



Effects of Exclusive Breastfeeding Consultation for Mothers on Continuation of Breastfeeding and Weight-gaining of Late Preterm Infants Hospitalized in Fatemeh Hospital in Hamadan, 2016

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ABSTRACT

Weight-gaining refers to providing sufficient calorie, liquids, and nutrients and appropriate growth for the newborn baby, so training the appropriate feeding methods improves weight-gaining. The present research is aimed to investigate the effects of counseling the mothers on weight-gaining of the preterm infants hospitalized in Fatemeh Hospital in Hamadan. The randomized clinical trials on 124 individuals from among the mothers with preterm babies hospitalized in Fatemeh Hospital in Hamadan were investigated and the samples were randomly categorized in two control and experimental groups. A researcher-made checklist was used for examining the breastfeeding performance and five sessions of breastfeeding consultation were held for the intervention group. In order to examine the babies' weight-gaining, a baby-weighting scale of co12000 model, made in Iran, was used. Finally, the information and the significance level $P < 0/05$ were analyzed using the Software SPSS Version-21. Comparison of the preterm babies' weight-gaining in control and experimental groups showed no significant difference before intervention ($P = 0/86$), but this difference was significant during the first to fourth month of follow-up ($P < 0/001$). so that the average weight of the preterm babies in both control and experimental groups in all four months of follow-up had increased compared to the period before the intervention. Findings showed that consultation improves the continuation of exclusive breastfeeding, increases the number of breastfeeding sessions, reduces the use of liquids and dry milk instead of breastfeeding for the preterm babies, and increases the babies' weight-gaining.

Keywords: Counseling, Weight-gaining, preterm infant

INTRODUCTION

Babies born at 34 to 36 $\frac{6}{7}$ weeks after the last menstruation of the mother are called late preterm babies [1]. The late preterm babies comprise 20 to 25% of the ICU readmission cases [2,3]. The late preterm babies are at risk of developing medical complications seven times more than the terms babies [4]. furthermore, the late preterm babies, due to lack of general growth and physiological immaturity[5,6], are at higher risk of morbidity to diseases such as jaundice, hypoglycemia, respiratory distress, and nutritional problems compared to the term babies[7-10] Starting and continuing breastfeeding in late preterm babies is considerably less than that in term babies[11]. Nutrition inefficiency in these babies is more prevalent than the term babies due to cardiorespiratory instability, premature

fatigue during feeding, over excitability, longer sleeping duration, and dysphagia, thus they are at higher risk of weight loss and developmental (growth) disorders at their early babyhood [12]. This mode puts infants are at higher risk for growth failure and weight loss in early infancy[13,14].

The WHO defines exclusive breastfeeding as: “feeding the baby with mother’s milk without using water, foods, and dry milk up to six months after birth, except using ORS, vitamins, minerals, and medicines in case of necessity” [15]. Perfect diet can lonely meet, up to six months, all of the baby’s developmental and evolving needs, further it can meet *all* of the evolving and developmental requirements of the first year of life. Mortality, childhood and adulthood obesity, diarrhea, asthma, eczema, malnutrition, and cancers are much less prevalent in breastfed babies than in others [16]. Most important reasons for Cessation of exclusive breastfeeding in previous studies, inadequate parental education, lack of support from the community, family and culture of continued exclusive breastfeeding, medical neglect and mother's perception of insufficient milk, have been reported[17-20].

Counseling the relationship between the counselor and attending that counselor with advice and encouragement, help clients in solving their problems[21].counseling the mothers can increase continuation of the exclusive breastfeeding in late preterm babies and improve the mother’s breastfeeding performance and, consequently, the babies weight-gaining [22,23]. A study conducted by Mardazad *et al.* showed that breastfeeding training and follow-up one month after the birth in preterm babies can lead to 402.16g of weight increase in the babies of the experimental group compared to the control group [24]. Also, a study performed by Thakur his colleagues showed that, by training exclusive breastfeeding for one month, we can increase the average weight of the experimental group babies about 196g more than that of the control group[25]. On this basis, the present research is aimed to investigate the effects of counseling mothers on weight-gaining of the late preterm babies hospitalized in Fatemieh Hospital in Hamadan.

MATERIALS AND METHODS

The present research is of randomized clinical trial type with control group, and sampling was performed in the Infants Unit of Fatemieh Hospital in Hamadan. The research population included literate and non-addicted mothers with unifetal pregnancy and without any base disease background, gestational diabetes, and pre-eclampsia who had delivery after 34-17 weeks of pregnancy and their babies had no perinatal abnormalities. Lack of tendency toward cooperation, lack of continuous presence in the training sessions, unavailability at the time of filling the questionnaire, and inability to breastfeed as diagnosed by the physician were factors based on which the mothers were excluded from the study. Besides, the babies were excluded from the study based on factors such as having metabolic diseases, acute respiratory distress, nosocomial infections (hospital-acquired infections), needing NPO, and death due to any reason. In a study by Arzani *et al.*,(1387) the amount of breastfeeding in experimental (case) and control (witness) groups was 60 and 40% (26), respectively:

$$n = \frac{(Z_{1-\frac{\alpha}{2}} - \frac{p_1 - p_2}{\sqrt{p(1-p)}} + Z_{1-\beta} \sqrt{p_1(1-p_1) + p_2(1-p_2)})^2}{(p_1 - p_2)^2}, \bar{p} = \frac{p_1 + p_2}{2}, \alpha = 0/05, \beta = 0/2$$

and the number of required samples, with 10-percent exclusion, was calculated as 62 individuals. On this basis, in the present research, we categorized the samples as 62 individuals in the experimental group and 62 individuals in the control group using the permutated blocks method. In order to gather information, we used the mothers’ breastfeeding performance counseling and observation checklist. This checklist included 17 yes-no questions about signs of right conditions of baby feeding (including keeping baby's body in a close contact with mother, positing baby's head and body in one direction, openness of the infant’s mouth, having most of the areola in the infant's mouth, slow and deep sucking, round and bulging cheeks of the infant during feeding, lack of pain for the mother while breastfeeding, holding the breast by the mother in the form of C, etc.) which was completed by the researcher. Each positive response received a score of 1, and each negative response received zero; thus, scores ranged between 0 and 17. The checklist was completed by the researcher in-person for mothers in experimental and control groups once before intervention and then in each monthly follow-up until 4 months after birth.

The Chronbach Alpha related to the first 20 questionnaires which were filled by the participants was used to determine the reliability of the checklist, and then its value was calculated ($\alpha=0/92$) and confirmed. Of course, reliability of this checklist has been previously assessed by Shahnazi ($\alpha=0/78$)(27). But reliability and validity of this checklist was assessed again in this study. Validity of the checklist was determined using the content validity method, and reliability of the questionnaire was determined using the Chronbach Alpha on 20 individuals, so that the values were the same ($\alpha=0/92$).

Initially, babies with 34 to $36\frac{6}{7}$ weeks of gestation, minimum coverage after weighting with standard scale, and the required qualification criteria (measures) we included in the study. Comparison of the babies' weight-gaining was done using baby weight scale *col2000* model; further, in order to weight the babies, an Iran-made Baby Weight Scale supplied by Rahbanan-e-Sazandegi Company (RASA) was used [28]. The capacity of this scale is up to 16kg, and it is highly accurate (\pm gr 100- 10). All measurements were done before and after the intervention with one scale and by the researcher. The participating mothers were justified and convinced about confidentiality of the information. Then, the demographic questionnaire and the breastfeeding performance observation checklist were filled once before intervention and then monthly up to four months after birth under the researcher's supervision in the hospital.

For mothers in the experimental groups, five 30-minute sessions of breastfeeding consultation were held daily, during their hospitalization in the hospital, as direct individual and face to face counseling, theoretically and practically (using maquette, pamphlet, and incentive package) based on the consultation steps on reproductive health services (GATHER) [29] including respectful behavior with mothers, questions on their needs, counseling, providing decision-making assistances, ensuring their learning through asking them some questions, and planning for follow-up, and also based on the daily objectives table. Consultation was done on the following subjects: the way of correct breastfeeding, learning the advantages of exclusive breastfeeding, features of the preterm babies, the number and duration of the breastfeeding sessions, the way of storing the mother's milk for employed mothers, probable reasons of breast refusal by the babies (breastfeeding strike), effects of breastfeeding on the health of mother and baby, breastfeeding continuation or cutoff during morbidity of mother or baby, and mother's nutrition during breastfeeding period. For discharged preterm babies, the remaining consultation sessions were held in coordination with the parents and in predetermined sessions in the hospital. Afterwards, the experimental group was asked to apply the learned principles at home. At the beginning of each training session, the mothers were asked to express the instructions of the previous session based on the daily objectives table and perform the skills in presence of the researcher in order to resolve and remove any remaining ambiguity. This approach led to more repetition and rehearsal and resulted in reliability of the new mentality (supposition) about the presented issues. The control group received only the common and ordinary instructions from the Infants Unit personnel after delivery. A month later, the initial questionnaire was filled again by both groups, and the babies were weighted. The incentive package (including the book of preterm baby's nutrition and CD training) and the educational pamphlet was given to the experimental group in the last session and to the control group at the end of follow-up due to regarding the ethical principles. Sampling was performed in 8 months from Aban 2016 to the end of Khordad 1394.

Finally, the obtained information was analyzed using software SPSS Version-21 and through testing the descriptive statistics, including diagrams, tables, and numerical indices, and inferential statistics, including qui-squared, Mann-Whitney, independent-t, and paired-t statistical tests, in both experimental and control groups at the given significance level $P < 0/05$ before and after the intervention.

RESULTS

Average age of the mothers in the experimental and control groups was 27.13 ± 0.527 and 27.19 ± 0.596 , respectively. Among the mother 115 (92/7%) were housewives. In terms of monthly income, 102 (82/3%) had less than one million Tomans of income per month. In terms of education level, 63 (50/8%) were of elementary and junior high school level. 48 mothers of the experimental group (77/41%) and 47 mothers of the control group (75/80%) had previous delivery experience. In both groups, 9 (14/5%) individuals had preterm baby delivery experience. Among these mothers, 95 mentioned their breastfeeding experiences (76/61%), 87 (70/16%) of whom had experience of exclusive breastfeeding their previous baby. 86 babies (69/4%) had been born after 33 to 35 weeks of gestation and 38 babies (30/6%) after 35 to 37 weeks. Both groups were demographically homogeneous and had no significant statistical difference. Analysis of repeated measurement variance showed that the average of five measurements weight infants was different in two groups ($P < 0/001, F = 22/84$). Comparison of the measurements by independent-t test between the two groups had no significant difference before consultation ($P = 0/86$), but this difference became significant after the consultation ($P < 0/001$). The highest average of the babies' weights four months after the follow-up was $(5694/8 \pm 779/434g)$ in the control group and $(4760/17 \pm 859/118g)$ in the experimental group. On this basis, the difference of the babies' weight-gaining between the experimental and control groups four months after the follow-up was $(934/63 \pm 79/684g)$. This difference can be due to the higher number of diarrhea morbidity and readmission in the hospital among the babies of the control group. On the whole, the results showed the increase of the babies' weight in both control and experimental groups during four months of follow-up, but this increase of the weight of the babies in the experimental groups was more than that in the control group. Further, based on the results obtained from the paired t-test in the control group, there was no significant difference between before and one month after consultation, before and two months after consultation, before and three months after consultation,

and before and four months after consultation; however, in the experimental group, these values showed significant difference in all four months of follow-up ($P<0/001$)(Table1).

Table-1: comparison of preterm babies' weight-gaining average in control and experimental groups during follow-up periods

Variable	group	Before M(SD)	After 1 month M(SD)	After 2 month M(SD)	After 3 month M(SD)	After 4 month M(SD)	The results of independent t-test			
							Before and 1 month after consultation	Before and 2 month after consultation	Before and 3 month after consultation	Before and 4 month after consultation
Weights of Infants(g)	Training	(439/217) 2621/1	(588/54) 2818/62	(642/68) 3844/83	(678/78) 4743/1	(779/43) 5694/8	$P<0/001$ $T=-15/1$	$P<0/001$ $t=-32/44$	$P<0/001$ $t=-44/3$	$P<0/001$ $t=-46/16$
	control	(453/96) 2126/29	(607/175) 2422/58	(684/244) 3296/45	(749/6) 4145/08	(859/11) 4760/17	$P=0/08$ $T=-0/29$	$p=0/21$ $t=-1/4$	$p=0/63$ $t=-0/7$	$p=0/34$ $t=-0/9$
Statistical test results between experimental and control groups (test statistic)		$p=0/86$ $t=-0/17$	$P<0/001$ $t=3/62$	$P<0/001$ $t=4/5$	$P<0/001$ $t=4/55$	$P<0/001$ $t=16/6$				

Results of the counseling checklist and breastfeeding observation showed that mean changes of breastfeeding performance were not the same in experimental and control groups during the five-stage measurement ($P<0/001$, $F=19/058$). Additionally, breastfeeding was not significantly different between mothers of experimental and control groups before the intervention ($P=0/07$); but the difference observed in first, second, third, and fourth follow-up months was significant ($P<0/001$). Mean score of breastfeeding performance in mothers of the experimental group increased in all four follow-up months compared with mean score before intervention, while this mean increased in mothers of the control group in the first month but decreased in the second, third, and fourth months (Table2).

Table2: Comparing Mean Breastfeeding Performances in Experimental and Control Groups

Variable	group	Before	After 1 month M(SD)	After 2 month M(SD)	After 3 month M(SD)	After 4 month M(SD)	The results of independent t-test			
							Before and 1 month after consultation	Before and 2 month after consultation	Before and 3 month after consultation	Before and 4 month after consultation
Breastfeeding Performances	Training	1/86 ± 5/61	2/21 ± 7/52	1/88 ± 8/01	8/70±1/93	8/62±2/08	$P<0/001$ $t=-15/48$	$P<0/001$ $t=-19/77$	$P<0/001$ $t=-19/55$	$P<0/001$ $t=-21$
	control	1/84 ± 5/85	1/96 ± 5/90	1/84 ± 5/84	6/38±2/30	6/40±1/84	$P=0/06$ $t=-2/09$	$P=0/94$ $t=-1/70$	$P=0/08$ $t=-3/73$	$P=0/06$ $t=-4/09$
The results of Independent t- test		$P=0/07$ $2/80 -$ $t=-$	$P<0/001$ $t=4/22$	$P<0/001$ $t=6/33$	$P<0/001$ $t=5/75$	$P<0/001$ $t=6/01$				

DISCUSSION

Comparing the average monthly weight-gaining of the babies during four months after birth in the experimental and control groups showed difference.

In this regard, Ghlolamitabar Tabari *et al.* [30] showed that breastfeeding training during gestation for mothers who are exposed to the risk of preterm delivery can improve the developmental (growth) indices of the preterm babies including weight, height, and head circumference in the first four months of life. In this study, breastfeeding training during gestation period could result in the increase of the experimental group's babies (433 ± 230 g) with birth weight of more than 2500g in four months of follow-up compared to the control group's babies with the same birth weight. This difference of weight-gaining in the present study has been ($948/66\pm64/9$ g) in the fourth month of the follow-up. The value of this difference of weight-gaining of the babies between the two groups in the present study is more than what has been obtained in the study conducted by Tabari *et al.*, which can be due to the difference between the number of samples (44 samples in the study conducted by Tabari *et al.* and 124 samples in the present study) and the difference between the average birth weight of the babies in these two studies. (Disagreement and disapproval of the results of Tabari *et al.* >2500 g by the results of the present study >2000 g) can be due to the higher number of the samples and, consequently, lower samples error in the present research.

Further, the study conducted by Mardazad *et al.* [24] showed that breastfeeding training and follow-up after one month in preterm babies can result in more increase ($402/16\pm58/19$ g) of weight in the babies of the experimental group compared to the babies of the control group. Duration of follow-up in this study has been only one month while in our study after one month of follow-up, the difference was observed in weight-gaining $410\pm3/932$ g. The value of the difference in the babies' weight-gaining between the two groups in the present research is more than that in Mardazad *et al.*, which can be due to the difference of the birth weight of the babies of the experimental and control groups between these two studies. However, on the whole, there is agreement and consistency between the two studies.

A study performed by his Thakur & colleagues [25] showed that, by training the exclusive breastfeeding, we can increase the average weight of the babies of the experimental group, after one month, by (196±74g) and, after two months, by (312±121g) more than the control group. It must be noted that in this study, the follow-up has been performed only for two months. However, in the present study, this value was (562/43±26/77g) after two months of follow-up. The value of difference between the babies' weight-gaining in the experimental and control groups in the present study is more than the value obtained by Thakur, which can be due to the higher number of the samples in that study compared to the present study (184 samples versus 124 samples), the difference of the birth weight of the babies of both groups between the two studies, and the difference between the under-study population in two studies because that study has been conducted in Bangladesh.

Breastfeeding counseling included support and behavioral interventions for improving breastfeeding results such as helping with breastfeeding problems. The main focus of breastfeeding counseling was on encouragement, crisis management, and breastfeeding problems, and training was a secondary goal [31]. Gious *et al.* [32] showed that breastfeeding counseling through support of mothers by telephone or in-person can increase the continuance of exclusive breastfeeding in the first six months of birth, while Sikorsky [33] showed that only in-person counseling can increase the continuance of exclusive breastfeeding of the infant by mothers, and telephone counseling is not effective. In the present study, by providing counseling sessions for mothers, we improved the continuance of exclusive breastfeeding and breastfeeding performance of mothers in the experimental group compared with the control group.

CONCLUSION

Findings of the present research show that counseling improves the continuation of the exclusive breastfeeding, so that this continuation increases the number of sessions of breastfeeding the preterm babies in a day, reduces the use of liquids, and reduces the use of dry milk and foods other than mother's milk for feeding the preterm babies in the experimental group, compared to the control group, in the first four months after birth. Further, it improves the mothers' breastfeeding performance, reduces the cases of breastfeeding cutoff in preterm babies, increases the weight in preterm babies, and resolves a large part of the problems in preterm babies.

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