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The first breastfeeding session: studies on caregivers' support
and breastfeeding duration



LICENTIATE THESIS

Karin Cato

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Abstract

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It is well-known that the first breastfeeding session can be essential for breastfeeding duration. The hands-on approach given by health care professionals, where health care professionals touch the woman's breast and the baby in order to stimulate latch on and breastfeeding, has been described as awkward and disturbing.

The aim of this thesis was to increase knowledge on the first breastfeeding session postpartum, as to frequency and experience of the hands-on approach, and possible correlates of shorter breastfeeding duration.

Questionnaires were sent five days, six weeks and six months postpartum, including questions regarding breastfeeding initiation and duration. Eight hundred and fifty-four women and 679 women were included in Study I and Study II, respectively.

The prevalence of the hands-on approach was 38%. Women who received the hands-on approach were more likely to report a negative experience of the first breastfeeding session (Study I). Seventy-seven percent of the women reported exclusive breastfeeding at two months postpartum. Being a first time mother, reporting emotional distress during pregnancy and giving birth by cesarean section were factors independently associated with exclusive breastfeeding less than two months postpartum (Study II).

These results can help to develop clinical practice, in order to improve women's experience of the first breastfeeding session and identifying women in need of targeted, individualized support, to be able to promote longer exclusive breastfeeding duration.

Keywords: breastfeeding, breastfeeding duration, hands-on approach, cesarean section, pregnancy

Karin Cato, Uppsala University, Department of Women's and Children's Health, Obstetrics and Gynecology, Akademiska sjukhuset, SE-751 85 Uppsala, Sweden

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List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

- I Cato, K., Sylvén SM., Skalkidou A., Rubertsson C (2014) Experience of the first breastfeeding session in association with the use of the hands-on approach by healthcare professionals: a population based study. *Breastfeeding Medicine*, 9(6):294–300
- II Cato, K. Sylvén SM, Lindbäck J., Skalkidou A., Rubertsson C. (2015) Risk factors of exclusive breastfeeding less than two months – identifying women in need of targeted breastfeeding support. *Submitted*

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Abbreviations

BMI	Body Mass Index
CI	Confidence Interval
EBF	Exclusive breastfeeding
EDA	Epidural anesthesia
OR	Odds ratio
SLE	Stressful life event
SSC	Skin-to-skin care
WHO	World Health Organization

Introduction

Breastfeeding

Breastfeeding provides infants optimal nutrition and is associated with a reduction in risk for infections, a reduction in risk for sudden infant death syndrome and has several long-term health benefits for the child, for example reduced risk for diabetes type II and obesity (1–3). It also protects against childhood acute otitis media, with greater protection with longer breastfeeding duration(4).

Breastfeeding also provides health benefits for mothers, such as a reduction of risk for breast and ovarian cancer, and reducing the prevalence of diabetes type II (1,5), hypertension and cardiovascular diseases (6).

The World Health Organization (WHO) recommends exclusive breastfeeding (EBF) up to six months, with continued breastfeeding with additional food up to two years or beyond (7). These recommendations are also communicated by the National Board of Health and Welfare (Socialstyrelsen) and the Swedish National Food Agency (Livsmedelsverket) (8,9), and is therefore the recommendation healthcare givers should promote when meeting women and their partners soon to be parents, or families with small children. Exclusive breastfeeding is defined by the WHO as giving the infant only breast milk, without any additional food or drink, not even water, except for vitamins (7). However, the Swedish National Food Agency has also stated that parents may offer their infant minor bites of solid food from four months of age, although in such a small amount that it does not interfere with breastfeeding (9).

Breastfeeding initiation and caregiving routines

Skin-to-skin care (SSC) between mother and newborn has several benefits facilitating breastfeeding initiation (10,11). Previous research on clinical practice has come to the conclusion that the contact between the mother and child should be uninterrupted, skin-to-skin, during the first hours after birth until the first breastfeeding session has been accomplished. Furthermore, caregiving routines should be designed to enable uninterrupted SSC between mother and child (12,13). Researchers have earlier discovered, video-recording newborns, nine distinct infant behavioral phases observed as; birth cry, relaxation, awakening, activity, crawling, resting, familiarization, suckling and sleeping (13), including instinctive reflexes helping the baby to latch on spontaneously (13,14). Further, studies report that an early first breastfeeding session, within the first hour after birth, has been proven to have impact on maternal-infant attachment and breastfeeding duration (15–18).

To promote successful breastfeeding, every facility providing maternity services and care for newborn infants should help initiate breastfeeding within half an hour of birth (19). This is stated in the Ten steps to successful breastfeeding, developed by WHO and UNICEF (Box 1).

Nevertheless, initiating breastfeeding within the first hour after birth or avoidance of separation is not always practiced in clinic. For example, at the Uppsala University Hospital, all children being born by caesarean section are to be removed from the operating theatre and from the mother, shortly after birth, for measurement and assessment. If a midwife or nurse is not available to take responsibility for the newborn in the recovery ward, the baby will be separated from the mother and instead be cared for by her partner in the maternity ward. During the evening and at night, it is common that the mother will be separated from her baby for several hours. This management with separation might not only include women undergoing caesarean section but also women experiencing for example larger vaginal tears or retained placenta.

Box 1. WHO's Ten Steps to Successful Breastfeeding

1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
2. Train all health care staff in skills necessary to implement this policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding within half an hour of birth.
5. Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming-in – that is, allow mothers and infants to remain together – 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

Breastfeeding support

When offering breastfeeding support, structural observations of the breastfeeding sessions, documented in the women's and infants' medical records respectively, is a valuable method by health care providers. A structural breastfeeding observation may help assess if further individualized breastfeeding support and encouragement is needed (20,21). Self-confidence should be encouraged among mothers, in order for them to breastfeed independently after leaving hospital care (22). Level of breastfeeding self-efficacy, as a measure of breastfeeding confidence (23,24), is dependent on the first breastfeeding session postpartum, showing that an early initiation is associated with higher maternal self-efficacy (25). Maternal confidence and breastfeeding self-efficacy has also been associated with a longer duration of exclusive breastfeeding (26). Supporting the mother's own ability to breastfeed through encouragement, oral information and demonstration on how to latch on seems to give a positive experience for the breastfeeding mothers and enable them to breastfeed for a longer period of time (27–29).

On the contrary, health care professionals may force the baby to the breast and initiate breastfeeding using their hands touching the woman's breast and the baby, named as the hands-on approach or hands-on breastfeeding support. The hands-on approach has been explored in qualitative research (30), and mothers have described this method of breastfeeding support as disrespectful, physically intrusive, distressing, embarrassing and as causing feelings of objectification (31,32). Although the hands-on approach is described in several studies as an act possibly to be experienced as distressing by the mothers, clinical practice tells us that it might be commonly used.

Knowledge of mothers' experience of breastfeeding support is crucial in assessing the optimal way for physicians, midwives and nurses to guide women to successful breastfeeding. Help with an optimal positioning and information about the infants' behavior by the breast is important in supporting successful breastfeeding and preventing breastfeeding problems (21).

Breastfeeding duration

Several of the benefits from breastfeeding for both mother and child are strengthened by longer breastfeeding duration and exclusive breastfeeding (4,33), hence the recommendations on EBF for the first six months. Most mothers in Sweden initiate breastfeeding after birth, but the breastfeeding rates are declining in the following months. In Sweden, breastfeeding rates for EBF at two months were 74,6 % in 2006, while the numbers had declined to 65,8 % in 2013 (8).

Breastfeeding, and the duration of breastfeeding in particular, are shown to be negatively affected by socio-demographic variables such as low maternal educational level and smoking pre-pregnancy or during pregnancy (34,35). Women with a history of depression (36) or experiencing postpartum depression (37) more often report shorter breastfeeding duration. Obesity (38) and obstetric variables such as caesarean section (36) are also influencing breastfeeding rates negatively.

On the other hand, health care practices that promote breastfeeding, including for example early breastfeeding initiation and rooming-in, have positive effects on breastfeeding duration (39). Among mothers, positive breastfeeding attitudes and breastfeeding self-efficacy contributes to longer breastfeeding duration (26,40). The role of the partner has been investigated in studies, reporting that a supportive partner contributes to longer breastfeeding duration (41,42). This highlights the importance of partners being included in the care of women during pregnancy and postpartum.

Rationale

Studies report that the hands-on approach is described to be disrespectful, distressing and harmful. Other studies highlight that the first breastfeeding session may be crucial for continuous breastfeeding. There is, to our knowledge, no study investigating the prevalence of the hands-on approach during the first breastfeeding session and its possible associations with the mothers' experience of the first breastfeeding session.

Investigating the breastfeeding duration, possibly identifying risk factors, is important. Breastfeeding duration is explored in many studies, although not in this setting. Increasing the knowledge on breastfeeding duration may lead to revisions of routines and guidelines in order to offer women the best evidence-based breastfeeding support. Since the Swedish National Food Agency states that parents may offer their babies minor parts of solid food from four months of age (9) it is essential to investigate EBF duration before that time, when there is no obvious reason for introducing other food or drinks.

Aims

Overall aim

The overall aim of this thesis was to increase knowledge of the first breastfeeding session postpartum, as to frequency and experience of the hands-on approach, and possible correlates of breastfeeding duration.

Specific aims

Study I

To investigate the prevalence of healthcare professionals' use of the hands-on approach during the first breastfeeding session postpartum and to investigate its correlates as well as its possible association with the mothers' experience of their first breastfeeding session.

Study II

To investigate factors possibly associated with EBF less than (<) two months postpartum.

Material and methods

Study Population

The studies were undertaken as part of the UPPSAT (Uppsala-Athens Project in Postnatal Depression) Study, a population-based cohort in the county of Uppsala, Sweden, investigating correlates of postnatal depression. The study was conducted at the Department of Obstetrics and Gynecology at Uppsala University Hospital, Sweden. Uppsala is a medium sized Swedish county with a population of 348,995 inhabitants and the annual birth rate is approximately 4000.

From May, 2006, to June, 2007, all eligible women giving birth at the Uppsala University Hospital were asked within some hours after birth by their midwife or midwife's assistant about their willingness to participate. Exclusion criteria were:

- not being able to write or read in Swedish
- women with confidentially kept personal data
- stillbirths or women with infants admitted in the neonatal intensive care unit immediately after birth.

Socio-demographic data – such as medical and obstetric history, education, age, weight - were gathered from the first questionnaire five days postpartum. The majority of the women had left the hospital by this time.

A second questionnaire was sent to the women six weeks after birth, containing *inter alia* the Stressful life event scale by Rosengren et al (43).

As an addition to the third questionnaire, sent to the women six months postpartum, a number of women received an extensive breastfeeding questionnaire. This included questions on breastfeeding initiation, caregivers' support, experience of the first breastfeeding session and breastfeeding duration. This additional questionnaire was sent during ten months, while the third questionnaire in the UPPSAT study was sent during the whole year.

Information on gestational week, vaginal rupture, mode of delivery and the use of pain relief was gathered from medical journals. No reminders were sent due to administrative reasons.

Ethical considerations

The study protocol was approved by the Regional Research and Ethics Committee of Uppsala on the 9th of August 2006 (no 2006/150). The women were given oral and written information about the study, that the participation was voluntary and that they could end their participating at any time. Further, the women were informed that all information would be handled confidentially. Written consent was obtained from all participating women.

Study I

Study variables and outcome measures

Information on perinatal factors (age, Body Mass Index, family status, educational level, smoking during pregnancy, previous psychiatric contact and experience of giving birth) was included in the first

questionnaire. Experience of giving birth (rated as excellent, good, ok, bad or awful) was dichotomized as a positive (excellent, good or ok) or negative (bad or awful) experience of giving birth.

From the second questionnaire, answered by the women at six weeks postpartum, we gathered data on stressful life events (SLE), through a 10-items scale. The variable was dichotomized into none or one SLE versus two or more SLEs during the past year.

The extensive breastfeeding questionnaire included 12 questions and 30 statements with yes/no alternative answers. The statements were phrased such as “The first breastfeeding session was a positive experience to me” and “At the first breastfeeding session, the caregivers helped me breastfeeding by using their hands, attaching my breast to the baby’s mouth”. Information on place/setting during the first breastfeeding session (delivery ward versus maternity ward or elsewhere, in which the former consequently indicates postponed first breastfeeding session with at least two hours), successful breastfeeding during hospital stay or formula supplementation during hospital stay was also included in the breastfeeding questionnaire as statements with yes/no alternative answers.

The hands-on approach during the first breastfeeding session and the mothers’ subjective experience of the first breastfeeding session were used as the outcome variables.

Information on gestational week, mode of delivery, vaginal rupture, the baby’s weight and the use of pain relief was gathered from the medical journals.

Statistical analyses

Univariable analyses were performed to assess the associations between socio-demographic or obstetric factors and the hands-on approach as well as a negative experience of the first breastfeeding session. Odds ratios (OR) and 95 % confidence intervals (CI) were calculated using the Mantel-Haenszel procedure (44).

Multivariate logistic regression was used to estimate the specific effect of the background variables on the hands-on approach. A second multivariate logistic regression model was applied, with negative breastfeeding experience as the outcome variable and the hands-on approach as well as other possible predictor variables. SPSS version 18.0 software was used for statistical analyses. The level of statistical significance was set at a p value of 0.05.

Study II

Study variables and outcome measures

In Study II, the aim was to identify factors possible associated EBF < two months postpartum. For this study the additional exclusion criteria were; a) women giving birth prematurely (before 37 weeks), b) and women giving birth to twins, c) women not initiating breastfeeding or not completing the breastfeeding questionnaire.

In addition to the variables already used in Study I, the breastfeeding questionnaire included questions about initiation of formula supplementation or other solid food, for example “At which age did your baby receive formula?” with alternative “XX weeks”, “XX months” or “not at all”. Mothers who had given their babies anything else than breast milk at any point from initiation to two months, and women reporting discontinuation of breastfeeding introducing formula feeding, were classified as EBF < two months. EBF < two months was used as the outcome variable.

Statistical analyses

Univariable analyses were performed to assess the possible associations between EBF < two months postpartum and socio-demographic and obstetric factors and the mothers' subjective experiences. OR and 95 % CI were calculated using the Mantel-Haenszel procedure (44).

A multivariable logistic regression model was fitted to estimate the specific effect of the background variables, (included for their clinical relevance), on exclusive breastfeeding < two months postpartum. Variables included in the model were BMI, parity, subjective emotional distress during pregnancy, giving birth by caesarean section, epidural anesthesia (EDA), the hands on approach during the first breastfeeding session and postponed first breastfeeding session. Adjusted OR and 95 % CI were estimated. The C index, equivalent to the area under the receiver operative characteristics (ROC) curve, was used to assess the discriminative ability of the model. Based on the multivariable logistic regression, a nomogram was created. Model calibration and internal validity was evaluated using 100 bootstrap samples (45). SPSS version 20.0 and R version 3.1 was used for the statistical analyses. The level of significance was set at a p value of 0.05.

Results

General results

In the whole of the UPPSAT study, 2493 women (2493/4304 eligible women) gave consent to participate and 2318 women answered at least one of the three questionnaires. The additional questionnaire on breastfeeding that was included with the third questionnaire six months postpartum was sent to 1569 women, and 879 women sent it back, (Figure I). Of the 879 women the mean age was 30.6 years (Standard deviation [SD] 4.4). Sixty-one percent had a higher education (college/university). Fifty percent were first time mothers and 99 % were married or cohabitant. Most of the women (87 %) gave birth in gestational week 37-41 and 84 % gave birth vaginally.

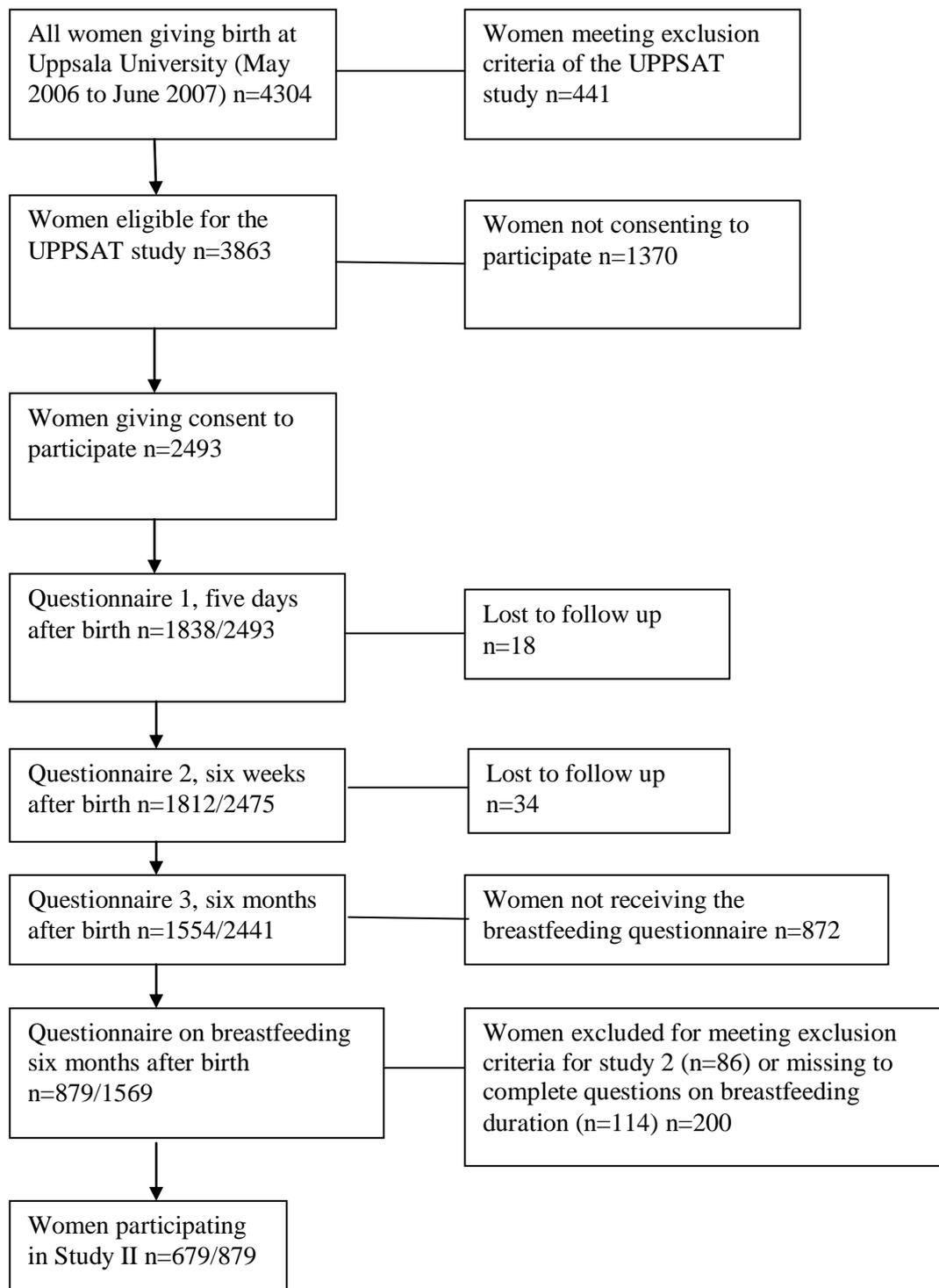


Figure 1. Flow chart of participants

Study I

Of the participating women in Study I (women answering the question on the hands on approach during the first breastfeeding session n=854), the mean age was 30.6 years (SD 4.4). Sixty-one percent of the women had a higher education (college or university). Fifty percent were first time mothers and 99% were married or cohabitant. Sixteen percent of the women were delivered by cesarean section. Seventy-four percent of the women experienced their first breastfeeding session at the delivery ward, whereas the remaining reported the first breastfeeding session occurring in the maternity ward or elsewhere, which indicates postponed first breastfeeding session with at least two hours.

Of the eligible women, 38% experienced the hands-on approach during their first breastfeeding session. Ninety-two percent of the women reported having a positive experience of the first breastfeeding session. Multivariate logistic regression analysis was carried out with the hands-on approach as the outcome variable and obstetric/life style variables as the predictor variables. Having a BMI over 25 kg/m², being a first time mother, breastfeeding for the first time in a place other than the delivery ward (postponed breastfeeding initiation), low maternal educational level and use of medical nitrous oxide as pain relief were all independently associated with an increased risk of receiving the hands-on approach during the first breastfeeding session.

Then, the results from the multivariate logistic regression with negative experience of the first breastfeeding session as the outcome variable and the hands-on approach as well as a series of predictor variables showed that even after adjusting for confounders such as BMI, parity, postponed breastfeeding initiation, experience of giving birth, previous psychiatric contact, the woman's age, and the presence of stressful life events in the previous year, the hands-on approach was associated with a negative first breastfeeding experience (OR 2,37, 95% CI 1.02-5.50), (Table 1).

Table 1. Multiple logistic regression-derived odds ratio (OR) and 95 % confidence intervals (CI) for a negative experience of the first breastfeeding session in relation to hands-on approach at first breastfeeding session

Variables		Model 1 OR (CI)	Model 2 OR (CI)	Model 3 OR (CI)
Hands-on approach at first breastfeeding session	No	1	1	1
	Yes	4.48 (2.57-7.82)	2.48 (1.22-5.04)	2.37 (1.02-5.50)
BMI ^a	≤25		1	1
	>25		1.71 (0.90-3.24)	1.90 (0.87-4.17)
Parity	Multipara		1	1
	Primipara		1.76 (0.85-3.66)	1.88 (0.78-4.54)
Place/setting during first breastfeeding session	Delivery unit		1	1
	Other ^b		2.93 (1.54-5.56)	3.16 (1.42-7.05)
Experience of giving birth	Positive		1	1
	Negative		2.28 (1.22-4.28)	2.45 (1.13-5.33)
Previous psychiatric contact	No		1	1
	Yes		1.96 (1.01-3.80)	2.22 (0.99-4.94)
Age (years)	25-34			1
	<25			0.99 (0.21-4.73)
	≥35			0.51 (0.14-1.90)
SLE ^c during the previous year	≤1			1
	≥2			2.00 (0.87-4.56)

^a Body mass index

^b Maternity unit, NICU or elsewhere, which consequently indicates a postponed first breastfeeding session

^c Stressful life event

Study II

In Study II, 679 women completed questions regarding EBF duration.

Among the participating women, the mean age was 30.7 years (standard deviation 4,3 years). Twenty-eight percent had a BMI equal to or over 25 kg/m² and 99 % of the women were married or cohabitant. Sixty-two percent of the women had a higher education (college or university). Forty-six percent were first time mothers. Twenty-three percent of the mothers reported subjective emotional distress during pregnancy and 23 % reported a previous psychiatric contact. Thirteen percent of the women gave birth by caesarean section. Thirty-six percent of the women experienced the hands on approach during the first breastfeeding session. Seventy-nine percent of the women had their first breastfeeding session at the delivery ward, while the remaining women reported postponed breastfeeding, which took place at the maternity ward. Seventy-seven percent of the women were breastfeeding exclusively for at least two months.

The univariable analyses shows that factors correlating to EBF < two months postpartum were having a high BMI (over 25 kg/m²), being a first time mother, previous psychiatric contact and/or experienced emotional distress during pregnancy. Giving birth through caesarean section and/or the use of epidural local anesthetics during delivery was also associated with EBF < two months postpartum. Furthermore, women exposed to the hands-on approach during the first breastfeeding session and women breastfeeding for the first time in the maternity ward (postponed breastfeeding) were at higher risk to report EBF < two months postpartum. If the women reported a more negative experience of the first breastfeeding session or giving birth by caesarean section they were less likely to breastfeeding exclusively at two months postpartum.

In the multivariable logistic regression, primiparity, subjective emotional distress during pregnancy, and giving birth by caesarean section, were all independently associated with EBF < two months postpartum, (Table 2). The use of EDA during birth and postponed breastfeeding initiation almost reached statistical significance with an EBF < two months postpartum. The multivariable model had a C index of 0.72 and the bootstrap-corrected C index was 0.70 indicating that the model is likely to perform well for predictions in similar settings.

Figure 2 shows the nomogram, with variables from the multivariable analysis, weighted in order to reflect their effect size in predicting EBF equal to or more than two months postpartum. For each predictor, a point is assigned on the 0-10 scale at the top. The sum of points gives a total score, which reflects the probability of EBF at two months postpartum. As an example, consider a first time mother (8 points) reporting emotional distress during pregnancy (8 points) who gave birth by caesarean section (10 points), and had a postponed breastfeeding initiation (6 points). The total number of points is 32, corresponding to a probability of EBF \geq two months of approximately 37 %.

Table 2. Multivariable logistic regression model for factors associated with EBF < two months postpartum

Variable		Adjusted OR for EBF < two months postpartum (95% CI)
BMI ^a (kg/m ²)	<25	1
	≥25	1.45 (0.90-2.32)
Parity	Multipara	1
	Primipara	2.15 (1.32-3.49)
Emotional distress during pregnancy	No	1
	Yes	2.21 (1.35-3.62)
Cesarean section	No	1
	Yes	2.63 (1.34-5.17)
EDA ^b during birth	No	1
	Yes	1.55 (0.98-2.46)
Hands-on approach ^c	No	1
	Yes	1.34 (0.83-2.16)
Place/setting during first breastfeeding	Delivery ward	1
	Maternity ward ^d	1.75 (0.99-3.09)

^a Body Mass Index

^b Epidural local anesthetics

^c During first breastfeeding session

^d Maternity ward, which consequently indicates postponed first breastfeeding session.

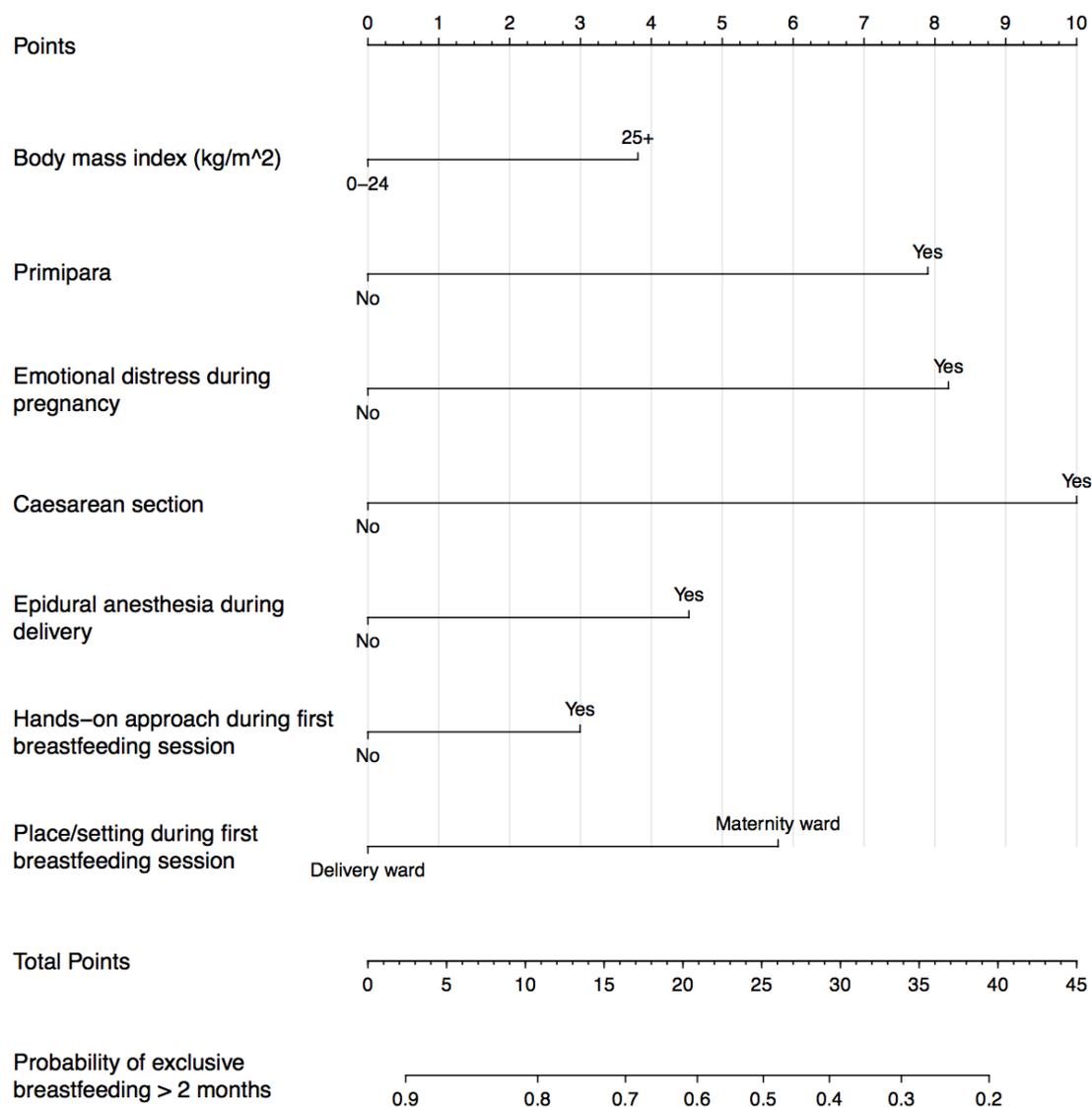


Figure 2. Nomogram for probability of exclusive breastfeeding >two months postpartum. Consider a first time mother (8 points) reporting emotional distress during pregnancy (8 points) who gave birth by cesarean section (10 points). The total number of points is 26, corresponding to a probability of EBF >two months of approximately 50 %.

Discussion

The hands-on approach was frequently used by caregivers during the first breastfeeding session, and was associated with a more negative experience of the first breastfeeding session. Being a first time mother, giving birth by cesarean section and/or experiencing emotional distress during pregnancy were the strongest predictors for EBF < two months postpartum.

Negative effects due to the hands-on approach have also been pointed out in previous studies (30–32), leaving mothers' with feelings of guilt and treated as objects. Nevertheless, in Study I, the results showed that the hands-on approach was frequently used as breastfeeding support. It was more commonly used in women with a high BMI, first time mothers, women with postponed first breastfeeding session, women with low educational level and women using medical nitrous oxide for pain relief during birth. The reasons for these associations can only be speculated upon, but are possibly more related to preconceptions and prejudices in the health care staff than the mothers' and newborns' actual needs. When considering possible negative effects of the hands-on approach, this practice was in the present study shown to be associated, even in the adjusted analyses, with a negative first breastfeeding experience. The findings reflect other research results, finding the hands-on approach as awkward and disrespectful (31). It is likely related to self-efficacy (25) that breastfeeding within the first postpartum hours at the delivery ward and reporting a positive experience of giving birth seems to have a positive impact on the breastfeeding experience.

Factors independently associated with EBF < two months postpartum were being a first time mother, reporting subjective emotional distress during pregnancy and giving birth by cesarean section. Breastfeeding duration has previously been shown to be shorter amongst first time mothers (46,47) as confirmed in our material. There is no clear routine screening procedure for depression and anxiety in antenatal care in Sweden. However, depending on local guidelines, midwives and obstetricians address this issue. Depression and/or anxiety prior to or during pregnancy and postpartum are factors known to negatively affect breastfeeding (36,37,48). Compared to vaginal birth, cesarean section includes several aspects that can affect breastfeeding rates, such as separation between mother and newborn, and a delay of the first breastfeeding session (49,50). Cesarean sections are also often associated with pain in the first days postpartum, which can affect the mother's well-being and breastfeeding (51). It has also been found that mothers giving birth by cesarean section have a lower breastfeeding self-efficacy, a predictor of breastfeeding success and duration, than women giving birth vaginally (23).

To be discussed are the factors almost reaching statistical significance in the multivariable model, as the use of EDA during labor and a postponed breastfeeding initiation. First time mothers have a high use of EDA (52) and studies show that the EDA can affect the infant in a way that postpone the first breastfeeding session (53). Initiating breastfeeding within the first hour of the newborn's life is an important factor for continuous breastfeeding (16–18). The time between giving birth and initiation of breastfeeding is a care routine possible to modify, if prioritized. In any mode of giving birth it should be possible to avoid separation or at least shorten the time of separation. As shown in study I, the hands-on approach was more common if the woman did not have the chance to breastfeed while in the delivery ward. The hands-on approach was shown in the current study, in the univariable analysis, to be a risk factor for discontinuation of exclusive breastfeeding, though not significant in the multivariable model. Nevertheless, the hands-on approach should be questioned given all the information we have on women's experience of that manual support.

The use of a nomogram is, to our knowledge, a new approach in this research area, identifying women with need of extended breastfeeding support.

Methodological considerations

Overall

The strengths of this study are its population-based design and the number of participating women, as well as the number of studied variables on an individual level, which gave possibility for adjusted analysis. Nevertheless, there are limitations that need to be considered. One possible limitation is due to administration leaving it up to only a few people to register all the questionnaires into the computer file, posing an eventual human error. Due to this, on several occasions a number of the original questionnaires have been compared with the data files, finding no errors. Another possible limitation of these studies is that the women answered questions on the first breastfeeding session and introduction of other food than breast milk six months postpartum, posing an eventual problem of recall bias. It is possible that the women's experiences during this period might affect their memories of the event and the way the answer questions about it. It has, on the other hand, been showed that women, a long time after giving birth, are capable of successfully recalling what happened during the birth process and the early hours postpartum (54). Another limitation to discuss is that postponed breastfeeding was defined by which place the first breastfeeding session occurred. Due to the hospital promemoria, we know that women who answered that their first breastfeeding session took place at the maternity ward, would have had a postponed breastfeeding initiation by at least two hours. The response rate of 56 % is in accordance with studies of similar natures (55). In this study we were not able to send reminders due to administrative reasons, which might affect the number of participating mothers. Nonetheless, this limitation would probably have led to an underestimation of factors associated with the hands-on approach and EBF < two months.

Study I

It is possible to speculate that the mothers who have a more negative attitude in general might have answered in a biased way concerning the experience of the first breastfeeding session and the experience of giving birth. This association was, nevertheless, adjusted for both previous psychiatric contact and stressful life events. The use of the hands-on approach cannot fully account for dissatisfaction with the first breastfeeding session, because a majority of the women who had been exposed to the hands-on approach had a positive experience of the first breastfeeding session. One could speculate that women who were able to breastfeed in those first hours were more optimistic about any intervention, as long as they were able to breastfeed during that crucial time. It could even be possible that some women found the hands-on approach helpful, but because the results of Study I point to an overall negative experience of the first breastfeeding session, this method should be questioned. Another limitation already mentioned is the fact that the women answered the question on the hands-on approach during the first breastfeeding session six months later, possible leading to recall bias. Nevertheless, one could argue that recalling this as late as six months after giving birth may indicate that women were traumatized by the intervention.

Study II

It is argued that retrospective evaluation methods systematically overestimate the duration of breastfeeding (56) but our prevalence of 77 % women breastfeeding exclusively for at least two months is similar to that of breastfeeding rates in Uppsala county during the same year (76,2 %) (57). This study only investigates caregiving routines and breastfeeding support during the first breastfeeding session so there might be some additional reasons why mothers EBF < two months postpartum. A limitation of the study is that we did not have any data on the mothers' intention to breastfeed, but we assume that the mothers had planned to breastfeed, as most mothers initiate breastfeeding (8). We cannot rule out that the

women we found to EBF < two months actually followed their breastfeeding plans, but we consider it not to be likely. Further, the question on emotional distress during pregnancy is not validated, although it is the question recommended for midwives to ask during pregnancy according to the Swedish Society of Obstetrics and Gynecology (58). One could also speculate if it would be of interest to separate caesarean section conducted in labor from caesarean section without labor, but to strengthen the results we decided not to separate the two in the multivariable analysis.

Conclusions

This thesis indicates that the hands-on approach was frequently used during the first breastfeeding session and that this practice was associated with a more negative experience of the first breastfeeding session, even after adjusting for possible confounders. Furthermore, being a first time mother, reporting emotional distress during pregnancy and giving birth by caesarean section were identified as independent factors for EBF < two months postpartum. To promote breastfeeding, adequate breastfeeding support after identification of women's need and potential risk factors should be started already during pregnancy and followed up by breastfeeding observations postpartum. Introducing a nomogram on the probability of exclusive breastfeeding > two months might help caregivers direct their attention to women within certain risk groups and give targeted support where needed.

Further research is needed to understand why caregivers choose the hands-on approach as breastfeeding support. The relative impact of receiving the hands-on approach at a later time than the first breastfeeding session after birth is unclear. More studies are needed in order to be able to investigate these questions. Also, the results of these studies need to be confirmed in other settings using a prospective design. If confirmed, the results should be disseminated among health care professionals in order to possibly lead to revision of routines and guidelines in order to offer women the best evidence-based breastfeeding support.

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