

The effect of prenatal breast-milk and breast-feeding training given to expectant mothers on the behaviour of breast-feeding

Şenay Onbaşı, Rıdvan Duran, Nükhet Aladağ Çiftdemir, Ülfet Vatansever, Betül Acunaş, Necdet Süt*

Trakya University Medical Faculty, Department of Pediatrics, Edirne, Turkey

**Trakya University Medical Faculty, Department of Biostatistics, Edirne, Turkey*

Summary

Aim: Currently, training given during pregnancy has been shown to affect the beginning, rate and duration of breast-feeding. The present study aims to inform expectant mothers about breast-milk and breast-feeding via a prenatal training program and to emphasize the advantages of the training.

Material and Method: Trainings on breast-milk and breast-feeding were held for pregnant women on two days in a week. Each expectant mother was given prenatal training once. Data were collected via a questionnaire composed of 42 questions about breast-milk and breast-feeding.

Results: A total of 190 mothers, 90 in the training group and 100 in the control group were included in the study. The rate of behaviour of not using water, pacifier, bottle and formula/solid food during the first six months was shown to be significantly higher in the training group. A significant difference in the rate of breast-feeding was found in the first six months. Bottle feeding was found to be the cause of breast-feeding for shorter than six months.

Conclusions: It is concluded that the rate and duration of feeding only breast-milk could be increased if pregnant women are given training about breast-milk. (*Turk Arch Ped 2011; 46: 74-8*)

Key words: Breast-feeding, breast-milk, training

Introduction

Human breast milk is the only living food changing its content during the day, during the period of breast-feeding and according to the weight of the baby. Mothers need information and support to start breast-feeding and maintain breast-feeding successfully (1). According to Turkish Population and Health Research data, only 44% of infants are fed only breast-milk in the first two months of life (2). When infants are 3 months old, rate of being fed only breast-milk decreases to 16% (2,3). Controlled studies show that training on breast-feeding during pregnancy significantly affects starting, rate and duration of breast-feeding. Support offered by a healthcare provider regarding breast-feeding increases the duration of feeding only breast-milk significantly (3-5). Because of a tendency to

start introducing solid food early and weaning early in our society, mothers should be made conscious via prenatal training programs and encouraged to feed their infants only breast-milk in the first six months (1). Healthcare providers have an important role in supporting breast-feeding and preparing appropriate environment for this (1,2). In this study, it was aimed to investigate the effect of prenatal training of expectant women on breast-milk and breast-feeding on the rate and duration of breast-feeding and to emphasize the benefits of training.

Material and Method

Study population consisted of expectant women hospitalized in Trakya University Medical Faculty Education and Research Hospital for delivery. Approval was

obtained from Trakya University Local Ethics Committee for the study. Trainings on breast-feeding and breast-milk were held by the investigator on two days in a week. Each expectant woman was given prenatal training once.

Course of training

In the training, the training video tape prepared by Turkish Republic Ministry of Health General Directorate of Mother and Child Health and Istanbul University Children Health's Institute was used (6). Following visual training which lasted 20 minutes, the important points were repeated briefly by the investigator. Mothers were allowed to ask questions about feeding their infants breast-milk, breast-feeding and care of the infant without a time limit and questions were answered in detail.

At the beginning of the study, the number of expectant mothers to be included in the study was not determined. All expectant women reached were included in the study in a period of six months on two days in a week. The training group consisted of expectant women hospitalized in the service for delivery on training days. The control group consisted of mothers who were hospitalized on days when training was not given and who were discharged after delivery. At the end of the study, training on breast-milk and breastfeeding was given to the expectant women who did not receive training in the control group. Expectant women with a high risk and poor general well-being were excluded from the study. A total of 190 expectant women, 90 in the training group and 100 in the control group were included in the study.

Questionnaire form

The questionnaire was applied after receiving consent following explanation of the informed consent by the investigator. The questionnaire included 42 questions. The first six questions aimed to determine the effect of demographic properties on breast-feeding by questioning age, socio-cultural level and education level of mothers. Birth weight, gestational week and mode of delivery were asked to investigate the relation between the characteristics of the infant and breast-feeding. After the 15th question feeding modalities were questioned in detail. Time of the first breast-feeding, the first food given, frequency of breast-feeding, use of water, use of formula and solid food, duration of feeding only breast-milk and use of pacifier-bottle were questioned. The effect of these variables on breast-feeding rates and duration of feeding only breast-milk was investigated. The last 10 questions were aimed to assess the knowledge of mothers regarding breast-milk. Considering the right answers given to the questions, level of knowledge was evaluated as "well" for 8 right answers, as "moderate" for 5-7 right answers and as "poor" for <5 right answers. The relation between level of knowledge and breast-feeding rates and duration of feeding only breast-milk was investigated.

To determine the intelligibility and applicability of questions and instructions included in the questionnaire a trial application was performed with 10 mothers from a different socio-economical level outside the study population and after necessary adjustments the questionnaire was given its last form. Mothers were reached when their babies became 6 months old. The questionnaire was applied by the investigator in a face-to-face interview.

Statistical evaluation

After definitive analyses were completed, collected data were analysed on a sample which would be formed to determine the variables affecting the behaviours of mothers in terms of feeding their infants breast-milk and states and dimensions of the effects of various properties of mothers on this subject was demonstrated. Findings were expressed as mean±standard deviation or number (%). Conformity of qualitative variables to normal distribution was examined by single-sample Kolmogorov Smirnov test. In comparison between groups, t test was used in independent groups for variables showing normal distribution and Mann Whitney U test was used for variables which did not show normal distribution. Chi-square test was used for comparison of categorical data between groups. Linear regression analysis was used to determine factors affecting feeding only breast-milk and duration of breast-feeding and knowledge scores of mothers. Pearson correlation test was used between continuous variables and Kendall's Tau-b correlation test was used between ordinal variables. Statistical analyses were done using Statistica 7.0 (Licence number: 31N6YUCV38) package program. A p value of <0.05 was considered to be statistically significant.

Results

Demographic properties of the mothers included in the study are shown in Table 1. No significant difference was found between the training group and the control group in terms of demographic properties. Mean birth weight of the infants was found to be 3134±613 g in the training group and 3113±620 g in the control group. There was no difference between the two groups in terms of birth weight (p=0.85). Twenty six infants (28.9%) born to the mothers in the training group and 32 infants (32%) born to the mothers in the control group were born by spontaneous vaginal delivery and there was no difference between the two groups in terms of mode of delivery (p=0.55). Fifty one infants (56.7%) born to the mothers in the training group and 56 infants (56%) born to the mothers in the control group were female and there was no difference between the two groups in terms of gender (p=0.52).

Data about feeding breast-milk and breast-feeding of the mothers included in the study are summarized in Table 2. Forty two mothers (46.7%) in the training group and 48 mothers (48%) in the control group breast-fed their infants in the first half an hour and there was no sta-

tistically significant difference between the two groups in terms of time of starting breast-feeding ($p=0.26$). Eighty six mothers (95.6%) in the training group and 84 mothers (84%) in the control group gave their infants breast-milk as the first food. There was a statistically significant difference between the two groups in terms of giving breast-milk as the first food ($p=0.01$). Thirty four mothers (37.8%) in the training group breast-fed their infants for 10-15 minutes and 53 mothers (53%) in the control group breast-fed their infants for 5-10 minutes. There was no statistically significant difference between the two groups in terms of duration of breast-feeding ($p=0.05$). In both groups, mothers frequently breast-fed their infants every time their infants wanted (58,9% in the training group and 67% in the control group). There was no difference between the groups in terms of breast-feeding frequency ($p=0.64$). Twenty five mothers (27.8%) in the training group and 50 mothers (50%) in the control group gave water to their infants in the first 6 months. There was a statistically significant difference between the two groups in terms of this aspect ($p=0.002$). Twenty nine mothers (32,2%) in the training group and 72 mothers (72.0%) in the control group gave their infants formula/solid food and there was a statistically significant difference

between the two groups in terms of this aspect ($p<0.01$). Rate of use of bottle was 25,6% (23 mothers) in the training group and 65% (65 mothers) in the control group. There was a statistically significant difference between the two groups in terms of this aspect ($p<0.001$). Thirty three mothers (36.7%) in the training group and 58 mothers (58%) in the control group used pacifier. Behaviour of using pacifier was statistically significantly more frequent in the mothers who did not receive training ($p=0.003$).

Sixty one mothers (67.8%) in the training group and 28 mothers (28%) in the control group fed their infants only breast-milk in the first six months. There was a statistically significant difference between the groups who received training and who did not receive training in terms of this aspect ($p<0.001$). Infants in the training group were

Table 1. Demographic properties of the mothers included in the study

Demographic properties	Training group (n=90) Number (%)	Control group (n=100) Number (%)	P
Age			
18-24 years	17 (18.9)	15 (15.0)	0.40
25-34 years	61 (67.8)	64 (64.0)	
35 years and older	12 (13.3)	21 (21.0)	
Occupation			
Housewife	58 (64.4)	63 (63.0)	0.76
Working woman	32 (35.6)	37 (37.0)	
Level of education			
Nonliterate	1 (1.1)	4 (4.0)	0.84
Literate	1 (1.1)	1 (1.0)	
Elementary school	35 (38.9)	30 (30.0)	
Junior high school	13 (14.4)	17 (17.0)	
High school	22 (24.4)	27 (27.0)	
University	18 (20)	21 (21.0)	
Monthly income			
Minimum wage	19 (21.1)	31 (31.0)	0.84
500-1500 TL	47 (52.2)	39 (39.9)	
1500 TL and more	24 (27.7)	30 (30.0)	
Family structure			
Nuclear family	79 (87.8)	82 (82.0)	0.88
Wide family	11 (12.2)	18 (18.0)	
Smoking during pregnancy			
Yes	9 (10.0)	15 (15.0)	0.36
No	81 (90.0)	85 (85.0)	

Table 2. Comparison of nutritional properties in infants of the mothers in the training and control groups

Properties	Training group (n=90) Number (%)	Control group (n=100) Number (%)	P
Time of giving breast-milk			
In the first half an hour	42 (46.7)	48 (48.0)	0.26
In the first hour	22 (24.4)	18 (18.0)	
In the first 2 hours	16 (17.8)	15 (15.0)	
In the first 2 hours	10 (11.1)	19 (19.0)	
After the second hour			
The first food given			
Breast-milk	86 (95.6)	84 (84.0)	0.01
Formula	4 (4.4)	16 (16.0)	
Duration of breast-feeding			
5-10 minutes	29 (32.2)	53 (53.0)	0.05
10-15 minutes	34 (37.8)	29 (29.0)	
15-20 minutes	16 (17.8)	12 (12.0)	
>20 minutes	11 (12.2)	6 (6,0)	
Frequency of breast-feeding			
Every time the infant wants	53 (58.9)	67 (67.0)	0.64
Every one hour	12 (13.3)	13 (13.0)	
Every two hours	14 (15.6)	11 (11.0)	
Every three hours	11 (12.2)	9 (9.0)	
Giving water			
Yes	25 (27.8)	50 (50.0)	0.002
No	65 (72.2)	50 (50.0)	
Use of pacifier			
Yes	33 (36.7)	58 (58.0)	0.003
No	57 (63,3)	42 (42.0)	
Use of bottle			
Yes	23 (25.6)	65 (65.0)	<0.001
No	67 (74.4)	35 (35.0)	
Use of formula/solid food			
Yes	29 (32.2)	72 (72.0)	<0.001
No	61 (67.8)	28 (28.0)	
Feedig only breast-milk			
Shorter than 6 months	29 (32.2)	72 (72.0)	<0.001
6 months	61 (67.8)	28 (28.0)	

fed only breast-milk with a mean duration of 4.9±1.8 months. Infants in the control group were fed only breast-milk with a mean duration of 3.2±2.4 months. There was a statistically significant difference between the groups who received training and who did not receive training in terms of this aspect (p<0.001).

The mean number of right answers given to the 10 questions asked to determine the level of knowledge of mothers regarding the properties of breast-milk was 8.4±1.3 in the training group and 7.7±1.6 in the control group. There was a statistically significant difference between the groups who received training and who did not receive training in terms of this aspect (p=0.03). Level of knowledge was good in 80% of the mothers in the training group and in 66% in the control group. There was a statistically significant difference between the groups who received training and who did not received training also in terms of this aspect (p=0.04). Levels of knowledge of mothers regarding breast-milk and breast-feeding are shown in Table 3.

When the factors leading mothers to feed their infants only breast-milk shorter than 6 months were examined

Table 3. Comparison of the levels of knowledge of the mothers regarding breast-milk in the training and control groups

Level of knowledge	Training group (n=90) Number (%)	Control group (n=100) Number (%)	P
Good	72 (80.0)	66 (66.0)	0.04
Moderate	17 (18.9)	30 (30.0)	
Weak	1 (1.1)	4 (4.0)	

Table 4. Logistic regression sample regarding factors leading to feeding only breast-milk for shorter than 6 months

Factors	Training group (n=90)		Control group (n=100)	
	OR value	P	OR value	P
Age of the mother	1.15 (0.99-1.33)	0.06	0.97 (0.99-1.33)	0.63
Level of income	1.00 (0.99-1.00)	0.16	1.00 (0.99-1.33)	0.32
Level of knowledge	0.72 (0.14-3.76)	1.00	1.48 (0.99-1.33)	0.99
First food	0.19 (0.01-3.24)	0.25	0.51 (0.99-1.33)	0.54
Time of the first breast-feeding	1.86 (0.20-17.02)	0.58	0.64 (0.99-1.33)	0.64
Frequency of breast-feeding	0.73 (0.09-5.41)	0.76	0.79 (0.99-1.33)	1.00
Smoking	1.70 (0.23-12.75)	0.61	0.01 (0.99-1.33)	0.99
Use of pacifier	2.72 (0.66-11.25)	0.17	0.96 (0.99-1.33)	0.94
Use of bottle	17.64 (4.09-75.95)	<0,001	7.72 (0.99-1.33)	<0.001

with logistic regression model, bottle-feeding was found to cause feeding only breast-milk shorter than 6 months statistically significantly in both groups (Table 4).

Discussion

Currently, especially in developing countries, many children lose their lives because of diseases developing due to insufficient and inbalanced nutrition during the first year of life. It has been reported that mortality rate in children younger than 5 years old can be reduced 13% by feeding infants only breast-milk during the first six months following birth (2). One of the most important factors which can increase the rates of breast-feeding is trainings given to mothers. Many studies in the literature report that prenatal training affects the duration and rate of feeding only breast-milk and total breast-feeding time positively (2,7,8). In our country, rates of mothers given prenatal breast-feeding training by healthcare providers have been reported to be between 22.7% and 53.7% (9,10).

In our study, mean time of feeding only breast-milk was 4.8±1.8 months in the training group and 3.1±2.4 months in the control group. According to findings of Turkey Population and Health Research 2003, mean breast-feeding time is shorter than 1 month in infants fed only breast-milk (2). Kaynar Tunçel et al. (9) found that the mean time of feeding only breast-milk was 1.4±1.6 months in infants followed-up in their hospital. Unsal et al. (1) reported the mean time of feeding only breast-milk to be 4.3±2.1 months in infants in their region. In our study, time of feeding only breast-milk was found to be longer than the general profile of the country. This finding may be explained by the facts that mothers were given training in our study and that our hospital is a “baby friendly” hospital.

In our study, 67.8% of the mothers in the training group and 28% of the mothers in the control group fed their infants only breast-milk in the first six months. Kavuncuoğlu et al. (11) found the rate of being fed only breast-milk to be 90.4% in 4-6-month-old infants in their study where mothers were given prenatal training regarding breast-feeding. In other studies performed in our country, the rates of being fed only breast-milk at the sixth month were found to vary between 8.7% and 46% (1,11,12). According to Turkey Population and Health Research 2003 data, only one out of five children are fed only breast-milk in the first six months (2). When we consider the rates of being fed only breast-milk in the world, two different studies from Australia reported the rates to be 50% at the sixth week (13,14). The same rates were found to be 7% in Norway (15) and 42.3% in Italy (5). In the study performed by Gonzales-Cossia et. al (16) in Mexico, the rate of being fed only breast-milk at the sixth month was reported to be 20.3%. In USA, the same rate was reported to be 14% (17).

In our study, 95.6% of the mothers in the training group and 84% of the mothers in the control group gave their infants breast-milk as the first food. In our country, 40% of infants were reported to be given another food before breast-milk (2). In the study performed by Akyüz et al. (18), it was found that mostly formula (15.0%) and sugar water (3.3%) was given to infants who were fed other foods before breast-milk.

In the training group, 36.7% of the mothers used pacifier and 25.6% used bottle. In the control group, 58% used pacifier and 65% used bottle. While Turkey Population and Health Research 2003 data reported the rate of using bottle in infants younger than 6 months old to be 37% (2), Ünsal et al. (1) reported the same rate to be 63.5%.

When we examined the effects of age of the mother, level of income, level of knowledge, first food, first time of breast-feeding, frequency of breast-feeding, use of pacifier, use of bottle and smoking on the duration of feeding only breast-milk with logistic regression sample in our study, use of bottle was found to cause feeding only breast-milk for shorter than six months in both groups. National and international publications have shown that rates of feeding only breast-milk at the sixth month were lower and duration of breast-feeding was shorter in bottle-fed infants compared to non-bottle-fed infants (1, 19, 20). In the study performed by Howard et al. (19), it was found that use of pacifier and bottle affected breast-feeding negatively. Similarly, Dunn et al. (20) reported that most women who did not continue breast-feeding regularly at the sixth week after birth were the ones who used bottle at the beginning.

Consequently, offering of support and training to mothers regarding breast-feeding as a part of children's healthcare service is becoming more and more important. Starting from the prenatal period, training on breast-milk and breast-feeding given to expectant women by healthcare providers considering level of education and individual differences seems to lead to an increase in the rates of feeding only breast-milk in the first 6 months and in the duration of feeding only breast-milk.

Conflict of interest: None declared

References

- Ünsal H, Altıhan F, Özkan H, Targan Ş, Hassoy H. Toplumda anne sütü verme eğilimi ve buna etki eden faktörler. *Çocuk Sağ ve Hast Derg* 2005; 48: 226-33. (Abstract) / (Full Text) / (PDF)
- Kurtuluş YE, Tezcan S. Bebeklerin beslenme alışkanlıkları, çocukların ve annelerin beslenme durumu. *Türkiye Nüfus ve Sağlık Araştırması* 2003; 12: 141-55.
- Gartner LM, Morton J, Lawrence RA, et al. American Academy of Pediatrics Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics* 2005; 115: 496-506. (Abstract) / (Full Text) / (PDF)
- Forster D, McLachlan H, Lumley J, Beanland C. Attachment to the breast and family attitudes to breastfeeding. The effect of breastfeeding education in the middle of pregnancy on the initiation and duration of breastfeeding: a randomised controlled trial. *BMC Pregnancy and Childbirth* 2003; 3: 5:1-12. (Abstract) / (Full Text) / (PDF)
- Betrini G, Perugi S, Dani C, Pezzati M, Trochini M, Rubaltelli FF. Maternal education and the incidence and duration of breastfeeding: A prospective study. *J Pediatr Gastroent Nutr* 2003; 37: 447-52. (Abstract) / (Full Text) / (PDF)
- Anne sütü ile beslenmede danışmanlık eğitim materyali. Türkiye Cumhuriyeti Sağlık Bakanlığı Ana Çocuk Sağlığı Genel Müdürlüğü ve İstanbul Üniversitesi Çocuk Sağlığı Enstitüsü, 2005.
- Bağ Ö, Yaprak I, Halıcıoğlu O, Parlak Ö, Harputoğlu N, Astarçioğlu G. Annelerin anne sütü hakkındaki bilgi düzeyi ve sadece anne sütü ile beslenmeyi etkileyen psikososyal faktörler. *Izmir Tepecik Eğitim Hastanesi Derg* 2006; 16: 63-70. (Abstract)
- Ekman KA, Todia W. Decision making regarding breastfeeding and bottle feeding by women cared for in an inner city hospital. *Obstetr & Gynecol* 2003; 101: 20.
- Kaynar TE, Dündar C, Canbaz S, Pekşen Y. Bir üniversite hastanesine başvuran 0-24 aylık çocukların anne sütüyle beslenme durumlarının saptanması. *C.Ü. Hemşirelik YO Derg* 2006; 10: 1-6. (PDF)
- Tansuğ N, Yılmaz Ö, Kasırga E, ve ark. Manisa bölgesinde emzirme uygulamaları. *Ege Pediatr Bül* 2006; 13: 155-61. (Abstract) / (PDF)
- Kavuncuğolu S, Akın MA, Aldemir H. Bebek dostu hastanede emzirme eğitimi ve anne sütü ile beslenmeye etkisi. *Ege Pediatr Bül* 2005; 12: 147-50.
- Uzunhan TA, Işık E, Karabayır N, Gökçay G, Baysal SU. Bir çocuk sağlığı izlem polikliniğinde emzirme oranlarının yıllara göre değerlendirilmesi. *Çocuk Derg* 2007; 7: 166-72. (Abstract)
- Stamp GE, Casanova HT. A breastfeeding study in a rural population in South Australia. *Rural Remote Health* 2006; 6: 495. (Abstract)
- Donath SM, Amir LH. Breastfeeding and the introduction of solids in Australian infants: data from the 2001 National Health Survey. *Aust N Z J Public Health* 2005; 29: 171-5. (Abstract) / (PDF)
- Lande B, Andersen LF, Baerug A, et al. Infant feeding practices and associated factors in first six months of life: the Norwegian infant nutrition survey. *Acta Paediatr* 2003; 92: 152-61. (Abstract) / (PDF)
- Gonzalez- Cossio T, Moreno-Macias H, Rivera JA, et al. Breast-feeding practices in Mexico: results from the Second National Nutrition Survey 1999. *Salud Publica Mex* 2003; 45: 477-89. (Abstract) / (Full Text)
- Li R, Darling N, Maurice E, Barker L. Breastfeeding rates in the United States by characteristics of the child, mother, or family. The 2002 National Immunization Survey. *Pediatrics* 2005; 111: 31-7. (Abstract) / (Full Text) / (PDF)
- Akyüz A, Kaya T, Şenel N. Annenin emzirme davranışının ve emzirmeyi etkileyen durumların belirlenmesi. *Koruyucu Hekimlik* 2007; 6: 331-5. (Abstract)
- Howard CR, Howard FM, Langhear B, Eberly S. Randomized clinical trial of pacifier use bottle-feeding or cupfeeding and their effect on breastfeeding. *Pediatrics* 2003; 111: 511-8. (Abstract) / (Full Text) / (PDF)
- Dunn S, Davies B, McCleary L, Edwards N, Gaboury I. The relationship between vulnerability factors and breastfeeding outcome. *JOGNN Clinical Research* 2006; 35: 87-97. (Abstract) / (PDF)