

Factors Associated With Post NICU Discharge Exclusive Breastfeeding Duration Amongst First Time Mothers of Preterm Infants In Shanghai: A Longitudinal Cohort Study

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Abstract

Background

Breastfeeding is crucial to the preterm infants. Breast milk is not only food but also medicine. Few studies focused on the longitudinal association with exclusive breastfeeding duration of preterm infants separated from their mothers after discharge, especially in Shanghai. We aimed to examine the exclusive breastfeeding duration amongst first time mothers of preterm infants after discharge and their determinants.

Methods

Analyses were based on 500 preterm infants separated from their mothers in a territory maternity and infant special hospital in Shanghai from September 2018 to September 2019. The self administered questionnaire, breastfeeding knowledge questionnaire, breastfeeding self-efficacy short form scale, Edinburgh postpartum depression scale and breastfeeding family support scale were used for the investigation, and the breastfeeding rate of premature infants was followed up 1 month, 3 months and 6 months after discharge. The changing trend of breastfeeding knowledge, breastfeeding self-efficacy, postpartum depression and family support were measured by ANOVA in different stages.

The Kaplan Meier survival curve and Cox regression model were used to analyze the determinants of exclusive breastfeeding duration of premature infants after discharge.

Results

Through the Cox regression model, we found that the maternal planned pregnancy (RR=0.68, 95%CI=0.53~0.87), delivering breast milk during hospitalization (RR=0.80, 95%CI=1.41~2.29), NICU feeding mode (RR=1.22, 95%CI=0.13~0.38) during hospitalization and family support (RR=0.56, 95%CI=1.00~2.43) were the independent factors influencing the exclusive breastfeeding duration after discharge.

Conclusions

The exclusive breastfeeding duration of premature infants was affected by many factors, so we should focus on three levels of individual, family and society, and give targeted intervention measures to increase exclusive breastfeeding rate and prolong exclusive breastfeeding duration.

Trial registration: Not applicable

Background

Breastmilk provides the optimum nutrition for infants, protects against infection, promotes long-term health, and is a crucial component of public health, especially for preterm infants. The worldwide

incidence of preterm delivery was 10.6% in 2019[1]. Preterm infants may have serious cardiovascular or nervous system complications after birth. Relevant studies have pointed out that the probability of death of preterm infants weighed less than 500g is as high as 85%[2]. Dysphagia and insufficient oral sucking power of preterm infants increase the risk of breastfeeding failure[3]. Because of their immature gestational age and organs, premature infants are more likely to require separation from their mothers.

The separation of mother and infant refers to the phenomenon that the newborn is sent to the NICU for observation and treatment due to congenital immaturity or disease after birth, resulting in the physical and psychological separation between the mother and the baby, and is also an important factor leading to breastfeeding failure[4]. Breastfeeding plays a key role in the prognosis of preterm infants. For preterm infants, breastfeeding can not only meet their growth and development needs but also play a therapeutic role. Breastfeeding can effectively prevent necrotizing enterocolitis of newborns, ROP (retinopathy of prematurity), and other serious complications[5], and can reduce the mortality of premature infants. Breastfeeding failure will lead to the low immunity and incidence rate of chronic diseases in premature infants, which will trigger the short-term and long-term health problems of premature infants[6].

At present, given the breastfeeding failure of premature infants, the health and medical departments have issued many relevant supporting policies, including the 10 steps to successful breastfeeding implemented by the World Health Organization[7], the international sales principles of breast milk substitutes[8], vigorously promote the benefits of breastfeeding and encourage maternal breastfeeding behavior. However, the global breastfeeding situation of preterm infants is not optimistic. The average breastfeeding rate of preterm infants during hospitalization in developed countries is 13%-49%[9-11]. However, the breastfeeding rate of premature infants in China is far lower than the data in developed countries. Although China has implemented related measures to promote the breastfeeding rate of preterm infants[12], the breastfeeding rate of preterm infants during NICU is still only 15%[13].

The breastfeeding outcome of premature infants separated from their mothers has not been investigated in detail in Shanghai in recent years. Premature infants are more likely to face lactation-related problems. This is the first cohort study to investigate factors of exclusive breastfeeding duration of preterm infants separated from their mothers after discharge in Shanghai. The aim of this paper is to investigate the status of breastfeeding in different stages of 1 month, 3 months, and 6 months after discharge and exclusive breastfeeding duration and analyze its determinants to prolong the exclusive breastfeeding duration of premature infants after discharge.

Methods

Recruitment and Sampling

This longitudinal cohort study included 500 premature infant admitted to NICU and their mothers in a territory maternity and infant special hospital in Shanghai. Inclusion criteria were primiparas with delivery gestational age less than 37 weeks and premature infants living in NICU. The primiparas that participated

in the study had the normal ability of expression, communication, and understanding. Exclusion criteria were primiparas with oral sleeping pills, history of mental illness, and refusing to breastfeed.

The sample size was obtained by cohort formula as follows:

$$n = [z_{\alpha}\sqrt{2pq} + z_{\beta}\sqrt{p_0q_0 + p_1q_1}]^2 p / (p_1 - p_0)^2$$

It is estimated that the breastfeeding rate of preterm infants during NICU is 15% [13], $\alpha = 0.1$, $\beta = 0.1$, and Z is obtained by checking the table $Z_{\alpha} = 2.576$, $Z_{\beta} = 1.282$ [14]. Considering the longitudinal study and follow-up loss, we expanded the sample size by 20%. The final sample size was 500.

2.2 Study Design and the Survey

All women in the maternity units were invited to voluntarily participate after they were fully informed of the study. Survey forms (Supplementary Material 1 [available in paper version]) were distributed by a researcher in respective areas from September 2018 to September 2019. The self-administered form, breastfeeding knowledge questionnaire [15], breastfeeding self-efficacy scale [16], Edinburgh postpartum depression scale [17], and family support questionnaire [18] were investigated on the day of discharge and returned anonymously on the spot. The results were kept confidential and known only to the research team. The self-administered 37-item questionnaire consisted of maternal and husband demographic data (22 items), mode of delivery data (3 items), maternal lactation experiences (6 items), and the follow-up data (6 items). Participant characteristics were as follows: maternal and husbands' age at delivery (< 25, 25–30, 31–34, > 34 years), education attainment (Primary studies, Secondary studies, Undergraduate studies, Postgraduate studies), occupation, primiparous (no, yes), working status (not working during pregnancy, planning not to work after maternity leave, planning to work after maternity leave), the family income per consumption unit (CU) was classified as ≤ 5000 RMB, 5001 to 10000RMB, 10001 to 15000RMB, ≥ 15001 RMB per month), mode of delivery, gestational weeks of delivery and husband's attitude towards breastfeeding (the total score is 10—the higher the score, the higher the husband's identity with breastfeeding). Infant characteristics were collected from the medical records: sex, gestational age and birth weight, Apgar score. These data were collected at birth by the face-to-face interview in the hospital. Because the sociodemographic characteristics only marginally evolved within 6 months, these data were collected only once.

Data collection

(1) Questionnaire survey: with the consent and support of relevant departments of the hospital, surveys were conducted in a territory maternity and infant hospital in Shanghai from September 2018 to September 2019. During hospitalization, the primiparas and infants who met the inclusion and exclusion criteria were recruited. On the day of discharge, the researchers explained the purpose and process to the participants, and collected the characteristics of mothers and their families, the score of the breastfeeding knowledge questionnaire, breastfeeding self-efficacy, Edinburgh postpartum depression

Scale, and family support scale. The returned proportion of questionnaires was 100%. If any missing or wrong option was found, relevant content would be required to be filled in again.

(2) The follow-up process: the follow-up event was the breastfeeding outcome of premature infants separated from their mothers; the discharge time of premature infants was recorded by the medical history, and the follow-up survey was conducted with the day of discharge as the starting point. The results of questionnaires were gotten by telephone or WeChat in 1 month, 3 months, and 6 months after premature infants were discharged from the hospital. The endpoint of observation; breastfeeding outcomes in 1 month, 3 months, and 6 months and exclusive breastfeeding duration were taken as variables. Finally, incomplete data related to weaning and discontinuation of breastfeeding as well as those who were lost to follow-up were excluded.

Statistical analysis

Data are reported as mean \pm standard deviation or percentage for categorical variables. The time variable was exclusive breastfeeding duration and participants discontinuing breastfeeding were considered events. Estimates were obtained using the Kaplan-Meier method. The relationships between a woman and infant characteristics and exclusive breastfeeding duration were analyzed via Cox regression parameterized as the accelerated time of failure[19]. Of note, the Cox model is a multivariable analysis and can analyze the influence of many factors on exclusive breastfeeding duration at the same time. The most frequent parameterization is proportional hazards, then the main result is usually expressed as a hazard ratio. Accelerated time of failure parameterization, however, displays its main result as time ratio, as time is a more natural and immediately understandable unit than a hazard, time ratios are easier to interpret. After the Cox analysis took place, we estimated adjusted medians and means of exclusive breastfeeding duration according to different mother or newborn characteristics.

Results

The initial sample was 500 infants included in the study at birth. Among all preterm infants, 496 infants were followed-up in 1 month and 478 infants were followed-up in 2 months. Finally, 443 infants (88.6%) were followed-up until 6 months. The average exclusive breastfeeding duration was (3.69 ± 1.80) months, the longest one is 6.90 months. A flowchart with the recruitment and follow-up data appears in Fig 1 and Fig 2.

Participant demographics

In this study, 500 cases of puerperal and preterm infants were collected. The mothers were (30.41 ± 4.64) years old on average. 338 mothers had attended the undergraduate studies. More than 90% of women were employed during the pregnant period; 433 mothers live in the city. More than 40% of families got an income of more than 20000 RMB monthly, 274 patients stayed in the hospital for more than 96 hours, 393 puerperal had medical insurance; Additionally, more than 90% of women lived with their husbands during the perinatal period. Among the mothers, 412 worked before delivery, 411 women decided to continue working after the maternity leave, 85.6% women planned to conceive, 349 women expected to breastfeed

for at least 6 to 12 months,300 women removed the breast milk by hands or pumped the breast, The results showed that 69.6% women pumped the breast less than 8 times per day, 60% women pumped the breast in 30 to 60 mins every time;273 mothers or their husbands visited the preterm infants during hospitalization, 47.8% women delivered the breast milk to their newborns in NICU.

The average age of husbands was (32.41 ± 1.36) years old, 279 husbands got the bachelor's degree;85.6% of husbands planned to get the babies; They hoped that the exclusive breastfeeding duration would maintain 6 to 12 months; 427 husbands' attitude towards breastfeeding reached 9–10 points.

256 infants were male and 36.8% weighted between 2000-2500g at birth; 308 preterm infants with a birth score of 9–10. More than 50% of preterm infants were fed formula in NICU(Table 1).

Table 1
Parental and preterm infants characteristics (n = 500)

Variable	Category	N	%
Maternal Age	18 ~ 25	35	7.0
	26 ~ 30	172	34.4
	31 ~ 34	243	48.6
	≥ 35	50	10.0
Maternal educational level	Primary studies	15	3.0
	Secondary studies	49	9.8
	Undergraduate studies	338	67.6
	Postgraduate studies	98	19.6
Maternal occupation	Working	494	98.8
	Unemployed	6	1.2
Residency	City	433	86.6
	Countryside	67	13.4
Family income(RMB)	≤ 5000	39	7.8
	5001 ~ 10000	79	15.8
	10001 ~ 15000	91	18.2
	15001 ~ 20000	89	17.8
	>20001	202	40.4
Type of delivery	Vaginal	221	44.2
	Cesarean	279	55.8
Pregnancy duration (week)	28 ~ 32 ⁺⁶	43	8.6
	33 ~ 34 ⁺⁶	49	9.8
	35 ~ 36 ⁺⁶	408	81.6
Labor Complication	Yes	252	50.4
	No	248	49.6
Payment type of expenses	Medical insurance	393	78.6

Variable	Category	N	%
	Self-paid	92	18.4
	Other	9	1.8
	Unclear	6	1.2
Live with husbands during Perinatal period	Yes	487	97.4
	No	13	2.6
Prenatal work	Yes	412	82.4
	No	88	17.6
Hospital stay (hour)	36 ~ 48	26	5.2
	49 ~ 72	102	20.4
	73 ~ 96	98	19.6
	>97	274	54.8
Plan to work after maternity leave	Yes	411	82.2
	No	89	17.8
Planned pregnancy	Yes	428	85.6
	No	72	14.4
Estimated breastfeeding time(month)	<6	100	20.0
	6 ~ 12	349	69.8
	12 ~ 24	49	9.8
	>24	2	0.4
Methods of removing breast milk during the period of mother and infant separation	By hand	63	12.6
	Breast pump	137	27.4
	By hand + Breast pump	300	60.0
Number of removing the milk by hand per day	<8	348	69.6
	8 ~ 12	149	29.8
	>12	3	0.6
Time of each removing the milk by hand	<30	158	31.6
	30 ~ 60	300	60.0

Variable	Category	N	%
	>60	42	8.4
Visit NICU newborns	Yes	273	54.6
	No	227	45.4
Deliver milk to the infants in NICU	Yes	239	47.8
	No	261	52.2
Husband Age(years)			
	18 ~ 25	15	3.0
	26 ~ 30	150	30.0
	31 ~ 34	195	39.0
	≥ 35	140	28.0
Husband's education. level			
	Primary studies	13	2.6
	Secondary studies	67	13.4
	Undergraduate degree	279	55.8
	Postgraduate studies	141	28.2
Planned pregnancy			
	Yes.	298	59.6
	No.	72	14.4
	Full	130	26.0
Husband's attitude towards breastfeeding.			
	5	7	1.4
	6	11	2.2
	7	1	0.2
	8	54	10.8
	9	31	6.2
	10	396	79.2
Infant gender	Male	256	51.2

Variable	Category	N	%
	Female	244	48.8
Weight at birth(g)	<1500	28	5.6
	1500 ~ 2000	42	8.4
	2001 ~ 2500	128	25.6
	2501 ~ 3000	184	36.8
	>3001	118	23.6
Apgar score	≤ 6	13	2.6
	7 ~ 8	179	35.8
	9 ~ 10	308	61.6
Type of feeding in NICU	Exclusive breastfeeding	38	7.6
	Partial breastfeeding	195	39.0
	Formula	267	53.4

About 19% of preterm infants were breastfed after 1-month discharge from the hospital, and the percentage dropped to 17% and 10% at 3 and 6 months after discharge, respectively. (Fig. 2).

Questionnaires survey

Table 2 displays maternal breastfeeding knowledge was (13.63 ± 2.93) at the hospital and decreased to (12.67 ± 3.72) in 6 months; maternal breastfeeding self-efficacy was (3.25 ± 0.77) at the hospital and increased to (3.34 ± 1.04) in 6 months; maternal postpartum depression was (16.63 ± 2.83) and decreased to (13.06 ± 1.86) in 6 months; maternal family support was (2.94 ± 0.40) and increased to (3.06 ± 1.11) in 6 months. Through the ANOVA analysis, the following results were obtained: with the time changing, there was a significant difference between maternal breastfeeding self-efficacy and postpartum depression ($P < 0.05$); the longer the time was, the breastfeeding self-efficacy showed an upward trend, and the degree of postpartum depression decreased.

Table 2
Maternal Breastfeeding knowledge, Breastfeeding self-efficacy, Postpartum depression and Family support at birth,1,3,6 months

Factor	At hospital ($\bar{x} \pm s$)	1month ($\bar{x} \pm s$)	3months ($\bar{x} \pm s$)	6months ($\bar{x} \pm s$)	Within-group factors	
					F	P
Breastfeeding knowledge	13.63 ± 2.93	13.05 ± 3.68	12.37±4.37	12.67±3.72	2.403	0.108
Breastfeeding self-efficacy	3.25 ± 0.77	3.29 ± 1.04	3.34 ± 1.05	3.34 ± 1.04	55.228	<0.001
Postpartum depression	16.63 ± 2.83	13.28 ± 2.14	13.15 ± 2.01	13.06 ± 1.86	19.930	<0.001
Family support	2.94 ± 0.40	3.03±1.15	3.01±1.15	3.06±1.11	1.624	0.226
F:Fish statistic;P:P value						

Factors associated with exclusive breastfeeding duration

Table 3 shows the results from the Kaplan Meier curve. The maternal and family characteristics, breastfeeding knowledge, breastfeeding self-efficacy, postpartum depression, and family support were included in the Kaplan Meier method for univariate analysis. There were significant differences in exclusive breastfeeding duration among the levels of psychological preparation for pregnancy, delivering milk to the infants in NICU, the attitude of spouses towards breastfeeding, type of feeding in NICU, maternal breastfeeding knowledge, breastfeeding self-efficacy, maternal postpartum depression, and family support (P<0.05). The data were shown in Table 3 and Fig. 3.

Table 3 - Factors associated with exclusive breastfeeding duration: results obtained by Kaplan Meier curve

Variable	The type of breastfeeding outcome			Median. (Month)	95%CI	Kaplan-Meier	
	Delete .data	Breastfeeding(N)	N%.			c2	P
Planned pregnancy						7.264	0.026
No	13	59	81.944	3.6	2.98-4.22		
Yes	51	277	84.451	3.5	3.20-3.80		
Sufficient	26	74	74	4.2	3.45-4.95		
Deliver milk to the infants in NICU						15.346	□ 0.001
Yes	62	199	76.245	4.3	4.06-4.54		
No	28	211	88.285	3.5	3.27-3.73		
Husband's attitude towards breastfeeding.						16.649	0.005
5	2	5	71.429	4.3	2.25-6.35		
6	1	10	90.909	2.0	0.00-4.05		
7	0	1	100.000	0.8	—		
8	9	45	83.333	3.5	2.87-4.13		
9	4	27	87.097	3.8	3.18-4.42		
10	74	322	81.313	3.6	3.33-3.87		
Type of feeding in NICU						45.371	□ 0.001
Exclusive breastfeeding.	31	15	39.474	6	—		
Mixed feeding.	23	189	89.231	3.5	3.25-3.75		
Formula	36	206	82.772	3.7	3.29-3.92		

Breastfeeding knowledge level (points)						82.015	□ 0.001
≥14	80	184	69.697	4.5	4.08-4.93		
≠14	10	226	95.763	2.8	2.47-3.13		
Breastfeeding self-efficacy (points)						53.184	□ 0.001
≥44	66	135	67.164	4.4	3.94-4.86		
≠44	24	275	91.973	3.5	3.16-3.84		
Postpartum depression (points)						53.221	□ 0.001
≥14	75	185	92.5	4.3	3.95-4.65		
≠14.	15	225	75	3.1	2.85-3.35		
Family support (points)						86.196	□ 0.001
≥3.	83	175	67.829	4.4	3.95-4.85		
≠3 .	7	235	97.107	3.9	2.66-3.14		

c²:Chi-square test ; P:p-Value ; CI: Confidence Interval

A significant single factor was included in cox regression, and the results showed that the more sufficient the degree of psychological preparation for planned pregnancy, the lower the risk of weaning and the longer the exclusive breastfeeding duration. In the multivariate analysis (95% confidence interval(CI) 0.531 ~ 0.873). Women who delivered milk to NICU during hospitalization had a lower risk of weaning than those who did not and breastfed the newborns longer((CI) 1.412 ~ 2.288). Premature infants who were fed formula in NICU had a higher risk of weaning after discharge and were prone to stop breastfeeding ((CI 0.128 ~ 0.381). Women with higher levels of family support had a lower risk of weaning their preterm infants after discharge from the hospital and were more likely to keep breastfeeding ((CI) 1.004 ~ 2.428). The data were shown in Table 4.

Table 4

factors associated with the risk of discontinuing exclusive breastfeeding which is the outcome event

Variable	<i>B</i>	<i>RR</i>	<i>95%CI</i>	<i>Se</i>	<i>z</i>	<i>P</i>
Planned pregnancy	-0.385	0.681	0.531 ~ 0.873	0.127	9.166	0.002
Milk delivery during hospitalization	-0.586	0.797	1.412 ~ 2.288	0.123	22.706	<0.001
Artificial feeding of premature infants in NICU	1.509	1.221	0.128 ~ 0.381	0.278	29.512	<0.001
High Level of family support	-0.445	0.561	1.004 ~ 2.428	0.225	3.904	0.048

B: Regression Coefficient; *RR*: risk ratio ;*CI* Confidence Interval ; *Se* standard error ; *z*:Wald Statistics *P*: p-Value

Discussion

In this cohort study, we found that exclusive breastfeeding duration was decided by maternal planned pregnancy, maternal and family action (delivery the breast milk to the infants separated from their mothers during hospitalization, family support), and medical intervention(artificial feeding of premature infants in NICU). The psychological status before pregnancy would have a great impact on the breastfeeding rate and duration. Therefore, maternal psychological state of preparation for pregnancy should be paid more attention to[20]. The more psychological preparation for pregnancy, the lower the risk of weaning in the future. Meanwhile,it mirrored that they were more aware of the breastfeeding benefits[21] and they were empowered to decide on whether breastfeeding or not[22].

Maternal and family actions of delivering the breast milk were associated with increasing breastfeeding rate and prolonging the exclusive breastfeeding duration. Relevant studies have shown that the lower the birth weight of premature infants, the more time they need to get used to direct breastfeeding after discharge. Shorter duration of pregnancy and lower weight at birth were frequently found related to early breastfeeding discontinuation[23–25].The younger gestational week of preterm infants, the less mature the organ system of sucking, the development of swallowing and aspiration coordination was not so good, so the nasal feeding had to been taken[26–27]; The early delivery of breast milk to the Neonatal Intensive Care Unit (NICU) will enable premature infants to begin breastfeeding as soon as possible, which facilitates the successful transition from artificial feeding to direct breastfeeding after discharge from the hospital.

This study pointed out that maternal family support not only affected the exclusive breastfeeding duration. A Good family support environment is the key to the success of breastfeeding. However, from this survey, it was found that the level of family support for breastfeeding was at a low level, especially about psychological support. During hospitalization, the score of family support was only (2.79 ± 0.37),

and the score of behavioral support was slightly higher. For example, for items like "my family think formula can replace breast milk", the general family members agreed that when breast milk was not enough, formula can be given instead of breast milk. This research showed that family members lacked breastfeeding knowledge, and they wanted to help mothers in their way. So to most families, the establishment of a supportive environment is crucial to prolong the exclusive breastfeeding duration.

We also found that artificial feeding to premature infants in NICU had been identified as a factor related to exclusive breastfeeding duration after discharge. Feeding the newborns formula increased the risk of breastfeeding discontinuation. The infants that were breastfed exclusively during hospitalization were likely to direct breastfeed longer after discharge. A national study on breastfeeding of preterm infants in Denmark showed that mothers were permitted to enter the NICU to take care of preterm infants, through cup feeding or spoon feeding can make premature infants accept direct breastfeeding earlier after discharge[28]. Considering the closed environment of NICU in China, and parents are not allowed to enter the NICU. Premature infants are mainly fed with formula, which is an obstacle to the women who want to continue breastfeeding the infants after discharge from the hospital.

Our study also has some limitations. Firstly, exclusive breastfeeding duration was reported by mothers or their husbands, so there is some room for information bias as some women could have informed according to social desires more than according to their actual practice. Secondly, although the sample size is only 500 mother-infant dyads, some categories in the analysis have few participants, which makes some confidence intervals excessively wide. The main strength of our study is that women and preterm infants have been prospectively followed homogeneously in a single-center committed to breastfeeding practices.

Conclusions

Using data from a study we have demonstrated the exclusive breastfeeding duration of premature infants after discharge is short, and targeted measures should be taken according to the different stages. We need to focus on three system levels of the individual, family, and social, improve maternal breastfeeding knowledge and self-efficacy, pay attention to maternal postpartum emotions; encourage family members to participate in the process of breastfeeding, and improve family support as well as possible. Secondly, to the medical staff, an open neonatal intensive care unit environment should be provided to the parents. Last but not least, to society, breastfeeding support policies should be optimized for premature infants to improve the breastfeeding rate and prolong the breastfeeding time of premature infants after discharge.

Abbreviations

ROP: Retinopathy of Prematurity; CI: Confidence Interval; NICU: Neonatal Intensive Care Unit; SD: Standard deviation

Declarations

***Ethics approval and consent to participate**

All aspects of the study were approved by the Ethics Review Board of the Shanghai First Maternity and Infant Hospital (No. KS1967), and written informed consent was obtained from caregivers before the interview.

***Consent for publication**

Not applicable

***Availability of data and material**

The questionnaire and datasets used during the current study are available from the corresponding author on reasonable request.

***Competing interests**

The authors declare that they have no competing interests.

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***Authors' contributions**

Xin Jiang designed the study, conducted the analysis, and drafted the initial manuscript. Hui Jiang provided substantial contributions to the design of the study and interpretation of the data. All authors reviewed and revised the manuscript and approved the final manuscript as submitted.

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Supplemental Data

Supplementary Files are not available with this version

Figures

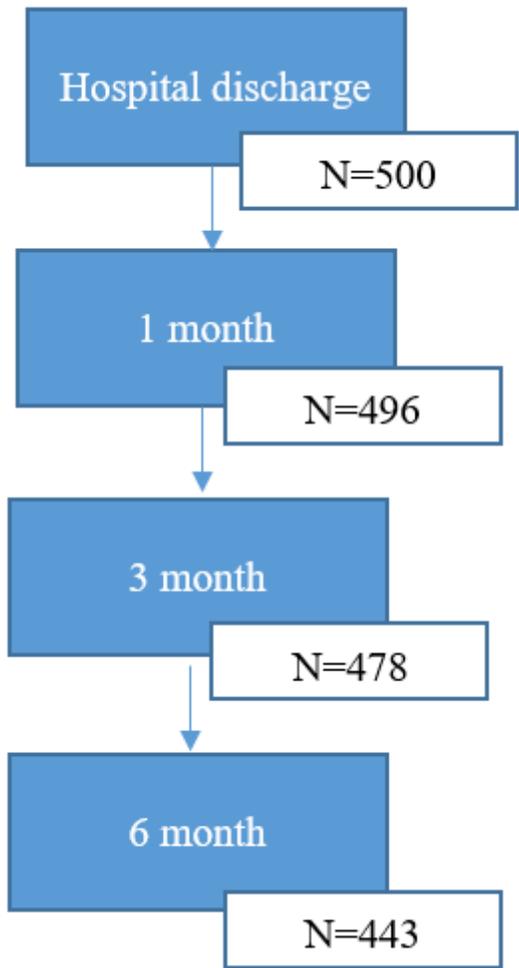


Figure 1

Flowchart

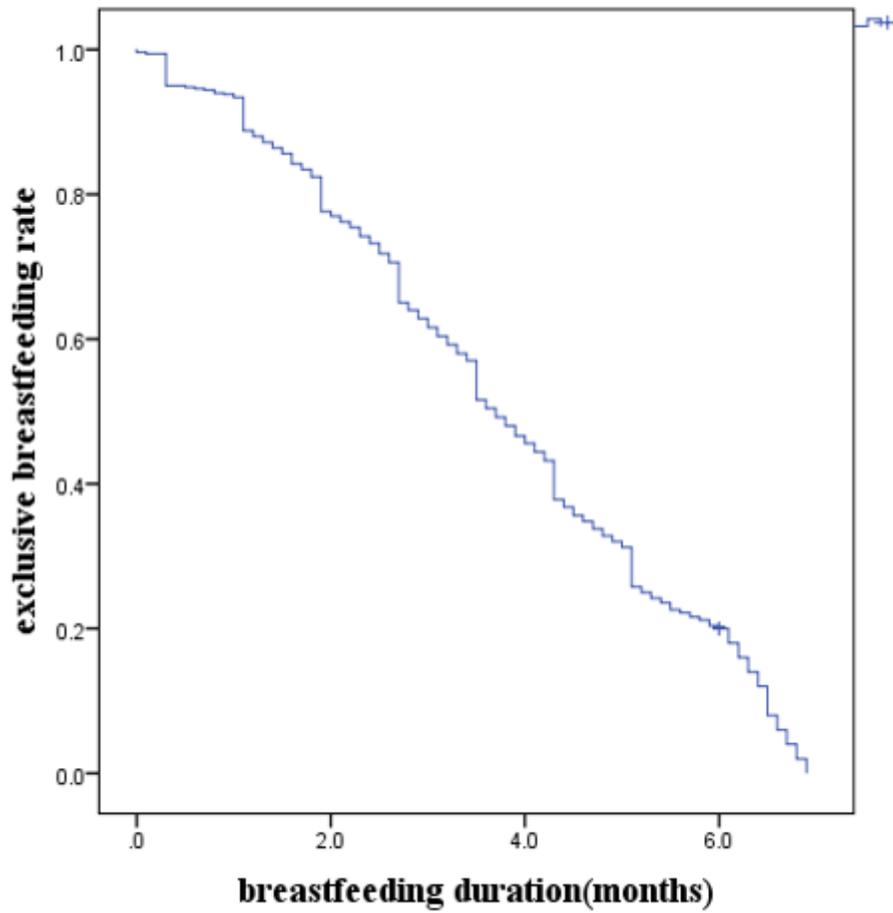


Figure 2

Breastfeeding duration in the whole cohort study. Kaplan-Meier estimates with 95% confidence bands

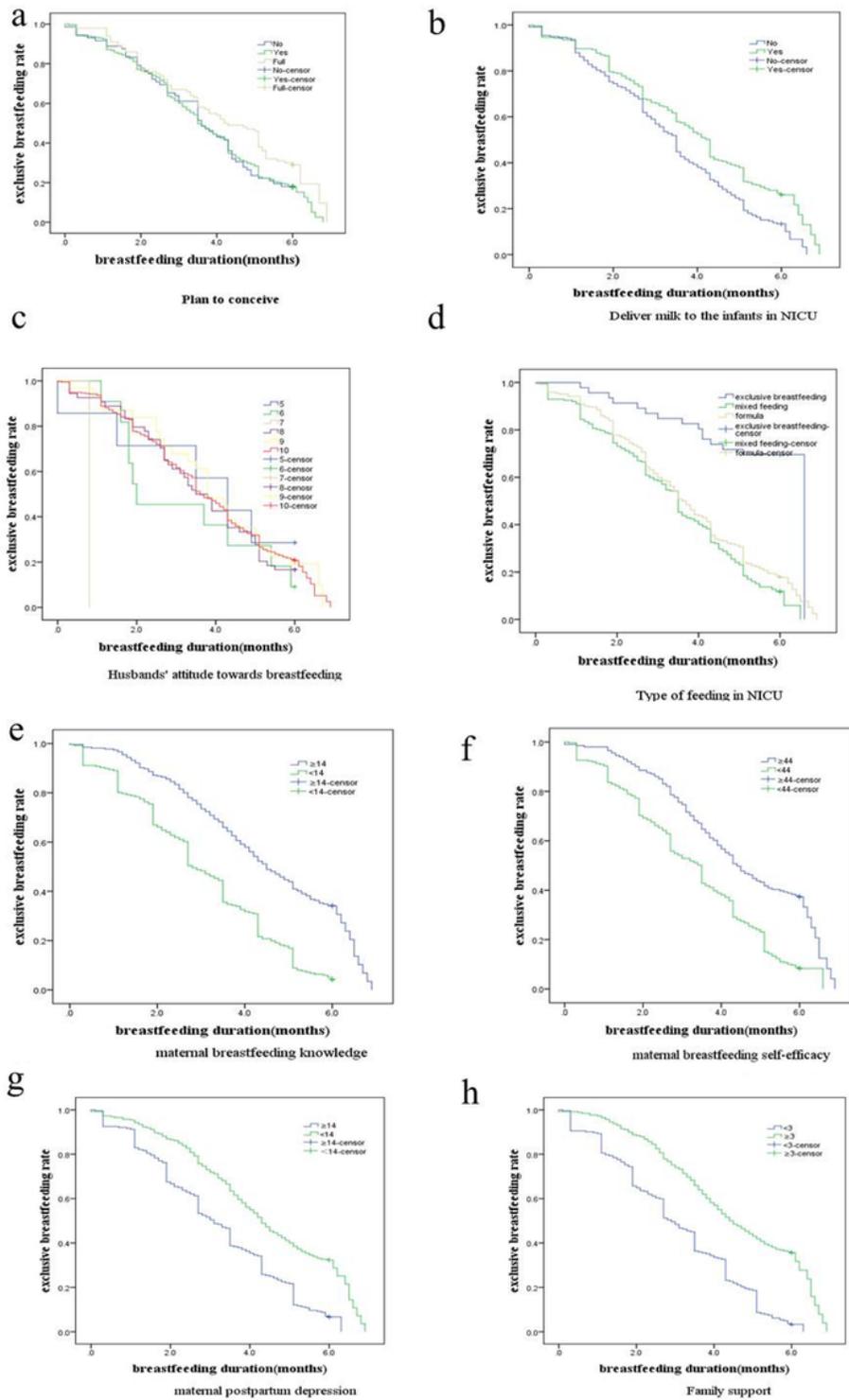


Figure 3

Duration of breastfeeding according to (a) plan to conceive , (b) Deliver milk to the infants in NICU,(c) Husband's attitude towards breastfeeding.,(d) Type of feeding in NICU,(e) Breastfeeding knowledge level, (f) Breastfeeding self-efficacy,(g) Postpartum depression,(h) Family support