

A Typology of Breastfeeding Mothers of Preterm Infants: A Qualitative Analysis

Abstract

Background: Breastfeeding is an important element of motherhood with a preterm infant, but the role of maternal emotions in relation to breastfeeding is vague. **Purpose:** To describe maternal emotions and insights regarding breastfeeding during the first year after a preterm birth.

Methods: In total, 80 mothers of preterm infants (<35 gestational weeks) participated in this secondary analysis of a larger study. The data were collected with an open question at discharge and three, six and twelve months after the expected birth date and analyzed using thematic analysis.

Findings: A typology of breastfeeding mothers of preterm infants was created. The group of survivors wished to be breastfeeding mothers, but after some unexpected difficulties, they had to give up their dream. The disappointment alleviated with time, but some of the mothers still harbored self-accusations after a year. The high-fliers were mothers who succeeded in breastfeeding due to their own persistence. They described breastfeeding as enjoyable for both the mother and the infant. The pragmatist mothers breastfed because it was the general norm and a practical way to feed the infant; breastfeeding caused neither passion nor discomfort. The group of bottle feeding-oriented mothers expressed that breastfeeding did not interest them at any point. **Implications for Practice:** Being aware of the typology could help nurses and midwives carefully observe mothers' individual counselling needs. Mothers' wishes and decisions regarding breastfeeding need to be respected and supported without any judgment.

Implications for Research: The possibilities to tailor breastfeeding interventions based on the typology should be investigated.

Key Words Breastfeeding experience, breastfeeding support, human milk expression, qualitative methods, preterm infant

Background

Mothers of preterm infants are strongly encouraged in the neonatal intensive care unit (NICU) to express milk to provide it to the infant.¹ Mothers usually re-evaluate their breastfeeding goals after a preterm birth.² The experience of expressing milk is individual, and some mothers find it comfortable, whereas others feel pain and stress. Even mothers who dislike expressing may want to continue because they have faith in their milk being important to the infant.^{2,3} Mothers are most often motivated to supply milk due to the positive effect on infant growth and well-being.⁴ For mothers who plan to breastfeed, expressing milk is also crucial for initiating and maintaining the milk secretion and is therefore the first step toward direct breastfeeding. In Nordic European countries, including Finland, breastfeeding is primarily considered as feeding directly at the breast also concerning preterm infants.⁵

The initiation of breastfeeding in the NICU is challenging, and discharge from the hospital is another critical moment regarding the continuation of breastfeeding. Mothers want to ensure the growth of the infant and may prefer bottle feeding so they know milk intake.¹ Only a small portion of mothers of preterm infants use exclusive breastfeeding.^{6,7} The mothers of preterm infants encounter several breastfeeding problems, and they may feel exhausted, which has caused coping to be the central theme of their experiences.⁸ Mothers of late preterm infants have described breastfeeding complex: significant but difficult, positive bonding experience but challenging due to physical and medical struggles.^{9,10}

Skillful breastfeeding counseling and reinforcement of mothers' motivation by health care professionals is essential during the breastfeeding journey.^{11,12} Maintaining milk secretion for several weeks by using breast pumps and finally transferring to breastfeeding is such a complex process that only a portion of mothers can accomplish it successfully. Multiple factors are

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associated with breastfeeding success: the characteristics of the mother and the infant, the role of the father, the counseling and support provided, and the environmental issues in the NICU.^{13, 14,}

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Health care providers know that mothers are not equal, and similar counseling is not suitable for all mothers. Health care providers need to listen carefully to the mothers' intentions and goals regarding breastfeeding to guide their counseling, which must include concrete advice about how to manage different situations and how to overcome challenges. Individual and achievable goals for mothers are needed instead of presenting idealistic global recommendations of maintaining exclusive breastfeeding or breast milk supply for six months.¹⁶

The emotions of mothers of preterm infants regarding breastfeeding and the resolution of success or failure have not been studied across time. It is suggested that breastfeeding mothers display enhanced sensitivity compared with mothers who bottle feed during the first months¹⁷ and later in childhood.¹⁸ Some studies have also examined the maternal attitude or a plan to breastfeed or the breastfeeding goals of the mothers of preterm infants.^{6, 19, 20} In addition, mothers' experiences expressing milk for their preterm infants and breastfeeding have been investigated^{8, 21}, but maternal emotions around breastfeeding outcome have not been studied before. Understanding how mothers feel regarding breastfeeding a year after their preterm infant's birth would guide counseling by health care providers. Previous studies on the experiences of mothers of preterm infants emphasize the importance of human milk and breastfeeding. The time frames of the studies have mainly covered the hospital stay, and longer follow-ups are scarce.⁸ Focusing on the mothers' emotions after the hospital stay provides a new perspective from which to individually develop and tailor breastfeeding support. The purpose of this study was to describe maternal emotions and insights regarding breastfeeding during the first year after a preterm birth.

Methods

Design

This study was a secondary analysis of a larger study that evaluated the effectiveness of internet-based breastfeeding support for mothers of preterm infants; it was conducted at a level III NICU in Finland from 2011 to 2015. The intervention used in the larger study was based on peer support and was conducted on social media, and it had no effect on the duration of breastfeeding, which was the main outcome.^{1,6} Therefore, in this study, the data were analyzed as one entity and not divided into intervention and control group data.

Ethical considerations

A favorable statement from the Ethics Committee of the Hospital District of Southwest Finland and study permission from the study hospital were received. During recruitment, the mothers were provided both verbal and written information about the whole study, and written informed consent was obtained from the participating mothers.

Setting

This study was conducted in a level III NICU with 600 admissions per year. The recruitment was conducted between June 2011 and March 2014, and the follow-up continued until May 2015. The NICU has free visiting hours for parents. Mothers of preterm infants are encouraged to initiate milk expression during the first six hours postpartum and to continue pumping at least eight times per day¹. Hospital-grade breast pumps are available in the unit. The hospital also has a breast milk bank for processing and storing donor human milk. After hospital discharge, infants in Finland visit the child health clinic in the municipality of residence monthly, and breastfeeding support by public health nurses is an essential part of this care.

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Sample

The sample consisted of mothers who 1) gave birth before the full 35 gestational weeks and 2) spoke Finnish. The limit was set to 35 weeks to include only mothers whose infants were transferred to the NICU and not cared for in the maternity ward. The mother was excluded if her infant's condition was critical according to the neonatologist.

Recruitment

The participants were recruited by the researcher (the first author) or the trained midwives in the hospital one to seven days postpartum. The data were collected from the mothers at four time points: 1) at the infant's discharge from the NICU, 2) at the infant's corrected age of three and 3) at six months with written questionnaires, and 4) at the infant's corrected age of twelve months via a telephone interview.

Data collection

The first questionnaire was distributed in the hospital at the time of discharge and returned to the hospital or sent by mail in a prepaid envelope. The second and third questionnaires were mailed to the participants' home addresses with a prepaid envelope. At the last measurement point, the first author phoned the participants. Phone calls were conducted instead of questionnaires to diminish loss of participants. If the researcher could not reach the mother by telephone ($n = 22$), a short questionnaire was sent to her home address. Each questionnaire included an open question: What are your current emotions and thoughts about breastfeeding? The same question was asked in the telephone interview. During the telephone interview, the researcher wrote down the answers and expressions used by the mothers. The concept of breastfeeding referred to feeding directly at the breast; exclusive or partial breastfeeding were not separated. The answers to the open questions constituted the data of this study. In addition, maternal background data

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(age, parity)—collected at recruitment, and neonatal data—collected from patient records (gestational age, birth weight)—were used to describe the participants and their infants.

Data analysis

Inductive thematic analysis²² was used to analyze the data by two researchers. An inductive approach was used to openly find a new perspective of maternal emotions regarding breastfeeding. Breastfeeding was considered as a holistic phenomenon, but the feeding method (direct breastfeeding or bottle feeding) and the nutrient (human milk or formula) were differentiated in the analysis if these elements were distinguished in the data. The unit of analysis was the chain of answers a mother gave during the follow-up. The chain of the mother's answers was coded by the first author as a short story describing the mother's emotions and insights regarding breastfeeding from the infant's discharge until the infant's corrected age of one year. The second author became familiarized with the codes and the raw data and critically reviewed the codes. Based on the discussions, a consensus was reached. The codes (short stories) were internally consistent during the follow-up; that is, the content of each mother's answers was consistent. After several rounds of reading the data, the short stories were collated into sub-themes and themes, depending on the main emotions and insights that appeared in the data. Patterns of four different types of mothers were identified from the themes, and a typology of breastfeeding mothers of preterm infants was formed. Typology can be defined as a classification system dividing certain aspects of the world into different parts.²³ In this study, maternal emotions, insights and the resolution of feelings toward breastfeeding over time were used as the main patterns in classification.

Findings

Participants

In total, 425 mothers were eligible for the study during the data collection period. In addition to mothers excluded because they did not speak Finnish ($n = 18$) or whose infant's condition was critical ($n = 6$), 67 mothers declined to participate, and 210 mothers were missed due to the absence (e.g., holidays, sick leaves) of the researcher or the midwives assisting the data collection. Of those recruited ($n = 124$), 21 did not answer the open question used in this study or answered only once ($n = 23$), narrowing the final sample to 80 mothers and their 91 preterm infants (11 pairs of twins). The median age of the mothers was 31 years (range 21–46). Most of the participating mothers (70%) were primiparas. The infants' median gestational age (GA) was 32.9 weeks, ranging from 25.6 to 34.9 weeks (Table 1).

Thirty-five mothers responded the open question at every data collection point, 23 mothers responded in three data collection points, and 22 responded in two data collection points. All the mothers who answered the presented open question at least twice were included in the sample ($n = 80$). The length of a typical answer was 2–4 sentences, varying from two words to more than 100 words. In the created typology, the four different types of breastfeeding mothers of preterm infants were called survivors, high-fliers, pragmatists and bottle-feeding oriented (Table 2.)

Survivors

Most of the mothers (55%; $n = 44$) of preterm infants were classified as survivors, whose emotions toward breastfeeding were mostly negative. During their infant's hospital stay, the mothers had considerable expectations of breastfeeding as a feeding method, and they were excited and confident about successful breastfeeding. Quite soon, however, all the mothers had

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to relinquish their plans and dreams to be breastfeeding mothers. After some difficulties subsequent to their hospital discharge, they were unsuccessful in breastfeeding, which caused deep disappointment. The negative emotions were usually alleviated with time, and the mothers described how they dealt with their feelings and that after a year, their emotions had become stable and were described as neutral and mild.

I would have liked to breastfeed exclusively and for a long period. I feel bad because my milk supply stopped. (ID259 at 3 months: II para, GA at birth 28.6)

I was disappointed, but I am not traumatized because of it [unsuccessful breastfeeding]. If I start to think about it, I still feel bad, but otherwise, I don't think about it anymore. (ID266 at 12 months: II para, GA at birth 29.3)

In some cases, the mothers still harbored self-accusations for a long time—even after a year.

After retrospectively reflecting on their breastfeeding journey, they thought that they should have tried more and been more persistent. The mothers also identified failures in the counseling in the hospital, such as the restrictions on the number or length of breastfeeding sessions.

Despite a long time having passed, they still felt disappointed, and some mothers described feelings of guilt and shame or of even being a bad mother—as if an essential part of motherhood was missing. Some of these mothers yearned for a future possibility to breastfeed successfully.

I feel worse as a mom when compared with breastfeeding moms. I think that my baby was left out of something essential because of formula feeding. I still feel ashamed about formula feeding and even for buying formula milk. I feel bad explaining myself when other people ask why I don't breastfeed. I feel guilty because I didn't try enough and didn't research enough information about breastfeeding before my baby was born. (ID024 at 6 months: I para, GA at birth 33.6)

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I thought I'd breastfeed exclusively for 6 months; however, I left the plans until later in my pregnancy, but then I had a preterm birth. I feel a little bitter toward the nurses who restricted the duration of my breastfeeding sessions. (ID014 at 12 months: I para, GA at birth 32.0)

I feel bad ceasing breastfeeding. (at 3 months) – I am ok now because the baby is older and time has passed since ceasing breastfeeding. I still feel like missing something important. (at 6 months) – At first I was very disappointed; still I feel bad about it. Breastfeeding was important to me. (at 12 months) (ID222: I para, GA at birth 34.3)

It feels really bad because breastfeeding was unsuccessful for me. If I ever have another child, I hope I can breastfeed him successfully. (ID011 at 3 months: I para, GA at birth 33.7)

The survivors described three strategies for coping with the disappointment caused by unsuccessful breastfeeding. A mother providing her own expressed milk for the infant was the most common way to alleviate her negative emotions. Expressing milk proved that they were real mothers and able to feed their infants. The second coping strategy was arguing that the infant was, in fact, growing. Mothers described that the main issue was a healthy and growing baby, irrespective of the feeding method. The value of breastfeeding then decreased to the same level as any other feeding method. Third, physical closeness with the infant was emphasized over breastfeeding. The mothers described focusing on kangaroo care and holding the infant while bottle feeding. Added physical closeness ensured bonding and emotional intimacy, and breastfeeding was not needed for that.

I had thought to breastfeed more, but expressing and bottle feeding became our thing. When I used to express and the milk volume was sufficient, it was not more arduous than breastfeeding. (ID040 at 3 months: I para, GA at birth 30.4)

I had planned to breastfeed until my baby was one year old, but things don't always go as you plan. My little boy has grown well, despite being fed formula. He has been healthy as well. For

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the first two months, he only received my expressed milk, and I'm happy about that. I know I'm a good and loving mom, even though I'm not breastfeeding him. (ID269 at 6 months: I para, GA at birth 33.1)

I don't think about breastfeeding anymore; my baby receives food well with other methods.

Because breastfeeding didn't feel like our thing, we didn't continue to try but instead focused on closeness and being together. (ID253 at 3 months: I para, GA at birth 26.9)

High-fliers

The high-fliers were mothers (n = 18) who succeeded in breastfeeding. They described breastfeeding as enjoyable for both the mother and the infant because it was a private moment of intimacy between them. The mothers were proud of their successful breastfeeding and described it as wonderful and joyful. They described that their own persistence supported them through the difficulties when initiating breastfeeding. They had actively searched for solutions and support outside the health care setting. The result was definitely worth the struggle.

Breastfeeding is definitely one of the best things I have ever done. Both I and my baby enjoy and we will continue for a long time. (at 3 months) - Breastfeeding is wonderful. The longer we breastfeed, the more pleasant it becomes. There is a special bond between me and my baby because of breastfeeding, and I wouldn't change it for anything in the world. (at 6 months) – It still is very comfortable, the baby enjoys as well (at 12 months) (ID021: I para, GA at birth 34.6)

In the beginning, breastfeeding was really difficult, and the counseling was insufficient. I received support from my sister and via the internet. It was hard, but definitely worth it. (ID201 at 12 months: I para, GA at birth 31.7)

The mothers who had ceased breastfeeding before the infant turned one year old had positive and warm memories about breastfeeding. Although they enjoyed breastfeeding, ceasing was not

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a difficult decision. The mothers experienced weaning as a relief: they were no longer as tied down by the child.

It was an amazing period, but the cessation felt wonderful, too. (ID006 at 12 months: I para, GA at birth 34.4)

Some of these mothers were still breastfeeding a year after their due date, and even the thought of ceasing breastfeeding felt painful. Breastfeeding was experienced as easy, natural and important, and the mothers already felt sorrow when thinking about the time after weaning. Several of the mothers had no intention of ceasing at twelve months, but some of them had experienced some questions from outsiders.

I'm thinking about cessation, but I feel wistful. I'm trying to delay weaning. It feels like giving up my baby; the symbiosis will break. I think breastfeeding causes no harm and it is very easy.

Breastfeeding such a big baby in public feels inappropriate, but at home as a good-night ritual, it is okay. (ID205 at 12 months: III para, GA at birth 27.4)

Pragmatists

The pragmatists (n = 12) breastfed because it was the general norm and a practical way to feed the infant. They described breastfeeding as causing neither passion nor discomfort; it was simply convenient. Breastfeeding was seen as a natural way to feed an infant, and it was considered to be a choice: *You just need to decide to breastfeed.* (ID035 at 12 months: II para, vaginal birth h. 34.7). *Breastfeeding is a good and safe way to feed a child.* (ID242 at 6 months: II para, twins, GA at birth h. 34.4)

Many mothers justified their breastfeeding from the perspective of the infant. They described breastfeeding as important and useful for the infant; one mother emphasized allergy prevention.

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In addition, breastfeeding was considered to be an optimal feeding method, and it was continued for as long as it was considered profitable to the child. The pragmatists had positive memories about breastfeeding; they liked it and considered it to be much easier than expressing milk.

Breastfeeding is important because I have allergies. My firstborn has no allergies, and long breastfeeding probably protected her. With a preterm infant, expressing milk was really arduous, and I might have given up without understanding how breastmilk helps combat allergy development. (ID025 at 12 months: II para, GA at birth 29.7)

I continued breastfeeding as long as the babies needed it. (ID254 at 12 months: I para, twins, GA at birth 34.4)

Breastfeeding was comfortable and much easier than expressing milk. (ID239 at 12 months: I para, GA at birth 30.3)

Bottle-feeding oriented

A group of mothers (n = 6) was classified as bottle-feeding oriented. Unlike the other groups, these mothers preferred nutrient before the feeding method. The mothers described being disappointed with their breastfeeding experience. They had had high expectations, but in practice, breastfeeding turned out to be different. It felt overrated, as it did not feel as wonderful as they had thought in advance and was time-consuming. The mothers described that intimacy with the infant could be experienced without breastfeeding.

I thought it [breastfeeding] would have been easier or more natural. It was not as wonderful as what I had heard from others. It was not that important for me; for example, ceasing was not mentally difficult. (ID034 at 12 months: I para, GA at birth 33.0)

I think breastfeeding is overrated and time-consuming. I can feel just as close to my baby, whether I breastfeed or not. (ID260 at 3 months: I para, GA at birth 32.9)

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Breastfeeding was difficult, and the mothers had negative emotions toward it; ceasing breastfeeding was a relief. None of the mothers in this group longed for breastfeeding after cessation. Bottle feeding was considered much easier than breastfeeding, and even the thought of public breastfeeding felt embarrassing. Some of the mothers in this group clearly expressed that breastfeeding did not interest them at all at any point. They did not have any emotions toward breastfeeding.

It is good that the phase is already over. (ID251 at 3 months: II para, GA at birth 32.9)

It is not quite my thing. It was easier to bottle feed. I did not breastfeed my firstborn for any longer than a couple of weeks. (ID234 at 12 months: II para, GA at birth 31.3)

Discussion

The breastfeeding journeys of the mothers of preterm infants were followed from each infant's hospital discharge until the infant's corrected age of one year, and a typology of breastfeeding mothers was created. The majority of the women experienced disappointment in their breastfeeding experiences, and as a result, became survivors using different coping methods. The second group of successfully breastfeeding mothers was named high-fliers; this group cherished breastfeeding. The pragmatists breastfed because it was convenient, reasonable and the general norm, but it did not create any strong feelings for them. The mothers in the bottle feeding-oriented group did not care about breastfeeding and considered it overrated.

Most of the participants in this study were classified as survivors, and they had to give up their dream of being a breastfeeding mother and, as a consequence, rebuild their personal image of motherhood. This is a major problem in neonatal care, as it is well-known that breastfeeding plays a major role in coping with a preterm birth and becoming the mother of a preterm infant.⁸

²⁴ It is notable that the bottle-feed group, the survivors and the high-fliers all described having

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difficulties breastfeeding in the hospital. The last group managed to solve their problems, usually with help and support from sources other than hospital staff. It is possible that these mothers had a more breastfeeding-favorable attitude, which strengthened their will to succeed and to persistently search for solutions. The maternal breastfeeding attitude seems to predict the duration of breastfeeding in both term²⁵ and preterm infants.⁶

Identifying all the different types of breastfeeding mothers directly in the NICU might not be possible, but being aware of the typology could help nurses and midwives carefully observe mothers' individual counselling needs.²⁶ By mapping mothers' personal breastfeeding goals,¹⁶ it may be possible to identify, for example, the pragmatist mothers, who want to breastfeed for allergy prevention. These mothers need different support compared to mothers who do not consider breastfeeding important or who do not have any plans for breastfeeding. It might also be possible to scan maternal breastfeeding attitudes during mothers' hospital stay to tailor breastfeeding support.^{6, 27}

The hospital stay of the preterm infants seemed to be one of the key factors directing the mothers' breastfeeding journeys. Many mothers described a lack of breastfeeding counseling or unjustified restrictions for breastfeeding, which they only managed to understand later, when the breastfeeding period was already over. The level and quality of professional breastfeeding support in the NICU seems to vary and even leads to new challenges instead of solutions.^{1, 26} Sometimes, there is a discrepancy between the nurses' knowledge and what they actually do concerning breastfeeding support.²⁸ The need for support and counseling should be emphasized during the infant's hospital stay because a mixture of emotions toward breastfeeding was common among almost all the mothers. It is notable that the nurses in the NICU have a significant role in the mothers' confidence in their ability to breastfeed.²⁸ Accepting a mother's

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decision is also extremely important; if a mother has decided to cease breastfeeding, her decision must be fully and consistently supported.²⁴ Both physical and emotional closeness should be enhanced in the NICU to support bonding between a mother and her preterm infant, regardless of whether breastfeeding was successful.²⁹

To increase the breastfeeding rates of preterm infants, more education for the staff members in NICUs is still needed.^{26, 28} The Baby-Friendly Hospital Initiation (BFHI) has been adapted in the neonatal units, and the principles of Neo-BFHI need to be spread to all NICUs to better support breastfeeding.³⁰ All staff members should have a basic knowledge of breastfeeding and how to support it. Furthermore, mothers would benefit from a breastfeeding specialist who is available when needed.²⁶ The continuum of breastfeeding support after discharge is essential in addition to during the hospital stay. The discharge plan should include adequate information about breastfeeding and continuous follow-ups by professionals with sufficient knowledge and skills in how to breastfeed preterm infants.^{30, 31}

In Finland, all infants regularly visit child health clinics, where a public health nurse is responsible for the follow-up and breastfeeding counseling.³² However, monthly visits are not enough if there are acute breastfeeding problems; therefore, professional and peer support via the telephone or internet should be available.¹ Many of the mothers wished for a future breastfeeding possibility. These expectations may increase pressure on a subsequent pregnancy, which is already a difficult decision.³³ A mother's personal breastfeeding history and future goals should be carefully mapped during the pregnancy to provide tailored support. It is also notable that mothers' previous experiences of breastfeeding might have had an influence on their breastfeeding emotions and, by implication, the typology. However, the majority (70%) of the participants were primiparas. In future studies, the previous experiences regarding breastfeeding

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or expressing milk and whether the mothers have experiences with preterm infants should be screened.

This study showed that unsuccessful breastfeeding is sometimes such a burdening experience that the mothers of preterm infants carry these unpleasant memories and even self-accusations for over a year. It is also possible to speculate that the nonchalance toward breastfeeding in the bottle feeding-oriented group might have been a protective measure to hide the disappointment of unsuccessful breastfeeding. Time served as a coping strategy for some of the mothers, but it did not help all of them.⁸ Some mothers enjoyed breastfeeding as an emotional bonding moment, and some considered the benefits breastfeeding had on the infant, meaning multiple types of information should be made available. A sensitive and empathic nurse or midwife is valuable to the mother and might even prevent long-lasting feelings of guilt. More research is needed to increase the understanding of this typology's meaning. In the future, it would be useful to develop an instrument with which to identify certain emotions mothers have to tailor breastfeeding counseling in the NICU.

This was the first study to our knowledge that explored the emotions and thoughts mothers of preterm infants have toward breastfeeding using a longitudinal design. A long follow-up enabled the observation of the continuum of mothers' emotions and insights and the creation of a typology. Based on the analysis, a clear picture of four different emotional journeys was revealed. Each type represented different insights and resolutions of feelings toward breastfeeding. Breastfeeding was considered as a holistic phenomenon aiming for a mutually satisfying experience, including and not differentiating the feeding method and the nutrient.³⁴ Based on this study, the direct breastfeeding was found to be very important aspect for mothers

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when feeding their preterm infants and the method could not be replaced with emphasizing the nutrient.

Strengths and limitations

Both the strengths and limitations of the study have been discussed through credibility, dependability and transferability.³⁵ The mothers' intention to breastfeed was not questioned prior to study participation, but mothers not interested in breastfeeding may have declined to participate in the study. In addition to selection bias, it is possible that the mothers provided socially acceptable responses. Data about the mothers' previous experiences of breastfeeding or milk expression were not collected. These possible experiences may have had an influence over current situation; however, less than a third of the participants (30%) had previous children. Two researchers performed the analysis, which enhanced the study's credibility, and representative quotes were used to illustrate the analysis. The researchers have, however, previous work experience as a midwife and as an NICU nurse, which inevitably had some influence on their perceptions of breastfeeding. The face validity with the mothers was not confirmed. Data saturation was reached, and all the mothers' answers fit the typology created.

The large sample and longitudinal design strengthened the dependability of the study because the mothers' stories were consistent during the follow-ups. Although some mothers responded only twice, their stories fit the typology. The phone interview did not seem to have any impact on the answers provided compared with the questionnaires; furthermore, the question presented to the mothers was similar at every data collection point. The transferability of the results is limited, as in all qualitative studies. The results, however, provide a new insight about the breastfeeding experiences of mothers of preterm infants.

Conclusions and implications for practice

The mothers' emotions and insights toward breastfeeding were stable during the first year after preterm birth; for example, the mothers repeated their negative or positive feelings during the follow up. As a result, creating a typology was justified. The typology may help the staff in the NICU understand the importance of individual counseling. Most of the mothers of preterm infants had to relinquish their dreams of being breastfeeding mothers and had to resort to different coping methods. Sometimes, unsuccessful breastfeeding caused strong and long-lasting feelings of disappointment and guilt, which were retained by the mothers for more than a year. Mothers' wishes need to be respected, and their decision about whether to breastfeed should be supported without any judgment. Providing multiple types of information and technical and material support based on a mother's individual breastfeeding goals and needs is essential for successfully breastfeeding of a preterm infant.

References

- 1 Niela-Vilén H, Axelin A, Melender HL, Salanterä S. Aiming to be a breastfeeding mother in a neonatal intensive care unit and at home: a thematic analysis of peer-support group discussion in social media. *Matern Child Nutr.* 2015;11(4):712–726.
- 2 Rossman B, Kratovil AL, Greene MM, Engström JL, Meier PP. “I have faith in my milk” The meaning of milk for mothers of very low birth weight infants hospitalized in the neonatal intensive care unit. *J Hum Lact.* 2013;29(3):359–365.
- 3 Hurst N, Engebretson J, Mahoney JS. Providing mother’s own milk in the context of the NICU: a paradoxical experience. *J Hum Lact.* 2013;29(3):366–373.
- 4 Alves E, Magano R, Amorim M, Nogueira C, Silva S. Factors influencing parent reports of facilitators and barriers to human milk supply in neonatal intensive care units. *J Hum Lact.* 2016;32(4):695–703.
- 5 National Program for Promoting Breastfeeding 2018–2022. Kansallinen imetyksen edistämisen toimintaohjelma vuosille 2018–2022. [in Finnish] National Institute for Health and Welfare. Available at: <http://www.julkari.fi/handle/10024/135535>
- 6 Niela-Vilén H, Axelin A, Melender HL, Löyttyniemi E, Salanterä S. Breastfeeding preterm infants – a randomized controlled trial of the effectiveness of an internet-based peer-support group. *J Adv Nurs.* 2016;72(10):2495–2507.

7 Wang Y, Briere CE, Xu W, Cong X. Factors affecting breastfeeding outcomes at six months in preterm infants. *J Hum Lact* 2018;doi: 10.1177/0890334418771307. [Epub ahead of print]

8 Ikonen R, Paavilainen E, Kaunonen M. Preterm infants' mothers' experiences with milk expression and breastfeeding: an integrative review. *Adv Neonatal Care*. 2015;15(6):394–406.

9 Dosani A, Hemraj J, Premji SS, Currie G, Reilly SM, Lodha AK, Young M, Hall M. Breastfeeding the late preterm infant: experiences of mothers and perceptions of public health nurses. *Int Breastfeed J*. 2017;12:23: doi: 10.1186/s13006-017-0114-0.

10 Kair LR, Flaherman VJ, Newby KA, Colaizy TT. The experience of breastfeeding the late preterm infant: a qualitative study. *Breastfeed Med* 2015;0(2):102–106.

11 Alves E, Rodrigues C, Fraga S, Barros H, Silva S. Parents' views on factors that help or hinder breast milk supply in neonatal care units: systematic review. *Arch Dis Child Fetal Neonatal Ed*. 2013;98(6):F511–F517.

12 Jones LR. Oral feeding readiness in the neonatal intensive care unit. *Neonatal Netw*. 2012;31(3):148–155.

13 Flacking R, Dykes F. 'Being in a womb' or 'playing musical chairs': the impact of place and space on infant feeding in NICUs. *BMC Pregnancy Childbirth*. 2013;13:179. doi: 10.1186/1471-2393-13-179

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- 14 Maastrup R, Hansen BM, Kronborg H, Bojesen SN, Hallum K, Frandsen A, Kyhnaeb A, Svarer I, Hallström I. Breastfeeding progression in preterm infants is influenced by factors in infants, mothers and clinical practice: the results of a national cohort study with high breastfeeding initiation rates. *PLoS One*. 2014;9(9):e108208. doi:10.1371/journal.pone.0108208
- 15 Denoual H, Dargentas M, Roudaut S, Balez R, Sizun J. Father's role in supporting breastfeeding of preterm infants in the neonatal intensive care unit: a qualitative study. *BMJ Open*. 2016;6:e010470. doi: 10.1136/bmjopen-2015-010470
- 16 Hoddinott P, Craig LCA, Britten J, McInnes RJ. A serial qualitative interview study of infant feeding experiences: idealism meets realism. *BMJ Open*. 2012;2(2):e000504. doi: 10.1136/bmjopen-2011-000504
- 17 Britton JR, Britton HL, Gronwaldt V. Breastfeeding, sensitivity, and attachment. *Pediatrics* 2006;118(5):e1436–e1443.
- 18 Weaver JM, Schofield TJ, Papp LM. Breastfeeding duration predicts greater maternal sensitivity over the next decade. *Dev Psychol* 2018;54(2):220–227.
- 19 Briere CE, McGrath J, Cong X, Brownell E, Cusson R. Direct-breastfeeding premature infants in the neonatal intensive care unit. *J Hum Lact* 2015;31(3):386–392.
- 20 Sisk PM, Lovelady CA, Dillard RG, Gruber KJ, O'Shea TM. Maternal and infant characteristic associated with human milk feeding in very low birth weight infants. *J Hum Lact* 2009;25(4):412–419.

- 21 Bower K, Burnette T, Lewis D, Wright C, Kavanagh K. “I had one job and that was to make milk”: Mothers’ experiences expressing milk for their very-low-birth-weight infants. *J Hum Lact* 2017;33(1):188–194.
- 22 Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychology*. 2006;3(2):77–101.
- 23 Patton M. *Qualitative evaluation and research methods*. 2nd edition. Beverly Hills, CA: Sage; 1990.
- 24 Swanson V, Nicol H, McInnes R, Cheyne H, Mactier H, Callander E. Developing maternal self-efficacy for feeding preterm babies in the neonatal unit. *Qual Health Res*. 2012;22(10):1369–1382.
- 25 Hannula LS, Kaunonen ME, Puukka PJ. A study to promote breast feeding in the Helsinki Metropolitan area in Finland. *Midwifery*. 2014;30(6):696–704.
- 26 Lucas R, Paquette R, Briere CE, McGrath JG. Furthering our understanding of the needs of mothers who are pumping breast milk for infants in the NICU: an integrative review. *Adv Neonatal Care*. 2014;14(4):241–251.
- 27 de la Mora A, Russell DW, Dungy CI, Losch M, Dusdieker L. The Iowa Infant Feeding Attitude Scale: analysis of reliability and validity. *J Appl Soc Psych* 1999;29(11):2362–2380.

A Typology of Bf Mothers

- 28 Shattnawi KK. Healthcare professionals' attitudes and practices in supporting and promoting the breastfeeding of preterm infants in NICUs. *Adv Neonatal Care*. 2017;17(5):390–399.
- 29 Flacking R, Lehtonen L, Thomson G, Axelin A, Ahlqvist S, Moran VH, Ewald U, Dykes F, Separation and Closeness Experiences in the Neonatal Environment (SCENE) group. *Acta Paediatr*. 2012;101(10):1032–1037.
- 30 Nyqvist KH, Häggkvist AP, Hansen MN, Kylberg E, Frandsen AL, Maastrup R, Ezeonodo A, Hannula L, Haiek LN. Expansion of the Baby-Friendly Hospital Initiative Ten Steps to Successful Breastfeeding into neonatal intensive care: expert group recommendations. *J Hum Lact*. 2013;29(3):300–309.
- 31 Barkemeyer BM. Discharge planning. *Pediatr Clin North Am*. 2015;62(2):545–556.
- 32 National Institute for Health and Welfare. *Handbook for child welfare clinics*; 2015. [in Finnish] Website: <https://www.thl.fi/fi/web/lastenneuvolakasikirja>
- 33 Funaba Y, Yokoo K, Ozawa M, Fujimoto S, Kido Y, Fukuhara R. Subsequent pregnancy after having a baby who was hospitalized in the NICU. *MCN Am J Matern Child Nurs*. 2014;39(5):306–312.
- 34 Flacking R, Ewald U, Nyqvist KH, Starrin B. Trustful bonds: a key to “becoming a mother” and to reciprocal breastfeeding. Stories of mothers of very preterm infants at a neonatal unit. *Soc Sci Med* 2006;62(1):70–80.

A Typology of Bf Mothers

35 Graneheim, UH, Lundman, B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Educ Today*, 2004;24(2):105–112.

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Table 1. Characteristics of participating mothers (n = 80) and their infants (n = 91)

Characteristic, mothers n = 80	Median / n	Range / %
Age, years Median (range)	31	21–46
Primiparas n (%)	56	70%
Married/cohabited n (%)	78	98%
Polytechnic/university level education n (%)	58	73%
Vaginal birth n (%)	38	48%
Multiple birth n (%)	11	14%
Duration of breastfeeding, months Median (range)	4.5	0–14
Duration of expressing milk, months Median (range)	4.0	1–11
Characteristic, infants n = 91		
Gestational age at birth Median (range)	32.9	25.6–34.9
Birth weight Median (range)	1895	580–3445
The length of hospital stay, days Median (range)	24	7–112

Table 2. Main themes and sub-themes of each type of breastfeeding mothers

Survivors	High-fliers
<p>Negative emotions associated with unsuccessful breastfeeding</p> <ul style="list-style-type: none"> • Major hopes and major disappointments • Disappointment and long-lasting self-accusations <p>Surviving the disappointment: Coping strategies</p> <ul style="list-style-type: none"> • Providing the mothers' own expressed milk • Ensuring that the baby is healthy and growing, regardless of the feeding method • Emphasizing physical closeness with the infant over breastfeeding 	<p>Enjoyable breastfeeding for both a mother and her baby</p> <ul style="list-style-type: none"> • Proud of successful breastfeeding • The mother's own persistence supported through the difficulties • Successful breastfeeding is worth the struggle. <p>Natural breastfeeding and sadness about weaning</p> <ul style="list-style-type: none"> • No intention to cease • Questioning by outsiders
Pragmatists	Bottle-feeding oriented
<p>Neither passion nor discomfort: convenient breastfeeding</p> <ul style="list-style-type: none"> • The general norm • Practical way to feed an infant <p>The infant's perspective is emphasized:</p> <ul style="list-style-type: none"> • Breastfeeding is beneficial for the child. • Breastfeeding is easier than bottle-feeding. 	<p>Disappointed with the breastfeeding experience</p> <ul style="list-style-type: none"> • Overrated and time-consuming • Ceasing breastfeeding is a relief <p>Bottle-feeding is easier than breastfeeding:</p> <ul style="list-style-type: none"> • Public breastfeeding is embarrassing. • No interest in breastfeeding