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Original Article

Focused group discussion with health care staff improves breastfeeding rates in hospitalized infants

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Abstract

Background Improving breastfeeding in sick infants is essential. During the neonatal care, health care staff play an important role in promoting breastfeeding. Therefore, it is important to study in depth how healthcare staff can improve breastfeeding practice in sick neonates.

Objective To compare breastfeeding rates in sick infants before and after a focused group discussion (FGD) of health care staff on how to improve breastfeeding.

Methods This study was an operational study using FGD and in-depth interviews as an intervention. A fish bone diagram was used to assess problems that may prevent mothers from breastfeeding their sick infants. Breastfeeding achievement was compared before and after the FGD.

Results Of 257 sick infants, 177 subjects were in the before FGD group and 80 subjects were in the after FGD group. Significantly more after FGD subjects were breastfed during hospitalization than before FGD subjects [97.5% *vs.* 82.9%, respectively; (X^2 =9.43; P=0.002)]. Breastfeeding initiation within 0-4 hours of birth was also significantly higher in the after FGD group [10 (12.5%) *vs.* 6 (3.5%), respectively; (X^2 = 52.5; P<0.001)]. The solutions for breastfeeding problems were: 1) support of hospital management, 2) support of healthcare workers for breastfeeding mothers, 3) support of husbands and families for breastfeeding mothers, 4) financial support, 5) other factors such as level of care and consistent FGD events, and 6) a prospective cohort study.

Conclusion The FGD with health care staff significantly increases breastfeeding achievement during infant hospitalization, and accelerated breastfeeding initiation. A fish bone diagram is used to effectively assess the problems with breastfeeding programs for sick babies. **[Paediatr Indones. 2017;57:187-93 ; doi: http://dx.doi.org/10.14238/pi57.4.2017.187-93]**.

Keywords: *breastfeeding; sick babies; qualitative study; FGD*

Although breast milk has been shown to reduce morbidity and mortality in infants, optimal achievement of breastfeeding in sick neonates has not been realized. Evidence has shown that nutrients in breast milk reduce the incidence of necrotizing enterocolitis, chronic lung disease, retinopathy of prematurity, and infection, as well as shortening the length of hospital stay, especially for preterm infants.[1-7] Despite the benefits of breast milk, breastfeeding rates in sick neonates are far from meeting expectations. According to 2013 data from the Neonatology Division, Department of Pediatrics, Cipto Mangunkusumo Hospital, the proportion of newborns who received breast milk during hospitalization was only 5%, and only 2% of those received exclusive breastfeeding. About 14.7% of newborns did not receive breast milk within the first 4 weeks of life, despite the breastfeeding achievement target of 90% for well infants and 20% for sick infants. Therefore, efforts to improve breastfeeding achievement in sick infants are essential.

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Measures to improve breastfeeding achievement have been done but their effectiveness was insufficient, hence, a new approach is required. One measure to improve breastfeeding achievement was health care staff training using a structured, clinical, objective-referenced, problem-oriented, integrated, organized (SCORPIO) method.[8] This training was conducted for a year with a focus on breastfeeding and included all health care staff in Dr. Cipto Mangunkusumo Hospital, Jakarta. However, the neonatal division reported fluctuative and below target rates of breastfeeding in sick infants. As a new strategy to complement healthcare staff training, a focused group discussion (FGD) of the staff was undertaken to improve breastfeeding achievement in sick newborns.

The aim of this study was to determine the effectiveness of FGD with health care staff for increasing breastfeeding rates in sick infants. Breastfeeding achievement in infants was compared before and after the FGD. In addition, factors affecting breastfeeding achievement and difficulties faced by the staff in improving breastfeeding achievement were also determined.

Methods

This study was operational research, using qualitative and quantitative methods. After receiving approval from the Medical Ethics Committee, we collected retrospective data from medical records and the neonatal registry of the Neonatal Unit, Dr. Cipto Mangunkusumo Hospital, from January to March 2015 to determine the rate of breastfeeding achievement. Then, the FGD, combined with in-depth interviews of health care staff, were conducted. During the FGD, a qualitative research method and fish bone diagram were used to gain information and to assess problems related to breastfeeding implementation in sick infants.[9] After FGD with healthcare staff, quantitative data were collected to determine the rates of breastfeeding in sick infants.

The target population of this study was sick, hospitalized neonates, admitted to the level 2 or level 3 Neonatal Care Unit from January to March 2015 (before FGD) and December 2015 (after FGD), which was within one month after the FGD. The subjects were allocated through non-probability sampling. The minimum number of required subjects was 75 participants for each group.[10] All subjects from a previous pilot study were enrolled as the before FGD group (177 newborns). Neonates who had not been given enteral nutrition or were discharged without a doctor's approval were excluded.

The 9 health care staff included breastfeeding coordinators, nurses in charge of breast milk delivery, dieticians, and a pediatric nutrition supervisor, as the FGD and in-depth interview participants. In addition to healthcare staff, parents were included in the FGD and in-depth interviews. The allocation for FGD respondents was through purposive sampling.

The *Statistical Package for Social Sciences (SPSS)* for Windows software was used for data analysis, comprising univariate, bivariate, and multivariate analyses. The data are summarized in diagrams, tables, and text.

Results

In general, the demographic and clinical characteristics of subjects were not significantly different between groups. However, significantly more after FGD subjects required ventilation support and inotropic drugs than did the before FGD subjects. The characteristics of subjects are shown in **Table 1**.

After the FGD, breastfeeding achievement in sick babies during hospitalization significantly increased. Of the total sample, 78 (97.5%) subjects after FGD received breast milk compared to 145 (82.9%) of those before FGD ($X^2=9.43$; $P=0.002$) (**Table 2**).

A significantly higher percentage of the after FGD group received breast milk during their first week of hospitalization than did the before FGD group [74 (92.5%) *vs.* 131 (74.9%), respectively; ($X^2=9.75$; $P=0.002$)] (**Table 3**).

Before FGD, 46.9% of infants received partial breastfeeding, and 25.1% babies did not receive breast milk at all. However, after FGD, the majority of subjects received partial breastfeeding (72.5%) and predominant breastfeeding (17.5%), significantly more than in the before FGD group ($X^2=36.76$; $P<0.001$) (**Table 4**). However, much fewer from the after FGD group (0.5%) received exclusive breastfeeding compared to the before FGD (22.3%).

Table 1. Demographic and clinical characteristics of subjects (N=257)

Characteristics	Before FGD (n=177)	After FGD (n-80)	X^2 or F	P value
Maternal education, n(%)				
Well-educated	39 (22)	13 (16.3)	X^2=0.81	0.32
Under-educated	138 (78)	67 (83.8)		
Commuting time to hospital, n(%)			X^2=1.97	0.37
<1 hour	60 (33.9)	34 (42.5)		
1-2 hours	69 (39)	29 (36)		
>2 hours	48 (27.1)	17 (21.3)		
Mean maternal age (SD), years	28.9 (6.27)	27.9 (6.12)	F=1.25	0.21[a]
Median parity (IQR) [N=256, missing 1 (0.6%)]	1 (0-2)	1 (0.5-1.5)		0.43[b]
Gender, n(%)			X^2=0.20	0.65
Male	80 (45.2)	33 (41.3)		
Female	97 (54.8)	47 (58.8)		
Level of neonatal care, n(%)			X^2=2.61	0.14
Level 2	110 (62.1)	58 (72.5)		
Level 3	67 (37.9)	22 (27.5)		
Mean gestational age (SD), weeks	35.0 (3.48)	34.9 (3.84)		
Gestational age by group, n(%)			X^2= 0.54	0.76
<32 weeks	28 (15.8)	15 (18.8)	F=1.21	0.23[a]
32-36 weeks	76 (42.9)	31 (38.8)		
≥37 weeks	73 (41.2)	34 (42.5)		
Mean birth weight (SD), grams	2,264 (764,06)	2,213 (873)		
Birth weight by group, n(%)			X^2=3.88	0.27
<1,500 grams	31 (17.5)	21 (26.3)	F=0.120	0.89[a]
1,500-1.999 grams	36 (20.3)	13 (16.3)		
2.000-2.499 grams	41 (23.2)	13 (16.3)		
≥1,500 grams	69 (39)	33 (41.3)		
Median APGAR score at 1st minute (IQR) [N=243, missing 14 (5.45%)]	7 (5.5-8.5)	7 (5.5-8.5)		
Median APGAR score at 5th minute (IQR) [N=243, missing 14 (5.45%)]	9 (8-10)	9 (8.5-9.5)		0.17[b]
Types of delivery, n(%)			X^2=0.001	0.97
Vaginal	55 (31.1)	25 (31.3)		
C-section	122 (68.9)	55 (68.7)		
Twins, n(%)	14 (7.9)	4 (5)	X^2=0.35	0.56
Persistant ductus arteriosus, n(%)	16 (9)	4 (5)	X^2=0.75	0.39
Hypotension requiring inotropic drugs, n(%)	4 (2.3)	8 (10)	X^2==5.72	0.02
Resusitation at birth, n(%) [N=253, missing 4 (1.6%)]	99 (57.2)	47 (58.8)	X^2==0.008	0.82
Ventilation support, n(%)			X^2=10.60	0.005
None	75 (42.4)	18 (22.5)		
Non-invasive ventilation	75 (42.2)	50 (62.5)		
Invasive ventilation	27 (15.3(	12 (15)		

[a]=T-test; [b]=Mann-Whitney test; IQR=interquartile range

Table 2. Breastfeeding achievement for sick newborns during hospitalization

Breastfeeding during hospitalization	Before FGD (n=175)	After FGD (n=80)	X^2	P value
Received breast milk, n(%)	145 (82.9)	78 (97.5)	9.43	0.002
Did not receive breast milk, n(%)	30 (17.1)	2 (2.5)		

N valid=255, missing 2 (0.8%)

In addition to the quantity of breast milk, breastfeeding initiation time after birth was significantly lower in the after FGD group than in the before FGD group, as shown in **Table 5**. There were 10 (12.5%) after FGD subjects who received breastfeeding within the first 4 hours of admission compared to 6 (3.5%) before FGD subjects (X^2=52.5; P<0.001). However, significantly more before FGD subjects than after FGD subjects were in the >4-24 hour initiation time category.

In this study, factors that were significantly different between the breastfed and non-breastfed groups were as follows: level of hospitalization, birth weight, gestation, APGAR score at the first and fifth minutes, resuscitation at birth, ventilation support, and FGD. These findings are described in **Table 6**.

Further logistic regression analysis revealed that only level of neonatal care and FGD affected breastfeeding achievement in sick infants. Infants hospitalized in level 2 neonatal care had 5.18 times (95%CI 2.19 to 12.28; P<0.001) higher odds to achieve breastfeeding compared to those hospitalized in level 3. Infants hospitalized after FGD had a 6.31 times (95%CI 1.43 to 27.87; P=0.01) higher odds to achieve breastfeeding compared to those hospitalized before the FGD was conducted. Level of care and FGD explained 20% of the variation in breastfeeding achievement in sick infants during hospitalization (Nagelkerke R2=0.20).

The qualitative section of the study was an applied, naturalistic study, in order to understand the health care staff's experiences, expectations, and attitudes towards a program for promoting breastfeeding for sick infants. Purposively recruited, the respondents were 9 staff responsible for feeding and providing education to promote breastfeeding. In addition, parents were also invited to participate

Table 3. Breastfeeding achievement during the first week of hospitalization

Breastfeeding during the first week of hospitalization	Before FGD (n=175)	After FGD (n=80)	X^2	P value
Received breast milk, n(%)	131 (74.9)	74 (92.5)	9.75	0.002
Did not receive breast milk, n(%)	44 (25.1)	6 (7.5)		

N valid=255, missing 2 (0.8%)

Table 4. The quantity of breast milk given during the first week of hospitalization

Breastfeeding during the first week of hospitalization	Before FGD (n=175)	After FGD (n=80)	X^2	P value
Exclusive breastfeeding	39 (22.3)	2 (0.5)	36.76	<0.001
Predominant breastfeeding	10 (5.7)	14 (17.5)		
Partial breastfeeding	82 (46.9)	58 (72.5)		
Did not receive breast milk, n(%)	44 (25.1)	6 (7.5)		

N valid=255, missing 2 (0.8%)

Table 5. Breastfeeding initiation time for sick infants before an

Breastfeeding initiation time	Before FGD (n=173)	After FGD (n=80)	X^2	P value
0-4 hours	6 (3.5)	10 (12.5)	52.5	0.001
>4-24 hours	61 (35.3)	15 (18.8)		
>1-4 days	48 (47.7)	35 (43.8)		
5-7 days	16 (9.2)	13 (16.3)		
>1-2 weeks	12 (6.9)	4 (5)		
3 weeks or more	30 (17.3)	3 (3.8)		

N valid=253, missing 4 (1.6%)

in the study.

Focused group discussion using a fish bone diagram was an effective method to improve breastfeeding achievement in sick infants. During the FGD, 10 topics were discussed. Through the use of a fish bone diagram, six factors were identified as the causes of poor breastfeeding achievement in sick infants. Short-term and long-term applicable solutions were proposed by the staff through six tools in the fish bone diagram shown in **Figure 1**.

Table 6. Factors affecting breastfeeding for sick infants during hospitalization, as grouped by breastfeeding status

Hospitalized subjects (N=255)	Breastfed (n=223)	Not breastfed (n=32)	P value/t/X^2
Education, n(%)			
[N=255, missing 2 (0.8%)]			
HIgh	45 (88.2)	6 (11.8)	X^2=0.06; P=0.85
Low	178 (87.3)	26 (12.7)	
Commuting time, n(%)			X^2=1.68; P=0.43
[N=255, missing 2 (0.8%)]			
<1 hour	83 (89.2)	10 (10.8)	
1-2 hours	87 (88.8)	11 (11.2)	
>2 hours	53 (82.8)	11 (17.2)	
Mean maternal age (SD), years	28.38 (6.12)	29.53 (6.53)	t=0.99; P=0.33
Median parity (IQR)	1 (0.5-1.5)	1 (0-2)	0.21[a]
[N=256, missing 1 (0.4%)]			
Gender, n(%)			X^2=0.02; P=0.87
[N=255, missing 2 (0.8%)]			
Male	97 (86.6)	15 (13.4)	
Female	126 (88.1)	17 (11.9)	
Level of neonatal care, n(%)			X^2=20.75;
[N=255, missing 2 (0.8%)]			P<0.001
Level 2	158 (94.6)	9 (5.4)	
Level 3	65 (73.9)	23 (26.1)	
Mean gestational age (SD), weeks	35.39 (3.49)	33.06 (3.79)	t=-3.49; P=0.001
Mean birth weight (SD), grams		1,843 (842)	t=-3.12; P=0.002
[N=255, missing 2 (0.8%)]	2,307 (779)		
Types of delivery, n(%)			X^2=0.001;
[N=255, missing 2 (0.8%)]			P=0.97
Vaginal	69 (87.3)	10 (12.7)	
C-section	154 (87.5)	22 (12.5)	
Median APGAR score at 1st minute (IQR)	7 (5.5-8.5)	6 (4.1-7.8)	P=0.04[a]
[N=243, missing 14 (5.45%)]			
Median APGAR score at 5th minute (IQR)	9 (8-10)	8 (6.5-9.5)	P=0.005[a]
[N=243, missing 14 (5.45%)]			
Multiple pregnancy, n(%)	14 (77.8)	4 (22.2)	X^2=0.84; P=0.36
[N=255, missing 2 (0.8%)]			
Persistant ductus arteriosus, n(%)	16 (4.2)	3 (15.8)	X^2=0.007
[N=255, missing 2 (0.8%)]			
Hypotension requiring inotropic drugs, n (%)	11 (91.7)	1 (8.3)	X^2=0.21; P=0.65
[N=254, missing 3 (1.2%)]			
Resuscitation at birth, n (%)	120 (82.2)	26 (17.8)	X^2=6.98; P=0.008
[N=251, missing 6 (2.4%)]			
Ventilation support, n(%)			X^2=19.68;
[N=255, missing 2 (0.8%)]			P<0.001
None	86 (94.5)	5 (5.5)	
Non-invasive ventilation	111 (88.8)	14 (11.2)	
Invasive ventilation	26 (66.7)	13 (33.3)	
Health staff FGD, n(%)			X^2=9.43;
Before	145 (82.9)	30 (17.2)	P=0.002
After	78 (97.5)	2 (2.5)	

[a]=Mann-Whitney test

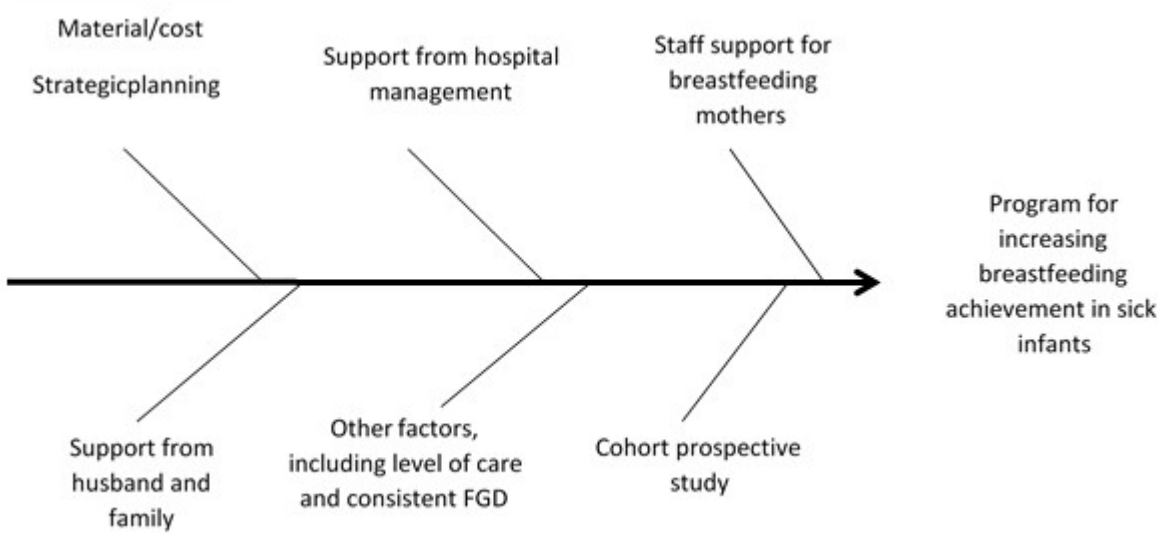

Figure 1. Fish bone diagram from the FGD to improve breastfeeding achievement in sick infants

Discussion

Subjects' characteristics were comparable between the before and after FGD groups, except for hypotension requiring inotropic drugs and ventilation support. However, multivariate analysis revealed that hypotension and ventilation support were not significantly associated with breastfeeding achievement during hospitalization.

In addition to FGD, breastfeeding achievement in sick infants was influenced by level of care in the neonatal unit. However, both FGD and level of care only explained 20% of the variation in breastfeeding achievement in sick infants. Therefore, 80% of the variation in breastfeeding achievement between groups must be due to other factors that require further investigation.

This study was an operational research project, using both quantitative and qualitative approaches. The qualitative component, including FGD and in-depth interviews, revealed more information about problems faced by healthcare staff in promoting breastfeeding for sick babies. A fish bone diagram facilitated the problem-mapping, analysis, and problem-solving processes in this study. The role of the quantitative method was to determine the effect of FGD intervention on breastfeeding.

Further continuous improvements are essential. Because of the cross-sectional study design, in which independent and dependent variables were measured at the same time, the temporal relationship between those variables was not easily determined. As such, a prospective cohort study with continuous data surveillance about breastfeeding achievement and its influencing factors is required. In addition, in this study the amount of breast milk given was measured semi-quantitatively. Recording the amount of breast milk given to sick babies during hospitalization is necessary. Moreover, FGD in this study did not involve physicians, who play an important role in deciding the types of feeding, including breastfeeding, for sick infants. In the future, FGD involving doctors and other health staff is required.

In conclusion, FGD with healthcare staff increases breastfeeding achievement in sick infants during their hospitalization. In addition, FGD accelerates breastfeeding initiation, as well as promoted partial and predominant breastfeeding. Education and training combined with FGD of healthcare staff is a effective strategic model to promote breastfeeding for sick babies. As a qualitative study, FGD reveales problems related to breastfeeding for hospitalized infants. A fish bone diagram effectively describes the problems and promoted problem-solving processes to improve breastfeeding achievement in sick neonates.

Conflict of interest

None declared.

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