

REGULAR ARTICLE

Proactive telephone support provided to breastfeeding mothers of preterm infants after discharge: a randomised controlled trial

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ABSTRACT

Aim: The aim was to evaluate the effectiveness of proactive telephone support provided to breastfeeding mothers of preterm infants after discharge from neonatal intensive care units (NICU).

Methods: Between March 2013 and December 2015, a randomised controlled trial was conducted at six NICUs across Sweden. At each NICU, a breastfeeding support team recruited, randomised and delivered the support to participating mothers. The intervention group received a daily proactive telephone call up to 14 days after discharge from the support team. The control group could initiate telephone contact themselves. Primary outcome was exclusive breastfeeding eight weeks after discharge. Secondary outcomes were maternal satisfaction with breastfeeding, attachment, quality of life and parental stress.

Results: In total, 493 mothers were randomised, 231 to intervention group and 262 to control group. There were no differences between the groups for exclusive breastfeeding, odds ratio 0.96, 95% CI 0.66–1.38, nor for maternal satisfaction with breastfeeding, attachment or quality of life. The intervention group reported significantly less parental stress than the controls, $t = 2.44$, 95% CI 0.03–0.23, effect size $d = 0.26$.

Conclusion: In this trial, proactive telephone support was not associated with increased exclusive breastfeeding prevalence eight weeks following discharge. However, intervention group mothers showed significantly lower parental stress.

INTRODUCTION

The birth of a preterm infant, gestational age <37 weeks and admission to a neonatal intensive care unit (NICU) constitute a situation where the maternal role and breastfeeding begin and develop in an unfamiliar medical setting. It may take time for mothers to understand the maternal role, and they may experience stress, helplessness and fear about the infant's health, as well as shame or guilt because of the preterm delivery. Experiencing the first period of parenting in a NICU puts strain on the family, and the changes in the family dynamics are more pronounced for these parents during the hospital stay (1) but also after discharge (2). Studies have reported that mothers of preterm infants are at risk for experiencing less positive interaction and attachment, compared to mothers of term infants, during the first six months after birth (1,3).

In the process of becoming a mother, breastfeeding becomes an important aspect (4). During the infant's hospitalisation in a NICU, there is a profound focus on nutrition and breastfeeding because of the importance of breast milk. Previous studies have shown a dose–response effect in that exclusive and longer duration of breastfeeding entail greater health benefits for both the mother and the infant (5–7), and the World Health Organization recommends exclusive

Abbreviations

BST, Breastfeeding support team; NICU, Neonatal intensive care unit; OR, Odds ratio; SF-36, Short form health survey.

Key notes

- For many mothers, the transition from a neonatal unit to the home environment is difficult and needs facilitating and there is a need to evaluate interventions aiming to support this transition.
- Daily proactive telephone support after discharge from neonatal units did not have an effect on exclusive breastfeeding prevalence eight weeks after discharge in this trial.
- Mothers who received proactive support showed significantly lower parental stress.

breastfeeding during the first six months of life (8). Unlike term infants, preterm infants need to mature in their breastfeeding behaviour and the time before the infant can breastfeed exclusively from the breast varies, depending on gestational age. Many mothers may therefore cease breastfeeding during the hospital stay (9) or during the first months after discharge from the NICU (10). For mothers of preterm infants, the transition to the home environment has been described as difficult, in general and in terms of breastfeeding, due to lack of support and unsolved problems (4).

In an Cochrane review, the findings showed that support was important for sustaining breastfeeding and that proactive support appeared to be beneficial compared to reactive support (11). Furthermore, a qualitative meta-synthesis of breastfeeding women's experiences showed the importance of providing person-centred care when supporting breastfeeding (12). The evidence for the effectiveness of telephone support to mothers to improve breastfeeding outcomes was promising for mothers of term infants (13,14). However, no studies so far have focused or included mothers of preterm infants.

The intervention in this study was influenced by a promising pilot trial undertaken in the UK with healthy term infants born in more disadvantaged areas, where the breastfeeding rates were low (15). Thus, our hypothesis was that the proportion of mothers who were exclusively breastfeeding at eight weeks after discharge would be higher in the intervention group compared to the control group. Furthermore, that the satisfaction with breastfeeding, attachment and quality of life would increase and that parental stress would decrease in the intervention group compared to the control group. The aim of this multicentre randomised controlled trial was to evaluate the effectiveness of person-centred proactive telephone support provided to breastfeeding mothers of preterm infants for up to 14 days after hospital discharge from NICUs.

METHODS

Trial design

The study was influenced by the FEeding Support Team pilot trial (15) with the core component of proactive telephone support after discharge from hospital. The study was designed as an individual one-to-one, multicentre randomised controlled trial with stratified blocks for maternal educational level and site. Reporting follows the CONSORT recommendations (16).

Participants and setting

Eligible participants for randomisation were mothers with preterm infants, gestational age <37 weeks, who had been admitted to one of the NICUs for at least 48 hours and who breastfed or expressed breast milk. Exclusion criteria were serious maternal medical or psychiatric problems at discharge; language problems that could not be resolved; infants transferred to another hospital or unit after discharge and/or infants that were terminally ill.

The setting was six-level 3a or 3b (17) NICUs geographically spread across Sweden. At each NICU, members of the

staff volunteered to be part of a breastfeeding support team (BST). About 10 staff members per unit were assigned and trained for two days. The training consisted of information and discussions about breastfeeding support, person-centred care and trial design and was delivered by two paediatric nurses well experienced in these topics, JE and RF. The BST recruited and randomised eligible mothers, and delivered the telephone support. Eligible mothers who agreed to participate in the study signed a written consent after receiving oral and written information from the BST. They were informed that participation in the study was voluntary, and that they could withdraw at any time. Each unit kept a logbook, in which the BST recorded data on all infants admitted to the NICU, admission date, gestation week, eligibility for inclusion and reason for exclusion and baseline characteristics of the mothers that declined participation. Before discharge, a BST member filled in data protocols on demographics, infant health and breastfeeding. Participating mothers completed the Short Form Health Survey (SF-36) at baseline. In an additional protocol, the BST documented calls made, no reply, duration of calls and if necessary, important content of the call for the next BST caller. The regional ethical review board, Uppsala, approved the study, No. 2012/292 and 2012/292/2.

All participating units allowed parents to go home with the infant before hospital discharge and to tube feed the infant at home. Two of the NICUs had a system whereby families were visited by a nurse at home; in three NICUs, the families travelled to the NICUs for care and follow-up; and in the sixth NICU, they changed from the latter to the former during the study period.

Intervention

The intervention consisted of a daily telephone call to the mother initiated by a member of the BST, that is proactive support, from day one until day 14 after discharge, including weekends. In addition, the mother had the option to call someone in the BST during the same period, that is reactive telephone support. The mother had the option to choose sparser calls or stop calls at any time. The telephone support aimed to have a person-centred approach (12). Thus, the mothers were encouraged and enabled to talk about whatever they felt was important.

Control group

Before the implementation of the intervention, two units had a routine where they encouraged mothers to call the NICU if problems with breastfeeding arose, while the other units did not. To harmonise this between the participating units, all mothers were offered the possibility to call the unit after discharge. Hence, the mothers in the control group could phone the BST from day one after discharge until day 14 after discharge 08.00–16.00 every day, including weekends. The reactive telephone support was defined as standard care.

Outcomes

The primary outcome was exclusive breastfeeding eight weeks after hospital discharge. Data were collected by a

telephone follow-up by the first author. Breastfeeding was defined as: exclusive (i.e. only breast milk, medication, fortification and vitamins), partial (i.e. breast milk in combination with formula) and no breastfeeding (i.e. no breast milk). The term breastfeeding was used both for breastfeeding at the breast and for breast milk feeding by bottle, tube or cup (8).

The secondary outcomes reported in this paper were assessed from questionnaires sent to the mothers eight weeks after discharge from the NICU. The mothers replied to the following questionnaires:

The Maternal Breastfeeding Evaluation Scale (18) is a 30-item scale including three dimensions: maternal enjoyment and role attainment, infant satisfaction and growth, and lifestyle and maternal body image. The items were scored on a five-point scale from strongly disagree to strongly agree. A summary score was calculated with a minimum of 30 and maximum of 150 scores, with higher scores indicating a more positive breastfeeding experience. The Cronbach's alpha for the Maternal Breastfeeding Evaluation Scale was 0.93 in our study. No Swedish version of the scale existed. Therefore, a translation was made according to Wild et al. (19) guidelines and standards for the translation and cultural adaptation of patient-reported outcome measures (19).

The Maternal Post-natal Attachment Scale (20) is a 19-item scale including three dimensions: quality of bonding, absence of hostility and pleasure in interaction. The items were scored on a two-, four- or five-point scale which gave a total global attachment score of 19–95, with higher scores indicating higher maternal to infant attachment. The Cronbach's alpha for this scale was 0.78 in our study. No Swedish version existed, and the scale was translated according to the same procedure as described above.

The Swedish Parenting Stress Questionnaire (21) is a modified Swedish version of the Parenting Stress Index (22), a 34-item scale organised in five dimensions: role restriction, incompetence, social isolation, health problems and spouse relationship problems. The items were scored on a five-point scale from strongly disagree to strongly agree. Scale scores were calculated as the mean for each dimension, and the total score was calculated as the mean of all responses. Higher scores indicated higher perceived parenting stress. The Cronbach's alpha was 0.90 in our study.

The SF-36 (23) measured quality of life in mothers. SF-36 provides an assessment of the mother's physical function, subjective well-being and general health during the last four weeks. It includes 36 items and eight health dimensions, physical functioning, social functioning, bodily pain, vitality, general health, mental health, role physical and role emotional. All domains were scored on a scale from zero to 100, where higher scores indicated better health. The Cronbach's alpha was 0.91 at baseline and 0.92 eight weeks after discharge.

Sample size

A power analysis was conducted, including one control per case. Prior data indicated that the prevalence of exclusive breastfeeding at two months of corrected age in preterm

infants was 53% (24). With an estimated 8.5% increase in exclusive breastfeeding, a clinically important difference, and with an estimated dropout rate of 5%, 558 mothers in the intervention group and 558 mothers in the control group were needed to be able to reject the hypothesis that the exclusive breastfeeding prevalence in intervention group was higher than in the control group with a power of 80%, using the chi-square test. The Type I error probability associated with this test was 0.05.

Randomisation

Mothers who met the inclusion criteria and who provided consent to participate were randomised to either proactive or reactive telephone support. The BST randomised mothers within 24 hours after discharge, that is after potential domiciliary care, by an automated and secure web-based system administrated independent of the research team. A stratified block randomisation was used, with blocks of 25 mothers with higher education and 25 with secondary school or lower education at each participating NICU. The mothers were informed of their randomisation group by a telephone call or text message. All authors of this paper were blind to the group allocation throughout the study period and during analyses of the primary outcome. Only the BST in each unit knew the allocated group for each mother.

Statistical methods

Analyses were conducted according to intention-to-treat principals; mothers were analysed for the outcomes in the group they were originally randomised to. For mothers of twins, only the firstborn infant was chosen. Among the twin births, only one twin infant had a different feeding outcome than their twin sibling. The Student's *t*-test was used to compare means between groups for data with nearly symmetric distributions and the Mann-Whitney's test to compare data with skewed distributions. Chi-square test was used to compare dichotomous variables.

To study the effects between intervention group and control group on the primary outcome measure, a logistic regression analysis was used. In the logistic regression analysis, the odds ratio [OR] represents the odds for not breastfeeding exclusively at eight weeks in the control group compared to the intervention group. Subgroup analyses with logistic regression analysis on the primary outcome were conducted on mother's educational level, that is secondary school or less versus higher education, parity (i.e. primipara versus multipara) and gestational age (i.e. <32 weeks versus 32–36 weeks). Exclusive breastfeeding was compared to partial/no breastfeeding, that is partial and no breastfeeding were merged into one group in all logistic regression analyses. The regression analyses on breastfeeding outcomes were adjusted for maternal educational level and site as we stratified for these factors in the randomisation. An additional adjustment was performed for breastfeeding at discharge. Data from the logistic regression models are presented with ORs and 95% confidence intervals [95% CIs]. There were no missing values in the analysis except for mothers lost to follow-up.

To analyse the secondary outcomes, Students *t*-tests were performed. For each scale, the total score and dimension scores were compared between the intervention and control group. Imputation was conducted to replace missed items, in which the mean or median score on a dimension was used. Very few items were missing in the questionnaires, in total $n = 146$, 0.3% out of 44,110 items. Effect size was calculated with Cohen's *d*, $d = 0.2$ small, $d = 0.5$ medium, $d = 0.8$ large, on secondary outcomes using the means and standard deviations of the intervention and control group. Statistical significance level was set at $p < 0.05$ for all analyses, and calculations were performed by IBM SPSS Statistics for Windows, Version 21.0. (IBM Corporations, Armonk, New York).

The trial was registered in www.clinicaltrials.gov as NCT01806480, and a study protocol was published (25).

RESULTS

Participant flow, recruitment and numbers analysed

The study started in March 2013 and the inclusion of mothers ended in December 2015 due to time constraints. Two NICUs started in March 2013, an additional three NICUs in the autumn 2013 and the sixth NICU in January 2015. In total, 493 mothers were randomised, 231 to the intervention group and 262 to the control group, Figure 1. The characteristics of participating mothers, infants and NICUs are presented in Table 1. Mothers who declined

participation were younger $p < 0.001$ and had a lower education level $p < 0.001$, compared to mothers who participated in the study. Four mothers in the intervention and one mother in the control group were lost to follow-up for the primary outcome as they did not answer the telephone or return any questionnaire, a dropout rate of 1%. Significantly, fewer mothers in the control group compared to intervention group returned the baseline questionnaire, $p = 0.007$. However, eight weeks after discharge there was no statistical differences between the intervention and control group in returning the questionnaire, $p = 0.28$. Statistically significant fewer mothers with a lower educational level $p < 0.001$, and mothers not born in Sweden $p < 0.001$, returned the eight-week questionnaire. The median [IQR] gestational age of infants at birth was 34 weeks [2], and the median gestational age at discharge was 38 weeks [2]. There were 52 twin births, evenly distributed between intervention and control group, $p = 0.20$.

The mean [SD] total time of telephone support was 43 [33] minutes in the intervention group and three [10] minutes in the control group. The mean [SD] number of proactive telephone calls made to each mother was eight [4]. The total number of reactive telephone calls documented by BST for the intervention group was four and for the control group 82, $p < 0.001$.

Effects of the intervention on exclusive breastfeeding

The prevalence of exclusive breastfeeding did not differ between the intervention 57% [$n = 130$] and control 58%

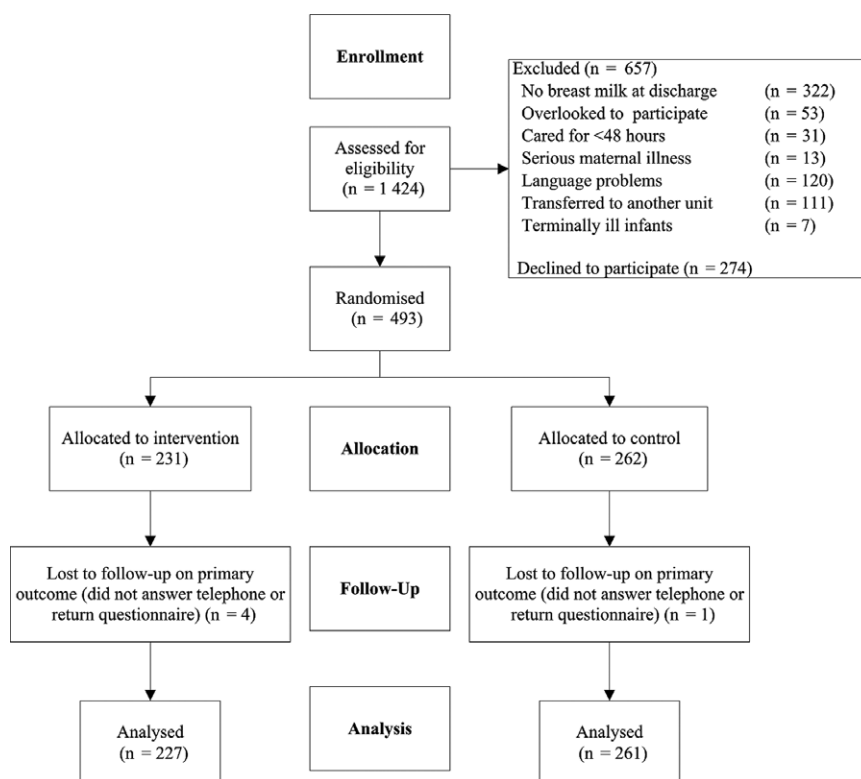


Figure 1 Flow chart showing the randomisation, allocation and analysis stages in the study.

Table 1 Characteristics of the participating mothers (n = 493), their preterm infants (n = 547) and the NICUs (n = 6)

Demographic variables	Total n (%)	Intervention n (%)	Control n (%)
Maternal variables			
Randomised	493	231 (47)	262 (53)
Age, year; mean (SD)	30 (5.2)	31 (5.3)	30 (5.1)
Maternal educational level			
Higher education	258 (52)	123 (53)	135 (52)
Upper secondary school or less	235 (48)	108 (47)	127 (48)
Primipara	278 (56)	122 (53)	156 (60)
Mothers not born in Sweden	46 (9.3)	27 (12)	19 (7.3)
Vaginal birth	277 (56)	125 (54)	152 (58)
Quality of Life (SF-36); mean (SD)*			
Physical functioning	83.5 (17.1)	83.5 (17.4)	83.5 (17.0)
Social functioning	72.4 (26.8)	73.2 (27.0)	71.6 (27.0)
Bodily pain	58.7 (27.3)	60.2 (26.4)	57.3 (28.1)
Vitality	45.7 (20.9)	47.7 (21.3)	43.9 (20.4)
General health	79.7 (15.8)	80.0 (16.3)	79.5 (15.4)
Emotional well-being	74.1 (17.6)	74.1 (17.4)	74.1 (17.8)
Role physical health	34.6 (40.9)	38.2 (41.5)	31.3 (40.0)
Role emotional problems	78.4 (36.7)	79.6 (35.7)	77.3 (37.6)
Infant variables			
Gestational age at birth, weeks; median (IQR)	34 (2)	34 (2)	34 (2)
Gestational age <28 weeks	17 (3.4)	10 (4.3)	7 (2.7)
Gestational age 28–31 weeks	62 (13)	30 (13)	32 (12)
Gestational age 32–36 weeks	414 (84)	191 (83)	223 (85)
Gestational age at discharge, weeks; median (IQR)	38 (2)	38 (2)	38 (2)
Birthweight, gram; mean (SD)	2295 (638)	2262 (657)	2324 (621)
Weight at discharge, gram; mean (SD)	2880 (473)	2904 (541)	2858 (403)
Small for gestational age	43 (8.7)	21 (9.1)	22 (8.7)
Male	275 (56)	138 (60)	137 (52)
Multiple birth	52 (11)	21 (9.1)	31 (12)
Length of stay, days; median (IQR)	23 (21)	24 (20)	23 (22)
Neonatal illness†	18 (3.7)	11 (4.8)	7 (2.7)
Breathing support‡	233 (47)	108 (47)	125 (48)
Domiciliary nursing care	448 (91)	212 (93)	236 (90)
Domiciliary nursing care, days; median (IQR)	10 (12)	10 (11)	10 (12)
Exclusive breastfeeding at discharge	406 (82)	184 (80)	222 (85)
NICU 1	109 (22)	49 (21)	60 (23)
NICU 2	74 (15)	34 (15)	40 (15)
NICU 3	77 (16)	36 (16)	41 (16)
NICU 4	94 (19)	44 (19)	50 (19)
NICU 5	93 (19)	46 (20)	47 (18)
NICU 6	46 (9.3)	22 (9.5)	24 (9.2)

IQR, Interquartile range, NICU, Neonatal intensive care unit, SD, Standard deviation.

*Measured at baseline. Missing data on SF-36 in 23 mothers.

†Bronchopulmonary dysplasia, Retinopathy of prematurity, Necrotizing enterocolitis, Intraventricular haemorrhage, Periventricular leukomalacia.

‡Treatment with ventilator, continuous positive airway pressure or high flow oxygen.

[n = 152] groups at eight weeks after discharge from NICUs, OR 0.96, 95% CI 0.66–1.38. The OR [CI] for not exclusively breastfeeding when adjusting for breastfeeding at discharge was 1.13 [0.74–1.70]. Hence, the hypothesis that the intervention would have a positive effect on breastfeeding eight weeks after discharge was rejected. When analysing ‘any breastfeeding’ compared to ‘no breastfeeding’, there were no difference between intervention and control group, not shown in table.

In the subgroup analyses on maternal education level, parity and gestational age, no statistical significant differences were found on exclusive breastfeeding prevalence eight weeks after discharge from the NICU between the intervention and control group, Figure 2.

Effects of the intervention on secondary outcomes

There were no statistical differences between the groups in breastfeeding satisfaction, attachment and quality of life, Table 2. However, mothers in the intervention group experienced less parental stress in the dimensions of role restriction, $t = 2.38$, 95% CI 0.03–0.32 and effect size $d = 0.25$, social isolation, $t = 2.09$, 95% CI 0.01–0.27, $d = 0.22$ and in the total score, $t = 2.44$, 95% CI 0.03–0.23, $d = 0.26$, although the effect sizes were small, Table 2.

No adverse events were reported from the mothers or breastfeeding support teams.

DISCUSSION

In this trial, proactive telephone support was not associated with increased exclusive breastfeeding prevalence at eight weeks following discharge from a NICU, nor was the support associated with breastfeeding satisfaction, attachment or quality of life in mothers. However, the mothers who received proactive breastfeeding support showed significantly lower parental stress compared to mothers in the control group.

One possible reason for the lack of effect of the intervention on most of the outcomes was that almost all mothers, 93%, in this study received some degree of domiciliary care before discharge from the NICU. This could have affected the results of this study, as the transition to home was already facilitated. Subgroup analysis of women receiving and not receiving domiciliary care was not in our published protocol (25), and the numbers were small. However, the intervention may be effective for breastfeeding outcome where there is no domiciliary care and requires further testing in different countries and contexts.

Another possible reason could be that the intervention was delivered over a short time with relatively intense contact. Many mothers declined daily contact and preferred contact every second day or less often. The mothers who ceased breastfeeding during the first eight weeks, ceased on average four weeks after discharge. Consequently, breastfeeding telephone support for a longer time but with sparser contact might have been more relevant as in previous successful telephone support interventions (26,27). An additional motive for prolonging the intervention is that

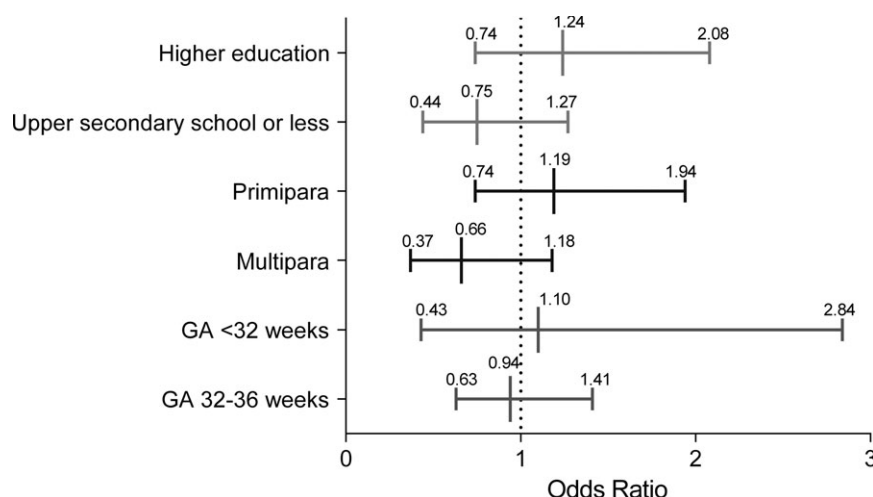


Figure 2 Odds Ratio (CI 95%) for not breastfeeding exclusively at eight weeks in the control group ($n = 261$) compared to the intervention group ($n = 227$) with regard to characteristics of mothers and infants.

Table 2 Differences between the intervention and control group on secondary outcome at eight weeks after discharge from the neonatal unit

	Intervention eight weeks Mean (SD)	Control eight weeks Mean (SD)	Student's <i>t</i> -test <i>t</i> (CI 95%)	p-value	Effect size Cohen's <i>d</i>
Maternal breastfeeding evaluation scale	<i>n</i> = 170	<i>n</i> = 199			
Total	113.7 (19.2)	113.6 (19.3)	-0.04 (-4.05; 3.87)	0.97	0.004
Maternal enjoyment and role attainment	54.7 (10.6)	55.0 (10.6)	0.20 (-1.94; 2.39)	0.84	0.02
Infant satisfaction and growth	31.4 (6.4)	31.4 (6.0)	-0.02 (-1.29; 1.26)	0.98	0.003
Lifestyle and maternal body image	27.6 (6.0)	27.3 (6.0)	-0.48 (-1.52; 0.93)	0.63	0.05
Maternal post-natal attachment scale	<i>n</i> = 170	<i>n</i> = 200			
Global attachment score	83.7 (7.3)	83.6 (6.4)	-0.23 (-1.56; 1.24)	0.82	0.02
Quality of bonding	41.5 (3.1)	41.2 (3.1)	-0.89 (-0.92; 3.35)	0.59	0.09
Absence of hostility	21.3 (2.7)	20.8 (2.5)	-1.63 (-0.99; 0.09)	0.37	0.19
Pleasure in interaction	21.0 (3.3)	21.6 (3.1)	1.70 (-0.09; 1.23)	0.09	-0.19
Swedish parental stress questionnaire	<i>n</i> = 170	<i>n</i> = 200			
Total	2.35 (0.50)	2.48 (0.51)	2.44 (0.03; 0.23)	0.015	0.26
Incompetence	1.94 (0.63)	2.06 (0.63)	1.86 (-0.01; 0.25)	0.64	0.19
Role restriction	3.44 (0.71)	3.61 (0.70)	2.38 (0.03; 0.32)	0.018	0.25
Social isolation	2.00 (0.63)	2.14 (0.65)	2.09 (0.01; 0.27)	0.037	0.22
Health problems	2.55 (0.65)	2.59 (0.69)	0.59 (-0.96; 0.18)	0.55	0.16
Spouse relationship problems	2.07 (0.82)	2.20 (0.86)	1.57 (-0.03; 0.31)	0.12	0.06
Quality of life (SF-36)	<i>n</i> = 170	<i>n</i> = 201			
Physical functioning	93.0 (10.3)	91.9 (11.9)	-0.46 (-2.97; 1.85)	0.65	0.04
Social functioning	87.4 (18.4)	87.3 (19.1)	-0.09 (-4.02; 3.67)	0.93	0.009
Bodily pain	83.2 (22.0)	84.5 (20.3)	0.62 (-2.97; 5.68)	0.54	0.06
Vitality	54.5 (21.1)	55.3 (19.4)	0.38 (-3.35; 4.95)	0.71	0.04
General health	79.1 (16.0)	77.9 (16.4)	-0.73 (-4.56; 2.09)	0.47	0.08
Emotional well-being	78.9 (15.5)	79.0 (14.9)	0.08 (-2.98; 3.22)	0.94	0.007
Role physical health	75.8 (35.6)	76.5 (35.3)	0.20 (-6.55; 7.99)	0.85	0.02
Role emotional problems	80.0 (36.9)	82.3 (33.5)	0.62 (-4.93; 9.45)	0.54	0.06

Statistical significant values are marked in bold.

breastfeeding problems such as low breast milk supply also occur later in the lactation period for some mothers. A low milk supply has previously been described as one of the main reasons for discontinuing breastfeeding (28).

Mothers in the intervention group experienced significantly less parental stress compared to the control group.

Although parental stress was a secondary outcome and not powered for, studies of mothers of preterm infants show that parental stress is extensive and common during the first month after birth (1). Having someone that calls you on a regular basis gave the mothers continuity of support and contribute to them feeling secure (29) which suggests that

the transition from hospital to home was facilitated through the proactive person-centred telephone support.

This is the largest randomised controlled trial of a breastfeeding telephone intervention delivered after discharge to mothers of preterm infants. A further strength of this study is the low dropout rate for the primary outcome, 1%. Furthermore, the results are generalisable for Sweden by participation of six NICUs. Units were geographically spread over Sweden comprising a variety of care routines and spatial facilities. A limitation is that the blocks for randomisation were too large, that is 25 in each block, which entailed an unequal distribution between groups. Another limitation is that the recruitment of participants ended before the intended sample size was reached, due to time constraints which occurred because a smaller proportion of mothers than previously indicated (10,24,30) breastfed at discharge and because of the number of mothers who declined participation. Although the study was underpowered, it seems unlikely that additional mothers would have changed the outcome of the intervention. At the time of the priori power calculation, there was, to our knowledge, no published studies on similar interventions aiming to increase breastfeeding after discharge in countries with high breastfeeding prevalence. Thus, the priori power analysis was based on differences in exclusive breastfeeding at two months PNA in mothers with different educational levels and of preterm infants. This was probably an over-optimistic assumption on the effect of an intervention in a country with high breastfeeding prevalence.

Another weakness is that the mothers who did not participate in the study or did not return the questionnaires had a lower educational level than their counterparts. Low maternal educational level is one of the most prominent negative factors influencing breastfeeding (7,10). Hence, the mothers recruited may have been those most committed to persevering with breastfeeding and not the ones in the highest risk group for early cessation.

CONCLUSION

A proactive daily telephone support to mothers of preterm infants for up to 14 days after discharge from the NICU was not associated with increased prevalence of exclusive breastfeeding, mother's breastfeeding satisfaction, attachment or quality of life eight weeks after discharge. However, the mothers who received proactive breastfeeding support showed significantly lower parental stress, which is important for the mother–infant relationship and well-being.

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CONFLICT OF INTEREST

None of the authors has any conflicts of interest.

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