• lack of antenatal exclusive breastfeeding plan</li> <li>• delayed initiation of breastfeeding</li> <li>• inadequate breastfeeding support</li> <li>• lower quality of family-centered care</li> <li>• lower parenting self-efficacy.</li> </ul> <p>The most important factors associated with non-exclusive breastfeeding were a combination of the mother not having an antenatal plan for exclusive breastfeeding and lower parenting self-efficacy.</p>
2) How is breastfeeding supported in Baby-Friendly hospitals?	<p>The literature showed that mothers in Baby-Friendly hospitals perceive breastfeeding support that is well aligned with most Ten Steps practices. Implementation of BFHI improved breastfeeding support at the study hospital. Mothers found breastfeeding support more consistent with the Ten Steps after the implementation of BFHI than before.</p> <ul style="list-style-type: none"> <li>• Improvement was especially observed among multiparous mothers.</li> </ul> <p>When comparing breastfeeding support between Baby-Friendly and non-Baby-Friendly hospitals, mothers in Baby-Friendly hospitals perceived breastfeeding support that was more consistent with the Ten Steps than mothers in non-Baby-Friendly hospitals.</p> <ul style="list-style-type: none"> <li>• In particular, supplemental feeding and pacifier use were less common in Baby-Friendly hospitals.</li> </ul>
3) How is breastfeeding continued after discharge from a Baby-Friendly hospital?	<p>Exclusive breastfeeding was common among mothers.</p> <ul style="list-style-type: none"> <li>• Non-exclusive breastfeeding was associated with infants receiving in-hospital supplementation.</li> </ul> <p>The most common difficulties experienced by mothers were related to milk supply and finding good breastfeeding positions.</p> <ul style="list-style-type: none"> <li>• Primiparity and maternal perception of inadequate in-hospital breastfeeding support were associated with increased odds of experiencing difficulties.</li> </ul> <p>Breastfeeding support from healthcare professionals was the primary source of breastfeeding support during the initial days and weeks after hospital discharge.</p> <ul style="list-style-type: none"> <li>• More timely access to face-to-face breastfeeding support from healthcare professionals was preferred by mothers.</li> </ul>

## 5.5 Integration of maternal perceptions into the Ten Steps framework

The findings of the sub-studies were integrated into the Ten Steps framework (Figure 2) with the aim of including a maternal perspective and thereby aiming to increase maternal acceptability and satisfaction with the Ten Steps practices, as well as facilitate breastfeeding. This revision of the Ten Steps suggests modifications and areas of focus that require special attention to address the issues identified based on the findings of this study.

<b>Comply fully with the International Code of Marketing of Breast-Milk Substitutes and relevant World Health Assembly resolutions (step 1a)</b>	Ensure that formula gift packs are not given to mothers.
<b>Have a written infant feeding policy that is routinely communicated to staff and parents (step 1b)</b>	Evaluate the appropriateness of the infant feeding policies within diverse cultural and socioeconomic populations. Review the policies from a mother's point of view.
<b>Establish ongoing monitoring and data-management systems (step 1c)</b>	In addition to measuring adherence to Ten Steps practices, establish other quality indicators of breastfeeding support, such as maternal satisfaction with the support.
<b>Ensure that staff have sufficient knowledge, competence and skills to support breastfeeding (step 2)</b>	Train healthcare professionals to provide family-centered care that increases mothers' self-efficacy in feeding and caring for her infant also when the mother chooses to bottle feed. Ensure that healthcare professionals provide breastfeeding support that is consistent and not conflicting.
<b>Discuss the importance and management of breastfeeding with pregnant women and their families (step 3)</b>	Encourage and facilitate mothers' intentions to breastfeed exclusively.
<b>Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth (step 4)</b>	Ensure that early skin-to-skin contact and initiation of breastfeeding are also facilitated for mother-infant pairs after caesarean delivery, a mother's postpartum operation, or an infant's NICU admission.
<b>Support mothers to initiate and maintain breastfeeding and manage common difficulties (step 5)</b>	Provide mothers with practical breastfeeding support and reassurance, and access to proactive one-to-one breastfeeding support. Provide first-time mothers with enhanced support and guidance on how to manage breastfeeding difficulties.
<b>Do not provide breastfed newborns any food or fluids other than breast milk, unless medically indicated (step 6)</b>	Respond to nonmedical supplementation needs with enhanced breastfeeding support rather than supplementation. If supplementation is used, provide adequate breastfeeding support to maintain breastfeeding. Provide appropriate support and understanding for mothers who wish to supplement.
<b>Enable mothers and their infants to remain together and to practise rooming-in 24 hours a day (step 7)</b>	Provide family-centered care that builds parenting self-efficacy, especially for first-time mothers. Involve mothers' partners in breastfeeding support and other care provided.
<b>Support mothers to recognize and respond to their infants' cues for feeding (step 8)</b>	Promote mothers' parenting self-efficacy in recognizing infant feeding cues.
<b>Counsel mothers on the use and risks of feeding bottles, teats and pacifiers (step 9)</b>	Counsel mothers about the use and risks of nipple shields and how to wean from them. Ensure that mothers have adequate support for the infant's latch before introducing the nipple shield.
<b>Coordinate discharge so that parents and their infants have timely access to ongoing support and care (step 10)</b>	Provide mothers with a timely access to professional, face-to-face breastfeeding support during the days and weeks immediately after being discharged from hospital. Counsel mothers on how to continue feeding at home if the infant received supplementation in the hospital.

**Figure 2.** Suggestions for modifying the Ten Steps framework (right column).

# 6 Discussion

## 6.1 Discussion of the results

This study examined maternal perceptions of postnatal breastfeeding support provided by healthcare professionals and the impact of BFHI on breastfeeding support from the mothers' perspective. The study showed that breastfeeding support in the immediate and early postnatal period is of great importance when facilitating exclusive breastfeeding. Evidence-based breastfeeding support practices, such as early skin-to-skin contact and breastfeeding initiation, were common even in the non-Baby-Friendly hospital, but the breastfeeding support provided in addition to these practices did not meet mothers' needs and expectations. Breastfeeding difficulties and in-hospital supplementation were common. Early and adequate breastfeeding support along with family-centered care that promotes parenting self-efficacy was found to be important in promoting exclusive breastfeeding. Implementation of BFHI improved breastfeeding support from the mothers' perspective, although the differences between Baby-Friendly and non-Baby Friendly hospitals were not substantial. After hospital discharge, mothers received breastfeeding support mostly from healthcare professionals but preferred more timely access to face-to-face breastfeeding support from them. Maternal perceptions integrated into the Ten Steps indicate that the framework should be continually reviewed and further developed to better meet the needs of mothers.

### 6.1.1 Postnatal breastfeeding support in the non-Baby-Friendly hospital

Early SSC and initiation of breastfeeding were experienced by most mothers in the non-Baby-Friendly hospital. Mothers who had a caesarean delivery and primiparous mothers were less likely to experience these practices. Early initiation of breastfeeding is well implemented in Finnish maternity hospitals, but caesarean delivery and primiparity are known barriers (Hakala et al., 2017). According to a study conducted in Finnish maternity hospitals, the first breastfeeding started on average 41 minutes after birth and lasted 51 minutes for mothers who gave birth vaginally. In addition, mothers rated the early initiation of breastfeeding as a very

positive experience (Hakala et al., 2017). The absence of early initiation of breastfeeding has been linked to non-exclusive breastfeeding (Hakala et al., 2021), while interrupted skin-to-skin contact (SSC) has been associated with an increased likelihood of negative breastfeeding experiences during the early postnatal period (Nilsson et al., 2020).

The two most commonly reported barriers to early breastfeeding initiation were infants being admitted to the NICU and postpartum operations for mothers. Barriers related to hospital policies, such as not allowing the infant to accompany the mother to the postoperative unit, were also reported. This finding suggests that hospital policies and resources should be reviewed to better facilitate these evidence-based practices (Brimdyr et al., 2018). Today, more mothers are primiparous and have cesarean deliveries than in the past (Official Statistics of Finland 2023). Ensuring that hospital policies support early SSC and breastfeeding initiation for these specific groups of mothers is warranted.

Half of mothers reported inadequate breastfeeding support in postnatal units (Kortet et al., 2021; Malouf et al., 2019; Ellberg et al., 2010), and mothers who reported inadequate breastfeeding support were less likely to breastfeed exclusively (Hakala et al., 2021). The finding demonstrates the importance of addressing mothers' perceptions of adequate support, and this naturally requires that healthcare professionals have the resources to meet those needs. Mothers needed more concrete, one-on-one breastfeeding support that was proactive and more consistent (Malouf et al., 2019; McFadden et al., 2019; Schmied et al., 2011). Counseling on basic issues, such as positioning the infant at the breast and ensuring proper latching, was desired by mothers. Breastfeeding support was often described as inconsistent and dependent on the mother's initiative (McInnes & Chambers 2008; Schmied et al., 2011). Support and counseling were also needed when an infant received supplemental milk (Thomson et al., 2015). Mothers found the counseling on supplementation too general, leaving them uncertain about when and how to supplement. Considering that more than half of infants in Finland receive supplementation while in hospital (Ikonen et al., 2020), a significant proportion of mothers need counseling on supplementation. Healthcare professionals should respect a mother's infant feeding decisions and provide support for safe and responsive bottle-feeding, although it is important to discuss the risks associated with supplementation that may negatively impact exclusive breastfeeding (WHO 2018). In addition, appropriate support should be provided to mothers who wish to wean their infants off supplementation to facilitate exclusive breastfeeding. This is something that mothers found to be lacking. There is a need to educate healthcare professionals on how to help mothers safely discontinue supplementation, together with clearly communicated evidence-based recommendations and instructions.

Most mothers breastfed exclusively, although even more had planned to do so during pregnancy. The association between the antenatal breastfeeding plan and exclusive breastfeeding confirms the importance of step 3 (discuss the importance and management of breastfeeding with pregnant women and their families). A shorter intended duration of breastfeeding has also been identified as a factor associated with lower BSE (Nilsson et al., 2020). It is important to note that supporting and facilitating maternal intentions to breastfeed exclusively during the antenatal period are important to promoting breastfeeding (Rollins et al., 2016; de Jersey et al., 2017). Breastfeeding intentions may be associated with greater knowledge of nutritional recommendations and access to nutritional information during pregnancy and infancy. Breastfeeding intentions are therefore associated with better infant health outcomes, independent of whether mothers actually breastfeed. As a result, it is important to address the gap in maternal health literacy among mothers, rather than simply supporting mothers in their breastfeeding intentions (Raissian & Su 2018).

The negative association between primiparity and exclusive breastfeeding has also been reported in previous studies (e.g., Feenstra et al., 2018; Hackman et al., 2015). Primiparous mothers may typically have lower PSE (Salonen et al., 2009) or lower breastfeeding self-efficacy (BSE) (Nilsson et al., 2020) and require more in-hospital supplementation compared to multiparous mothers (Vidović Roguljić et al., 2023; Hackman et al., 2015; Chantry et al., 2014), which might be one explanation to this. Moreover, negative experiences during the week following birth have been identified as factors associated with lower BSE. Similarly, mothers who had a caesarean delivery showed a decrease in BSE from late pregnancy to the early postnatal period (Nilsson et al., 2020). This suggests that positive birth and breastfeeding experiences may contribute to mothers' self-efficacy, and similarly poor experiences may challenge their self-efficacy in feeding and caring for their infant. It is important to recognize the importance of a positive first breastfeeding experience (Nilsson et al., 2020; Bentley et al., 2017; Huang et al., 2019), and adequate breastfeeding support is particularly important during the first breastfeeding experience as it may influence the mother's subsequent breastfeeding (Nilsson et al., 2020; Barnes et al., 2021; Vidović Roguljić & Zakarija-Grković 2023; Koskinen et al., 2014). In particular, infant feeding practices established in a maternity hospital have a significant impact on subsequent infant feeding practices (Vidović Roguljić & Zakarija-Grković 2023). Longer breastfeeding duration and positive breastfeeding experiences with a first child are also associated with increased breastfeeding self-efficacy for subsequent breastfeeding among multiparous mothers (Koskinen et al., 2014).

It is unclear what the association is between PSE and exclusive breastfeeding; whether PSE contributes to breastfeeding or mothers with high PSE are more

motivated and prepared to breastfeed and manage common breastfeeding difficulties, thus leading to improved breastfeeding practices (Thomson & Dykes 2011). Steps 7 and 8, which facilitate maternal-infant bonding and maternal competence in reading infant cues (Pérez-Escamilla et al., 2023; Vidović Roguljić & Zakarija-Grković 2023) can be considered practices that have the potential to enhance mothers' PSE and reduce early cessation of breastfeeding due to perceived insufficient milk supply. Successful implementation of steps 7 and 8 can also be closely linked to the provision of FCC in postnatal units. High quality FCC may promote mothers' ability and self-efficacy to care for their infants, which may then facilitate breastfeeding success. For the first time, the DigiFCC instrument was used to measure FCC provision among mothers of term infants in postnatal units. The results showed that mothers who perceived higher quality FCC were more likely to exclusively breastfeed than those who perceived lower quality FCC. Previous studies have mainly been conducted in NICUs among mothers of preterm and sick infants. However, results have shown a positive association between FCC and infant weight gain, shorter hospital stays, lower readmission rates (Ding et al., 2019), lower levels of parental depression (Axelin et al., 2022; Ding et al., 2019), and higher levels of satisfaction (Ding et al., 2019).

The factors associated with exclusive breastfeeding suggest that breastfeeding support is not only about providing adequate breastfeeding support, but also the approach in which this support is provided to ease the transition to motherhood and help mothers build confidence early on (Kronborg et al., 2015). Focusing on the provision of FCC that promotes and facilitates mothers' PSE may be key to improving exclusive breastfeeding and overall transition to parenthood (Schmied & Bick 2014), especially among first-time mothers (Salonen et al., 2009).

### 6.1.2 Evidence from Baby-Friendly hospitals

The implementation of BFHI had a positive impact on breastfeeding support in the study hospital. This study was the first published and conducted in Finland on this topic. The results showed that implementation of BFHI improved mothers' perceptions on breastfeeding support in the hospital; the support was more in line with the Ten Steps practices after the implementation of BFHI compared to before. The posttest group was investigated only a few months after the hospital received the BFHI designation and therefore might have showed positive results. However, the study hospital renewed its BFHI designation in 2024 (Finnish Institute of Health and Welfare 2024), demonstrating good sustainability of the implementation.

Mothers in Baby-Friendly hospitals perceived high levels of compliance with steps 4 (early SSC and initiation of breastfeeding) and 5 (practical support for breastfeeding), although the results did not clearly address whether the support was



perceived as adequate to meet mothers' needs and expectations (Fallon et al., 2019). A larger proportion of mothers perceived adequate breastfeeding support in a Baby-Friendly hospital (82.5%, Sub-study IV) than in a non-Baby-Friendly hospital (50%, Sub-study I), and in-hospital supplementation was more often observed in non-Baby-Friendly hospitals than in Baby-Friendly hospitals (Sub-study II). However, in-hospital supplementation was also common in the Baby-Friendly hospital (Sub-study IV), including for non-medical reasons. Mothers who reported in-hospital supplementation were less likely to breastfeed exclusively than others (Ikonen et al., 2023; McCoy&Heggie 2020). This finding was concerning because the mothers had given birth in a Baby-Friendly hospital, raising questions about the sustainability of BFHI implementation. There is concern that non-medically indicated supplementation may substitute for adequate breastfeeding support in hospitals due to limited resources and short hospital stays (Mäkelä et al., 2024). This calls for more effort in terms of more structured, evidence-based recommendations and the ongoing education of healthcare professionals for situations when supplementation is necessary and when additional breastfeeding support is more appropriate (Hakala et al., 2021), including in Baby-Friendly hospitals (Mäkelä et al., 2024). Furthermore, there is a need to unify supplemental feeding criteria across maternity hospitals (Ikonen & Hakulinen 2019).

Most of the breastfeeding support practices improved after the implementation of BFHI. A significant improvement was observed in the practice of asking mothers about their wishes regarding breastfeeding. This emphasizes the significance of taking into account the individual preferences of mothers as a valuable foundation for breastfeeding support. It also demonstrates that while exclusive breastfeeding is the desired outcome, it does not disregard the mother as the autonomous decision-maker regarding feeding her infant. This positive result also contradicts the criticism of pressuring mothers to breastfeed, which is often associated with BFHI (Fallon et al., 2019). Interestingly, the practice related to asking how well the mother's partner was supported showed the least perceived fulfillment. There is evidence that social support from partners and other family members can have a positive impact on breastfeeding (Lok et al., 2017). How partners can be more involved in breastfeeding support during hospitalization needs further consideration.

Mothers perceived the study hospital to already be in good compliance with the Ten Steps prior to BFHI implementation. Some of the practices, such as early initiation of breastfeeding and rooming-in, were already part of the routine care before BFHI implementation and no significant improvement was observed for these (Mäkelä et al., 2022). Similarly, there were no differences between mothers who had a cesarean delivery and those who had a vaginal delivery. This indicates that both groups perceived equal support for breastfeeding before and after the implementation of BFHI. In settings where Ten Steps practices are integrated into

the provision of routine care, the differences between Baby-Friendly and non-Baby-Friendly hospitals may not be significant (Brodribb et al., 2013). Previous studies have demonstrated that maternity hospitals in Finland follow the Ten Steps practices even if the hospital is not BFHI designated (Hakala et al., 2021).

The implementation of BFHI improved multiparous mothers' perceptions of breastfeeding support. This is a novel and interesting finding. Healthcare professionals may prioritize breastfeeding support for primiparous mothers, assuming that multiparous mothers require less support due to their previous experience. This is important because parity does not necessarily correlate with a mother's needs for breastfeeding support. The mother's previous breastfeeding experience may have been poor or even non-existent. This suggests that the implementation of BFHI enhances the consistency of support, providing high-quality support for all, regardless of parity.

The implementation of BFHI resulted in only moderate improvement for mothers of preterm infants in neonatal intensive units (NICUs). It is known that preterm birth and low Apgar scores at birth pose obstacles to the implementation of early skin-to-skin contact (SSC) and initiation of breastfeeding in maternity hospitals in Finland (Hakala et al., 2017; Niela-Vilén et al., 2016). In Finland, self-reported compliance with Neo-BFHI guidelines is at good level, especially in units located in a BFHI hospitals (Niela-Vilén et al., 2020). There were significantly fewer mothers participating from the NICU and therefore, the findings lack validity. It is also worth mentioning that the use of the same questionnaire for postnatal units and NICUs may have limitations. Perhaps some of the items could have been modified differently for mothers who participated from the NICU. A separate study may be necessary to address the impact of Neo-BFHI implementation and provide more accurate results of mothers' perceptions of breastfeeding support in NICU settings.

Results suggest that Baby-Friendly hospitals are more likely to adhere to the Ten Steps than non-Baby-Friendly hospitals (Thomsen et al., 2024; Maastrup et al., 2019; Alonso-Díaz et al., 2016), although differences between Baby-Friendly and non-Baby-Friendly hospitals were moderate for some of the steps (e.g., rooming-in and breastfeeding on demand). The implementation of BFHI may also affect non-Baby-Friendly hospitals in the same society, meaning that Ten Steps practices may become routine in these hospitals as well (Brodribb et al., 2013). However, some findings indicate that Baby-Friendly hospitals need regular monitoring after designation to ensure sustainable improvement in breastfeeding support practices in the long term. Sustainable implementation of the Ten Steps is a familiar struggle for many Baby-Friendly hospitals (Zakarija-Grkovic et al., 2018; WHO 2018). For example, compliance with the Code was compromised when mothers reported receiving breastmilk substitutes as gifts from healthcare professionals. Similarly, low

compliance with some of the Ten Steps practices (e.g., full implementation of step 4) indicates that continuous monitoring is in place.

This study did not report on the impact of BFHI implementation on breastfeeding rates in the study cohort, but this was reported in another publication; the implementation of BFHI did not have a significant impact on exclusive or any breastfeeding between the same pre and post cohorts (Mäkelä et al., 2023). This was somewhat expected as breastfeeding support practices in the study hospital and breastfeeding rates were already at a good level before implementation, leaving little room for improvement. However, the implementation did improve the attitudes of healthcare professionals towards breastfeeding, which is good news. In particular, the attitudes of physicians (pediatricians and obstetricians) were improved to be more favorable to breastfeeding and the differences between different units of the hospital were reduced (Mäkelä et al., 2022). Well-designed and unit-specific implementation plans were found to be important for successful implementation of the initiative. Furthermore, continuous education of healthcare professionals and monitoring of hospital practices and breastfeeding rates were considered helpful to maintaining Baby-Friendly status in the study hospital. (Mäkelä et al., 2024).

The exclusive breastfeeding rate was higher among mothers discharged from a Baby-Friendly hospital than among those discharged from a non-Baby-Friendly hospital. However, the comparison is only suggestive because mothers who gave birth in a non-Baby-Friendly hospital completed the questionnaire somewhat later in the postpartum period. Both rates were slightly higher compared to the rate of exclusive breastfeeding in Finland in general among mothers of infants under one month of age (57%) (Ikonen et al., 2020). This is probably because the data was collected soon after hospital discharge and the mothers were well educated and had planned to breastfeed for a long duration, which may indicate a positive attitude towards breastfeeding. Finding ways to include less educated mothers and those with less favorable attitudes toward breastfeeding in breastfeeding studies would provide more accurate knowledge about breastfeeding practices among these mothers.

Maternal perceptions of ensuring continuity of breastfeeding support after discharge in Baby-Friendly hospitals were reported in only a few studies, indicating that this aspect of support needs further research. The tenth step (Ten Steps), which emphasizes breastfeeding support beyond the hospital stay, is crucial for breastfeeding continuation (Pérez-Escamilla et al., 2016). However, based on the findings, there seems to be some variation in how this practice is reported in studies. This is probably due to the variety in how this step is implemented in Baby-Friendly hospitals worldwide. Studies mainly reported telephone support and the provision of information about breastfeeding support groups, but there was a lack of detail on how mothers perceived support at discharge.

### 6.1.3 Continuing breastfeeding after hospital discharge

The majority of mothers were exclusively breastfeeding after discharge from the Baby-Friendly hospital. However, many mothers reported common breastfeeding difficulties after hospital discharge such as insufficient milk supply or difficulties in finding good breastfeeding positions (Mäkelä et al., 2023; Gianni et al., 2019; Li et al., 2008). Primiparous mothers were more likely to report breastfeeding difficulties (Feenstra et al., 2018; Swanson & Hannula 2022; Hackman et al., 2015) whereas mothers who experienced adequate breastfeeding support in maternity hospital reported fewer breastfeeding difficulties after hospital discharge (Pérez-Escamilla et al., 2023; Li et al., 2008). Providing adequate breastfeeding support during the hospital stay may prevent some difficulties at home and thus reduce the need for supplemental feeding (Vidović Roguljić et al., 2023).

Most mothers received breastfeeding support from healthcare professionals, such as public health nurses working in child health clinics. Mothers preferred face-to-face breastfeeding support with a professional over digital options. Limited exposure to digital alternatives may also explain the preference for traditional face-to-face support. It is unclear how widely digitally facilitated and interactive formal breastfeeding support has been implemented in healthcare settings in Finland. In recent years, healthcare facilities have established websites (e.g., Healthvillage.fi, a public online service developed by Finnish university hospitals) that provide breastfeeding information, but other sources of support remain less well known and future research is needed to map their characteristics, coverage, and effectiveness. Digital alternatives to breastfeeding support can be a good option to provide timely support when face-to-face support is not possible, but it is important to ensure mothers' acceptance and satisfaction with them (Gavine et al., 2020).

Mothers were mostly satisfied with the breastfeeding support they received from healthcare professionals, but many preferred timelier access to support than what was offered through regular visits to child health clinics. Overall, parents in Finland have rated ante and postnatal care in maternal and child health clinics as satisfactory, and differences between clinics are minimal, although satisfaction with breastfeeding support was not the focus (Vuorenmaa et al., 2023). In addition to breastfeeding support from child health clinics, there are breastfeeding outpatient clinics in almost all maternity hospitals in Finland that provide specialized support for advanced breastfeeding problems. However, access to some of these clinics is limited to infants of a certain age, creating some inequalities between different regions of the country (Ikonen & Hakulinen 2019). Given that almost all mothers initiate breastfeeding in the hospital, but only 58% are exclusively breastfeeding one month postpartum, further attention is needed on how to improve breastfeeding support also at the community level.

The continued decrease in hospital stays after childbirth suggests a shift in breastfeeding support from the hospital to the home. This requires modification of the Baby-Friendly approach to support and promote breastfeeding in the home environment and at the community level of care. Perhaps implementation of the Baby-Friendly Community Initiative (BFCI) could be the next step to ensuring that evidence-based breastfeeding support is provided to mothers and families beyond hospital discharge. The BFCI is an extension of the BFHI, and in particular of step 10, to provide evidence-based support for breastfeeding in community-based healthcare settings. The BFCI outlines evidence-based breastfeeding support in seven steps that community health facilities are encouraged to implement to support and promote breastfeeding (Cattaneo et al., 2016). To date, coverage of BFCI, especially in high-income countries, remains low and there is only little research on its effectiveness (Walsh et al., 2023; Fallon et al., 2019). Wider introduction of the BFCI and assessment of its benefits on breastfeeding and non-breastfeeding outcomes, also in resource-rich settings, could be a focus for future clinical and research practice.

#### 6.1.4 Mother-friendly Ten Steps

The revision of the Ten Steps framework added a maternal perspective to postnatal breastfeeding support provided by healthcare professionals based on the findings of the four sub-studies. The revision emphasizes the importance of continuing to develop the framework in accordance with emerging new evidence. The revised framework introduces considerations to enhance the Ten Steps to better meet mothers' needs and improve exclusive breastfeeding. Perhaps one of the most important revisions relates to providing breastfeeding support not only as a means of providing information but through family-centered care that strengthens mothers' self-efficacy in parenting.

The revised Ten Steps represent the views of the population in this study. The study focused on examining postnatal breastfeeding support in a resource-rich setting where breastfeeding initiation and exclusive breastfeeding are the norm, but where maternal experience and satisfaction are garnering more interest. Most of the participants were Finnish-speaking, highly educated mothers who had a healthy term infant by vaginal childbirth. Maternal interests may be different in other cultural, socioeconomic, and obstetric settings, which means that revisions of the Ten Steps may look different in other populations. Some of the findings encourage discussion on the cultural appropriateness of BFHI, as breastfeeding practices and beliefs may vary across different cultural contexts (Bengough et al., 2022; Rehayem et al., 2020; Brown 2015). Cultural sensitivity is crucial when implementing the Ten Steps practices in different cultural settings to avoid conflicts with the norms of different

populations. For instance, some of the Ten Steps contradicted the perceptions of African American mothers regarding infant autonomy (Miller et al., 2018). The BFHI is a global health initiative and to ensure successful implementation across cultures, cultural sensitivity needs to be considered. This could involve engaging representatives of different cultural communities in the implementation process to assess and improve its cultural appropriateness for diverse communities. Further research is also necessary for the evaluation of this aspect.

## 6.2 Validity and reliability

In the following section, the strengths and limitations concerning the validity and reliability of the sub-studies are discussed.

### Data collection methods

Data in Sub-studies I, III, and IV was collected using self-reported questionnaires, which are subject to social desirability and memory bias (Althubaiti 2016). Memory bias was addressed by collecting data as early as possible in the postnatal period. The questionnaires were self-developed for each sub-study, although previous literature and evidence-based recommendations such as the Ten Steps guided the formulation of the questions. The data collection methods used in Sub-study I also included validated instruments, which increases the internal validity of the study. The validated instruments used in Sub-study I have demonstrated high internal consistency in previous studies (Hollins & Martin 2014; Axelin et al., 2020; Salonen et al., 2011). However, as their psychometric properties were not assessed in this study, their validity and reliability in this research context cannot yet be established.

In Sub-study I, early skin-to-skin contact and initiation of breastfeeding were not explicitly defined, which reduces the accuracy of the results for these outcomes. In the questionnaire, early initiation of breastfeeding referred to the period the mother was in the delivery/operating/postoperative room where care is provided within the first two hours after delivery. This means that it cannot be confirmed whether mothers started breastfeeding early, within the first hour, as recommended by WHO. The internal validity of Sub-study I is also challenged by the fact that mothers completed the survey at different points in the early postnatal period. However, examining breastfeeding support from the mother's perspective in all sub-studies is a strength, as the mother's perspective is critical in examining the quality of perinatal care (Perriman & Davis 2016; Lavender 2016).

The survey in Sub-study I was available in three languages, so non-Finnish speaking mothers could also participate. It is possible that immigrant mothers with insufficient knowledge of Finnish, Swedish or English were unintentionally

excluded. The questionnaires in Sub-studies III and IV were only in Finnish, which meant that mothers with insufficient Finnish language skills could not participate. This may reduce the external validity of the findings, as immigrant mothers are a growing population of mothers in Finland.

In Sub-study II, the selected search terms and databases may not have exhaustively covered all existing publications on the topic and may have excluded relevant data (e.g., non-English publications or unpublished dissertations). The validity of the results may have also been affected by the lack of a manual search. As a result, there is a risk that some relevant studies may have been missed, which may limit the comprehensiveness and robustness of the review's conclusions. However, the systematic search in five databases and the selection of studies by two reviewers contribute to the validity and reliability of the review. Two researchers independently reviewed the studies and assessed their quality, which helps to minimize subjective selection bias. The quality of the original studies was assessed by using the JBI criteria, which ensured methodological quality.

The original studies included in the literature review were mostly quantitative studies with a cross-sectional design, which limits the validity of their results. Results on hospitals' adherence to the Ten Steps are imprecise because there was some variation in the definition of each step across the included studies (e.g., definitions of early SSC and initiation of breastfeeding varied across studies and were not always well described). The descriptive analysis of differences between Baby-Friendly and non-Baby-Friendly hospitals also limits the validity of the results. Due to limitations such as heterogeneity of the original data, a more robust analysis method (meta-analysis) would not have been feasible.

The mothers were recruited by the healthcare professionals (midwives, PHNs) who provided them with care. This may have influenced some mothers' responses due to perceived influence on their care. It is also possible that healthcare professionals may have recruited only certain mothers, for example, not recruiting mothers with complications or additional challenges to avoid placing an additional burden on them. Mothers were asked to participate relatively soon after giving birth, which is a very emotional and physical life event. Thus, it is possible that if more time had passed, mothers would have the opportunity to reflect on their experience and thus respond differently. All of this may have contributed to at least a certain degree of bias (Althubaiti 2016).

## Samples

Convenience sampling was used in Sub-studies I, III, and IV, affecting reliability and validity (Polit & Beck 2016). Sample size was only determined based on power analysis in Sub-study I, and sample sizes for Sub-studies III and IV were based on

the objective of including a minimum 10% of the hospital's annual birth volume. This might have reduced the validity of results.

In Sub-study III, characteristics of mothers in pre- and posttest groups differed in delivery method and maternal education. The statistical power of the analysis was decreased due to the small size of some participant groups, such as mothers of preterm infants. This may affect the validity of the findings for these groups. A bigger sample size and a randomized controlled trial design with a control group would have increased the validity, but this was not feasible for practical and ethical reasons. However, the participating mothers represented the study population well with the exception of a lower cesarean delivery rate in the pretest group compared to the cesarean delivery rate in Finland in general (Official Statistics of Finland 2023).

In Sub-studies I and IV, the external validity is limited due to the small and biased samples. Particularly in Sub-study IV, the risk of a type II error is increased because of the small sample size (Grove & Burns 2012). In Sub-study IV, the participating mothers were well-educated and from a good economic background, which poses a risk to the generalizability of the results to other socioeconomic populations. It also needs to be considered that possibly only breastfeeding mothers or mothers with a positive breastfeeding attitude participated in Sub-studies I and III. In Sub-study IV, only breastfeeding mothers were included, excluding the views of non-breastfeeding mothers. In Sub-studies III and IV, mothers gave birth in a medium-size maternity hospital with BFHI designation, which limits the generalizability of the results to larger maternity hospitals and non-Baby-Friendly hospitals.



## 7 Practical Implications and Suggestions for Future Research

The results of this study have the following implications for clinical practice:

- Breastfeeding support in postnatal units should be given a higher priority. Support and facilitation from the organization's management is a prerequisite for improving breastfeeding support in clinical practice. Moreover, institutional barriers (e.g., lack of personnel, time constraints) must be addressed by management. Breastfeeding support should be improved to ensure that all mothers receive consistent, proactive, one-on-one breastfeeding support provided with a family-centered approach. Mothers who are partially breastfeeding need support with supplemental feeding and maintaining breastfeeding. The provision of FCC aimed at supporting mothers' self-efficacy to breastfeed should be emphasized in clinical practice.
- Mothers who go through cesarean delivery or complications during or after childbirth (e.g., postpartum operation or infant admission to NICU) need emphasized support for breastfeeding. It is necessary to ensure that early SSC, early initiation of breastfeeding and adequate breastfeeding support are facilitated and included for all mothers and infants, not just dyads having uncomplicated vaginal births at term. This is especially important as nowadays more infants are born via caesarean and it requires continuous monitoring, education of healthcare professionals and support from the organization's management. Protocols for facilitating early SSC and breastfeeding initiation should be standardized on a national level to ensure equal quality of care in different hospitals.
- National quality indicators for postnatal breastfeeding support in maternity care should be established and regularly monitored, with particular emphasis on the regular monitoring of mothers' perceptions of breastfeeding support.

- Maternity hospitals should consider implementing BFHI to improve breastfeeding support. With regard to the BFHI implementation process, internal and external evaluations of hospital practices should go beyond measuring adherence to the Ten Steps to include other measures, such as how well breastfeeding support is aligned with mothers' needs and expectations. To improve the sustainability of implementation, these measures should be measured and communicated on an ongoing basis (Mäkelä et al., 2024).

Future research work should focus on the following issues:

- In addition to measuring breastfeeding outcomes, non-breastfeeding outcomes such as mothers' satisfaction with infant feeding and breastfeeding support should be more frequently assessed in breastfeeding research.
- FCC has been studied and adopted mainly in the context of sick and preterm infants. However, the concept needs further clarification within the early postnatal care of mothers of healthy and term infants. Future studies should examine the impact of FCC on maternal and infant outcomes in this population.
- Participatory action research (PAR), or other co-design methods, could be valuable in developing new approaches to breastfeeding support. Co-design may be a good way to increase mothers' satisfaction with breastfeeding support and healthcare professionals' commitment to providing support.
- The appropriateness of the BFHI and its policies in diverse cultural and socioeconomic populations should be further researched and evaluated. Overall, it is important to find ways to include and involve mothers from vulnerable groups (e.g., minorities) in breastfeeding research.
- There is a need to further explore mothers' preferences and perceptions of digitally facilitated breastfeeding support after hospital discharge.

## 8 Conclusions

This study contributed to knowledge about mothers' perceptions of postnatal breastfeeding support and provided evidence on the impact of BFHI in providing breastfeeding support. The findings confirm that breastfeeding support in the immediate and early postnatal period is of great importance when considering breastfeeding outcomes. Breastfeeding support does not always meet mothers' needs and expectations. Breastfeeding support is not only about providing information and assistance when requested, but also building mothers' self-efficacy to breastfeed their infants. Greater emphasis on providing family-centered care that focuses on maternal needs, both informational and emotional, and on building mutual trust between healthcare professionals and mothers may be key to not only improving breastfeeding outcomes but also maternal satisfaction with the support. Maternal satisfaction with breastfeeding support itself should be considered an outcome and not just a mediator of successful breastfeeding. The results also confirmed what is already known: more emphasis needs to be placed on reaching first-time mothers and those who give birth by cesarean section to ensure equal opportunities to breastfeed. After discharge from hospital, breastfeeding support should focus on providing mothers with more timely face-to-face support to ensure higher maternal satisfaction.

Mothers perceived an improvement in postnatal breastfeeding support through the implementation of BFHI, confirming the importance of the initiative in providing evidence-based breastfeeding support. The implementation of BFHI can also be seen as an appropriate initiative to reduce gaps and inconsistencies in the provision of breastfeeding support among mothers with different characteristics such as parity. High levels of compliance with many of the Ten Steps in non-Baby-Friendly hospitals indicate that the steps are likely to be part of routine care in these hospitals as well, underscoring the positive impact of the initiative in fostering a culture of care that extends beyond Baby-Friendly designated hospitals in societies. This positive result should be seen as an important outcome of the initiative in shaping and improving postnatal breastfeeding support in maternity care. The initiative should continue to evolve with a stronger focus on maternal perceptions and satisfaction with breastfeeding support.

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Embraced with faith, hope, and love

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# Appendices

**Appendix 1.** Search terms used and the results (total/title/abstract) of database searches.

Search terms	PubMed	CINAHL	Cochrane reviews	Included
(breastfeed* OR "breast feed*" OR "infant feed*" OR "exclusive breastfeed*" OR "breastfeeding pract*" OR "lactation" OR "Breast Feeding"[Mesh]) AND ("postnatal support" OR "postpartum support" OR "professional support" OR "birth hospital" OR "maternity hospital" OR "hospital discharge")	753/134/85	491/110/72	207/10/8	39
("baby friendly hospital*" OR "baby-friendly hospital*" OR "baby-friendly hospital initiative" OR "BFHI" OR "ten steps to successful breastfeeding" OR "ten steps")	707/138/99	482/142/104	3/3/3	31





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