

## Effect of Lactation Management Training on Feeding Pattern from Birth to 6 Months of Age

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**ABSTRACT** This quasi-experimental study involved 13 health centers (Puskemas) in Jakarta. Six hundred and four pregnant women were recruited. They were divided into two groups. Subjects in Group 1 were given 3 times extra-training in breastfeeding management, i.e. at recruitment, then during hospitalization for delivery and lastly at one month follow-up. Subjects in Group 2 was only given routine information at the health centres where they did their antenatal care. Data were collected at recruitment (in the last trimester of pregnancy), at birth, and every month thereafter for six months. At recruitment there were no significant difference the two groups regarding age of the mother, parity, number of living children, and age of the last living child. At birth 96.2% of Group 1 mothers started breastfeeding soon after birth and only 80.5% of Group 2 mothers did so. Prolactal feedings were given to 20.5% of babies of Group 2 and only 5.5% of babies of Group 1; the difference statistically significant. The kind of prolactal feed also differed between the two groups. Water was the most frequent prolactal feed given by Group 1 mothers while in Group 2 mothers it was milk-formula. At the age of 6 months there was no difference between the two groups in the proportion of breastfeeding (99.2% in Group 1 versus 98.7% in Group 2 mothers). The proportion of exclusive breast feeding at the age of 4 months was 60.7% in Group 1 and 36.7% in Group 2. We conclude that extra training to pregnant and new mothers may change their attitude and skill in feeding their infants. [Paediatr Indones 1999; 117-126]

### Introduction

The advantage of breastfeeding for the mother and breastmilk for the infant is a proven fact.<sup>1,3</sup> In Indonesia breastfeeding is already included in the National

Development Program and integrated to the Family Planning Program.<sup>4</sup> In Indonesia the incidence of breastfeeding is quite high, only 3 to 4% of women do not initiate giving breastmilk to their infants.<sup>5</sup> More than 85% are still breastfeeding at the age of 6 months and at least 25% are still breastfeeding their babies at the age of 2 years. In urban areas the incidence is a little lower, only 80% of mothers are still breastfeeding their babies at 6 months of age.<sup>6</sup> However, exclusive breastfeeding (giving nothing else but breastmilk) for at least 4 months is still very low which was in 1986 only 36%<sup>7</sup> although in 1993 it has risen to 48%.<sup>8</sup>

Since the Innocenti Declaration, exclusive breastfeeding has become a policy for infant feeding in Indonesia. To make this successful, on the 22nd of December 1990 the President of the Republic of Indonesia declared The National Movement for Breastfeeding promotion. Since then many activities to promote exclusive breastfeeding were done. Studies on the pattern of infant feeding in Indonesia are still rare. The objective of the study was to find out the feeding pattern of infants, and whether training in lactation management given during pregnancy, at birth and during follow-up will increase the rate and duration of exclusive breastfeeding. This study was undertaken to provide more information on the feeding pattern of infants in Indonesia as a contribution to the National program.

## Methods

This was a quasi-experimental (longitudinal study) conducted between July 1991 and August 1992, involving 13 health centers (Puskemas) in Jakarta to find out the length of lactation amenorrhea. This report is part of the study which looked at the feeding pattern.

Subjects consisted of pregnant mothers at their last month of pregnancy who came for antenatal care between September 1, 1991 and November 30, 1991 who fulfilled the study criteria. A mother was considered to be eligible for the study if she had a healthy pregnancy; agreed to be included in the study; agreed to follow training in breast feeding management (for mothers of Group 1), agreed to come for follow-up every month until 6 months. Pregnant women using drugs that influence breast milk production, or those working outside the house, and mothers giving birth to babies with problems or malformation were excluded from the study.

Six hundred and four pregnant women were recruited for this study; they were divided into two groups. Group 1 was given 3 times extra-training in breastfeeding management, i.e., at recruitment, then during hospitalization for delivery, and lastly at one month follow-up. Group 2 was not given extra-training, only what was given routinely at the health centers where they got their antenatal care. Using a questionnaire that had been prepared and tested beforehand, data were collected at recruitment (pregnancy in the last trimester), at birth, and every month thereafter for six months.

Training in breastfeeding management was given by midwives who had been trained before by one of the authors who was a breastfeeding consultant. Training for Group 1 mothers were given three times, i.e., at recruitment, during hospitalization after birth, and at the first follow-up. The content of the training included (1) the benefit of breastmilk; (2) the benefit of exclusive breastfeeding, (3) the danger of giving other food too early, and (4) techniques for successful breastfeeding.

Data were collected 8 times, i.e., at recruitment, at birth, and at one, two, three, four, five and six months (plus or minus 3 days). Baseline data on infant feeding pattern were collected at recruitment. Further information was collected at birth, including when breastfeeding was started, the introduction of prelacteal feeding and the kind of prelacteal feeding given. At every visit information mothers were asked whether they were still breastfeeding, whether supplementary food was started, and the kind of supplementary food given.

## Results

At recruitment 604 mothers agreed to be involved in the study, of which 328 mothers were given extra training (Group 1) and 284 were not (Group 2). Eventhough we did not randomize the mothers there were no significant difference in terms of age, parity, number of living children, age of the last living child and only a slight difference in the level of education between the two groups.

### Findings at recruitment

As many as 332 mothers have given birth to a liveborn infant before the study, of which 178 belonged to Group 1 and 154 to Group 2 mothers. History of infant feeding pattern were taken from these mothers. of the 332 mothers, 326 or 98.2% breastfed their babies and no significant difference was found between Group 1 and Group 2 mothers (Table 1). In 73.9% of mothers, breastfeeding was started within 9 hours after birth and 20% between 10-29 hours. No significant difference between the two groups was found (Table 2). Before breastfeeding was started most of the babies in both groups were given prelacteal feedings (Table 3). Formula was given in 49.2%, water in 29.1%, glucose in 1.2%, honey in 9.8% and sweet condensed milk in 1.5%. No significant difference was found between the two groups.

According to the mothers 78.9% have given only breastmilk to their babies for 1 to 4 months. Only 21.1% of the mothers have exclusively breastfed their babies for more than 4 months. And at the age of 9 months or older in 12.7% of the babies were not given any other food except breastmilk. No significant difference was found between the two groups (Table 4)

Table 1. History of breastfeeding the last child

Breastfed	Group				Total	
	Training (+)		Training (-)		n	%
	n	%	n	%		
Yes	176	98.9	150	97.4	326	98.2
No	2	1.1	4	2.6	6	1.8
Total	178	100	154	100	332	100

Table 2. Time lapse between birth and the first breastfeeding

First breastfeeding (hours)	Group				Total	
	Training (+)		Training (-)		n	%
	n	%	n	%		
1-9	130	73.9	111	74	241	73.9
10-29	32	18.1	1	20.7	63	19.6
>29	14	8	8	5.3	22	6.5
Total	176	100	150	100	326	100

### Findings at birth

Breastfeeding was started soon after birth in 96.2% in Group 1 mothers and 80.5% in Group 2 mothers. Eleven of Group 1 and 53 of Group 2 mothers did not start breastfeeding soon after birth (Table 5). Twenty percent of babies from Group 2 were given prelacteal feedings while in Group 1 it was only 5.5%. The kind of prelacteal feedings given also differ between the two groups. In Group one water was the most frequent prelacteal feed given while in Group two it was milk formula (Table 6).

### Findings at visits

Until the age of six months 99.2% of Group 1 and 98.7% of Group 2 mothers were still breastfeeding (Table 7) but exclusively breastfeeding at four months was only 36.7% in Group 2 mothers while in Group 1 mothers it was still 60.7%. Supplementary food was given earlier by Group 2 mothers (Table 8).

Table 3. Kind of prelacteal feed

Prelacteal feeding	Group				Total	
	Training (+)		Training (-)		n	%
	n	%	n	%		
<b>Milk formula</b>						
o yes	86	49.1	74	49.3	160	49.2
o no	89	50.9	76	50.7	165	50.8
o total	175	100.0	150	100.0	325	100.0
<b>Water</b>						
o yes	36	20.5	59	39.3	95	29.1
o no	140	79.5	91	60.7	231	70.9
o total	176	100.0	150	100.0	326	100.0
<b>Glucose water</b>						
o yes	1	0.6	3	2	4	1.2
o no	175	99.4	147	98	322	98.8
o total	176	100	150	100	326	100
<b>Honey</b>						
o yes	15	8.5	17	11.3	32	9.8
o no	161	91.5	133	88.7	294	90.2
o total	176	100	151	100	326	100
<b>Sweet condensed milk</b>						
o yes	3	1.7	2	1.3	5	1.5
o no	173	98.7	148	98.7	321	98.5
o total	176	100	150	100	326	100
<b>Others</b>						
o yes	2	1.1	6	4	8	2.5
o no	174	98.9	144	96	318	97.5
o total	176	100	150	100	326	100

### Discussion

From 328 women of Group 1 and 284 of Group 2, we were able to follow-up at delivery 293 (89.3%) from Group 1 and 272 (95.7%) from Group 2. Some of the mothers did not deliver at the health center and some were excluded because of problems during delivery or malformations of the baby. At six months there were still 252 (86%) from Group 1 and 233 (85.6%) from Group 2 mothers. The drop out rate was about 14%. The rate of drop outs in both groups did not differ significantly.

Table 4. Length of exclusive breastfeeding the last baby

Exclusive breastfeeding (months)	Group				Total	
	Training (+)		Training (-)		n	%
	n	%	n	%		
1-4	134	77	121	81.2	255	78.9
5-9	17	9.8	10	6.7	27	8.4
>9	23	13.2	18	12.1	41	12.7
Total	174	100	149	100	323	100

Table 5. Lapse of time from birth to first breastfeeding

Breastfeeding soon after birth	Group				Total	
	Training (+)		Training (-)		n	%
	n	%	n	%		
yes	280	96.2	219	80.5	499	88.6
no	11	3.8	53	19.5	64	11.4
Total	291	100	272	100	563	100

Table 6. Kind of prelacteal feed given

Prelacteal feeding	Group				Total	
	Training (+)		Training (-)		n	%
	n	%	n	%		
yes	16	5,5	56	20,6	72	12,8
no	275	94,5	216	79,4	491	87,2
Kind of prelacteal feed						
Milk formula	2	12.5	27	48.2	29	40
Water	10	62.5	25	44.6	35	49
Glucose water	3	18.75	1	1.8	4	5,5
Honey	1	6.25	3	5.4	4	5.5

Table 7. Number of mothers still breastfeeding by age of baby

Visit	Training (+)		Training (-)	
	n	still breastfeeding	n	still breastfeeding
one month	275	275 (100.0%)	253	252 (99.6%)
two months	268	268 (100.0%)	255	254 (99.6%)
three months	266	266 (100.0%)	252	249 (98.8%)
four months	262	260 (99.2%)	245	245 (100.0%)
five months	266	265 (99.6%)	251	248 (98.8%)
six months	252	250 (99.2%)	233	230 (98.7%)

Table 8. Baby given supplementary food

Baby's age	Training (+)		Training (-)	
	n	supplem.	n	supplem.
one month	275	8 (2.9%)	253	37 (14.6%)
two months	268	14 (5.2%)	255	64 (25.1%)
three months	266	30 (11.3%)	252	96 (38.1%)
four months	262	103 (39.3%)	245	155 (63.3%)
five months	263	188 (71.5%)	250	208 (83.2%)
six months	252	217 (86.1%)	233	200 (85.8%)

Group 1 mothers did not differ from Group 2 mothers except in their level of education which tended to be a little higher in Group 1 mothers. We assume that the more educated the mother, the more willingly she agreed to accept training. The influence of mother's education towards the practice of breastfeeding was controversial. Hofvander and Barvazian<sup>9</sup> report that educated mothers tend to postpone giving supplementary food. On the contrary, others report that more educated mothers tend to give supplementary foods earlier and the duration of breastfeeding is less.<sup>8,10</sup> Our own study<sup>11</sup> shows that mothers with 9 or more years of education do not differ from mothers with less than 9 years of education in giving supplementary food.

Employment outside the house may influence the pattern of infant feeding. Forty one percent of women in Semarang who are employed outside the home introduce bottle feeding by 2 months of age, and by 4 months of age it rises to 58.3% while mothers working at home, at 4 months only 27.4% did so.<sup>10</sup>

Table 9. Kind of supplementary food

Age	No of infant/total		Milk formula		Banana		Other fruit		Milk porridge		Rice porridge		Others	
	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*	1*	2*
1	8/275	37/253	2	6	5	28	1	1	0	3	0	2	0	0
2	14/268	64/255	2	6	10	53	0	4	2	8	0	3	0	1
3	30/266	96/252	3	6	15	58	5	14	6	31	5	8	0	1
4	103/262	155/245	5	7	54	100	43	58	63	90	5	6	6	2
5	188/263	208/250	9	16	81	134	98	96	123	133	19	6	9	23
6	217/252	200/232	11	13	109	115	139	101	132	113	18	25	45	84

1\* and 2\* refer to Group 1 and Group 2.

Before the study in both groups of mothers who had given birth before, the lapse of time before the babies were put to their mothers breast did not differ significantly. After the study 90.5% of Group 1 mothers put their babies to the breast soon after birth and only 80.5% did so in the Group 2 mothers. The earlier and the more frequent suckling to the breast the more quickly the milk builds up and lengthen the duration of breastfeeding.<sup>12,13</sup> Prelacteal feeding especially with milk formula decreases infant stimulus to the breast and may lengthen the time to the next feeding because of the delayed emptying time of formula.<sup>14</sup>

Before the study almost all babies were given prelacteal feedings; no difference was found between the two groups. After the study only 12.5% of babies were given prelacteal feeding, 16 out of 291 (5.5%) from Group 1 mothers and 53 out of 272 (20.6%) from Group 2 mothers. The difference between the groups was significant. The kinds of prelacteal feed given which were almost the same before the study, after the study differed between the two groups. Milk formula which was the most frequent prelacteal feed given for both groups remained the first choice for Group 2 mothers, while in Group 1 mothers water was the most frequent prelacteal feed given. According to Schutsman et al<sup>15</sup> even supplementing with water may delay the arrival of milk. Sweet condensed milk which was given before the study was no more given after the study.

The incidence of breastfeeding at 6 months did not differ between the two groups (99.2% Vs 98.7%) but the incidence of exclusive breastfeeding for 1-4 months in Group 1 mothers were 60.7% while in Group 2 mothers only 36.7%. This is a little higher than what was reported by Unicef in Indonesia that is the incidence of exclusive breastfeeding at the age of 1-3 months was 39% and frequency of breastfeeding at the age of 6-9 months was 82%.<sup>16</sup> Supplementary food given too early has many disadvantages. The disadvantage is that this will cause a decrease in frequency of breastfeeding and cause decrease in milk production<sup>17</sup> and if the supplementary food is high in protein and minerals it will be a burden to the kidney of the baby.<sup>18,19</sup>

We conclude that extra-training in lactation management given to pregnant and nursing mothers changes the attitude of mothers towards the pattern of feeding their babies from birth to 6 months of age. When compared to those without extra-training, mothers who are given extra training tend to breastfeed earlier, less in giving prelacteal feedings, and if prelacteal feeding is given, water is provided instead of milk formula. They also tend to withhold supplementary feeding.

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