

Improving Attitudes and Inclination towards Neonatal Feeding with Milk donated from Milk Bank in Mothers with Premature Neonates: A Comparison of Two Educational Interventions

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ABSTRACT

Background: Milk bank is one of the most important emerging issues in neonatal health. The present study aimed to improve the attitude and inclination of mothers with premature neonates to feed their suckling with milk donated from the milk bank by comparing the effect of face-to-face training and an educational package.

Methods: In this randomized clinical trial, 66 mothers of premature neonates hospitalized in the neonatal intensive care unit were included and assigned to two groups of 33 mothers. The samples completed the demographic information questionnaire and questionnaire of attitude and inclination toward feeding with milk donated from the milk bank. The first group received direct face-to-face training, and the second received an educational package. The data was statistically analyzed with SPSS 22.

Results: The attitude and inclination scores increased significantly in face-to-face and educational package groups. The attitude score in the face-to-face group was higher after the intervention compared to the educational package group ($P=0.003$). Besides, the inclination score in the face-to-face group was higher than that in the educational package group, which was statistically significant ($P<0.001$).

Conclusion: Both face-to-face training and educational packages effectively improved the inclination and attitude of mothers with premature neonates to feed neonates with donated milk. Considering the more significant impact of face-to-face training compared to the educational package, it is suggested that this accessible and affordable method be applied along with other training to increase the effectiveness of the training.

Keywords: Attitude, Donated milk, Education, Inclination, Milk bank, Mothers, Premature neonate

Introduction

A premature neonate is one born before the 37th week of gestation. These neonates are at risk of many problems such as cardiopulmonary disorders and gastrointestinal dysfunction(1,2). Prematurity is considered the most important cause of morbidity and mortality of neonates

around the world; for this reason, the quality of care for these neonates is of great importance (3). The common problems of premature neonates include low birth weight and stress caused by lack of milk in mothers. The best type of nutrition for a child until the end of six months is the mother's

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milk, which satisfies both the physical and physiological needs of the child and also satisfies the child's emotional needs by creating peace in the child (4). Other properties of breast milk include its safety and ease of digestion for neonates; breast milk reduces many diseases (5). If breast milk is unavailable or insufficient, according to the advice of the World Health Organization, the best substitute for breast milk is to use another person's donated milk. Donated milk from a milk bank is preferable to formula feeding (6). Milk bank is one of the most important emerging issues in neonates' health, and its scope is expanding daily. The birth of multiplet neonates and their lack of breast milk, premature birth and lack of milk in the mother giving birth, non-acceptance of breast milk formula by the neonate, and several other reasons have doubled the need to establish a breast milk bank in different countries of the world (7). Based on scientific sources, the use of breast milk, preferably the mother's milk or donated breast milk, reduces the risk of sepsis and necrotizing enterocolitis and helps to increase the intelligence and development of infants in the long run. In this bank, the milk donated by mothers is collected and pasteurized to be prepared for consumption by neonates deprived of their mother's breast milk. The study by Huang, conducted on the knowledge and attitude of mothers towards donated milk, showed very low knowledge and low positive attitudes of mothers towards the milk bank. 25% of mothers refused to do it due to the fear of changes in their body shape and the difficulty of breastfeeding (8). A study was conducted by Doshmangir et al. (2019) to investigate the factors affecting breast milk donation in the first milk bank in Iran. Factors related to the community, the health system, the individual, and the people around them affect breast milk donation. Inclination to help others, education during pregnancy, and education by doctors and nurses showed a significant relationship with milk donation. Hence, to increase the number of breast milk donors, people's awareness about milk banks should be increased (9). According to the study by Eksioglu, the lack of knowledge about the process of donated milk will also cause its non-acceptance, which can be overcome by using appropriate training (10). The media and personnel of health centers and hospitals, while increasing the awareness of mothers and their families about milk donation, can clear up the ambiguities about the milk bank (9). Training methods include face-

to-face training, training videos, and written methods. Face-to-face verbal training is considered the gold standard of training and is the most common method; nonetheless, in many situations, it is not possible to use it due to the limitation of resources, equipment, and manpower, and thus, it is necessary to use other methods. On the other hand, studies have demonstrated that most of the information received by patients verbally during face-to-face counseling could have been more understandable or remembered. Educational videos are a relatively new method that is claimed to provide education from superficial to deep learning (11). Written educational methods, such as teaching through pamphlets, have been suggested as educational aid methods and face-to-face education. The educational pamphlet is a useful educational tool because it is cheap and readily available to patients, and the patient can read the pedagogic materials quickly and re-read them whenever possible; further, they are not afraid of directly asking questions from health care workers, yet they have experienced the fear in face-to-face verbal training. In addition, it can reduce the time spent by healthcare workers. Some studies have considered pamphlets as a supplement to face-to-face training that is more effective than face-to-face verbal training alone; yet, some have not reported any difference between using pamphlets or not using them in comparison with face-to-face verbal training (12). Training based on the educational package, which can include a combination of the abovementioned items, is among the new educational methods that seem mandatory to satisfy trainees and enrich training programs. So far, sporadic studies have been conducted in Iran concerning milk banks and donated milk, which has often examined the issue under study from the point of view of jurisprudence; there are many unknown aspects regarding replacing donated milk with milk formula. In the current system of health centers, there is no instruction related to the process of donating and accepting donated milk; that is why fewer people from the community may have the right attitude and inclination toward the issue.

On the other hand, the native culture of Iran is very different from other countries. With a potential change in attitude, it is possible to create changes in motivation and behavior. By developing the inclination of mothers with premature neonates in this regard, the health of neonates can be improved. Thus, the present study was conducted to improve the attitude and

inclination to feed neonates with milk donated from the milk bank in mothers with premature neonates by comparing the effect of face-to-face training and educational package.

Methods

In this randomized clinical trial, 66 mothers of premature neonates were included in the study and were assigned to two groups of 33 mothers. Sampling was done in an educational hospital affiliated with Shahid Beheshti University of Medical Sciences in Tehran, Iran. After obtaining the code of ethics No.: IR.SSU.REC.1401.079, the study proposal, was registered in the Iranian Registration of Clinical Trial system with code IRCT20230124057204N1. The participants were assured that all their information would be confidential and they could leave the study at any stage. Then, informed written consent was obtained from the participants.

The randomization process was done using random assignment software. With concealment, the participants were randomly assigned into two groups with a ratio of 1:1. The samples were selected during May and July 2023. Based on the study by Iyoha et al. (13) and considering a two-way significance level of 5%, a test power of 80%, and a probability of change of 10% of the mean, the required sample volume was calculated to be 30 mothers. Due to the possibility of subject attrition, 10% was added to the sample volume, and finally, 33 mothers were considered research samples in each group. Inclusion criteria were: inclination to participate in the study, mothers with premature neonates hospitalized in the neonatal intensive care unit that were unable to breastfeed, the ability to care for the neonate and literacy in Persian language, not having confirmed physical and mental problems, and having cooperation to participate in training sessions. Exclusion criteria were: having a history of using donated milk in the mother's previous neonates or first and second-degree relatives, and the presence of any reason that prevents receiving donated milk, such as religious obstacles, digestive problems of the neonate, and problems and diseases that prevent receiving milk.

For the first group, face-to-face training was conducted, including the topics of the existence of milk banks, the benefits of using donated milk, the comparison of donated milk and formula in terms of ingredients, the disadvantages of formula, the prevention of infections and diseases, helping to improve physical and psychological development, and encouraging mothers to use donated milk

from the milk bank. After completing the training, the mother was asked to raise any questions or doubts about feeding with donated milk, and the researcher answered her questions.

The educational content for the second group was the same as the face-to-face group, with the difference that the training content included video files that could be used on a tablet, smartphone (cell phone), or television; also, an educational booklet approved by the professors was presented to the mothers. If the mothers wished it, the educational video file was sent to the legal messenger of Eita, and in case of lack of access, it was sent to WhatsApp and SHAREit, and they were asked to run the file once to ensure that it opened. Mothers were asked about reading the package to ensure that they read the educational package before completing the questionnaires after the educational interventions. The samples of the two groups were not in contact, so they could not share the educational content and the package. This study used a three-part questionnaire. The first part related to demographic information, including personal characteristics, occupation, education, childbirth characteristics, etc. Pal et al.'s questionnaire measured mothers' attitudes toward breastfeeding (14). At first, the questionnaire was translated into Persian by a fluent English speaker. Subsequently, it was examined by the thesis supervisor and advisor. An item was added according to the opinion of the professors. Then, a quantitative evaluation of content validity was carried out. After developing the questionnaire, it was given to 12 faculty members and experts in nursing, midwifery, and neonatology wards to verify validity. The content validity ratio (CVR) was calculated to ensure the selected item was necessary. In so doing, the translated questionnaire was provided to the experts. The participants were asked to choose one of the options of "necessary," "not necessary but useful," and "not necessary" for each item in the questionnaire. Participants' responses were calculated based on the CVR calculation formula and adapted using the Lawshe table. Considering there were 12 experts, numbers higher than 0.56 (all items) were accepted. After determining the content validity ratio, the content validity index (CVI) of Waltz & Basel was used to ensure that the questionnaire items were developed in the best way to measure the desired content. To do so, the questionnaire was again sent to the experts. They were asked to express their opinions on each item of the questionnaire based on the three criteria of

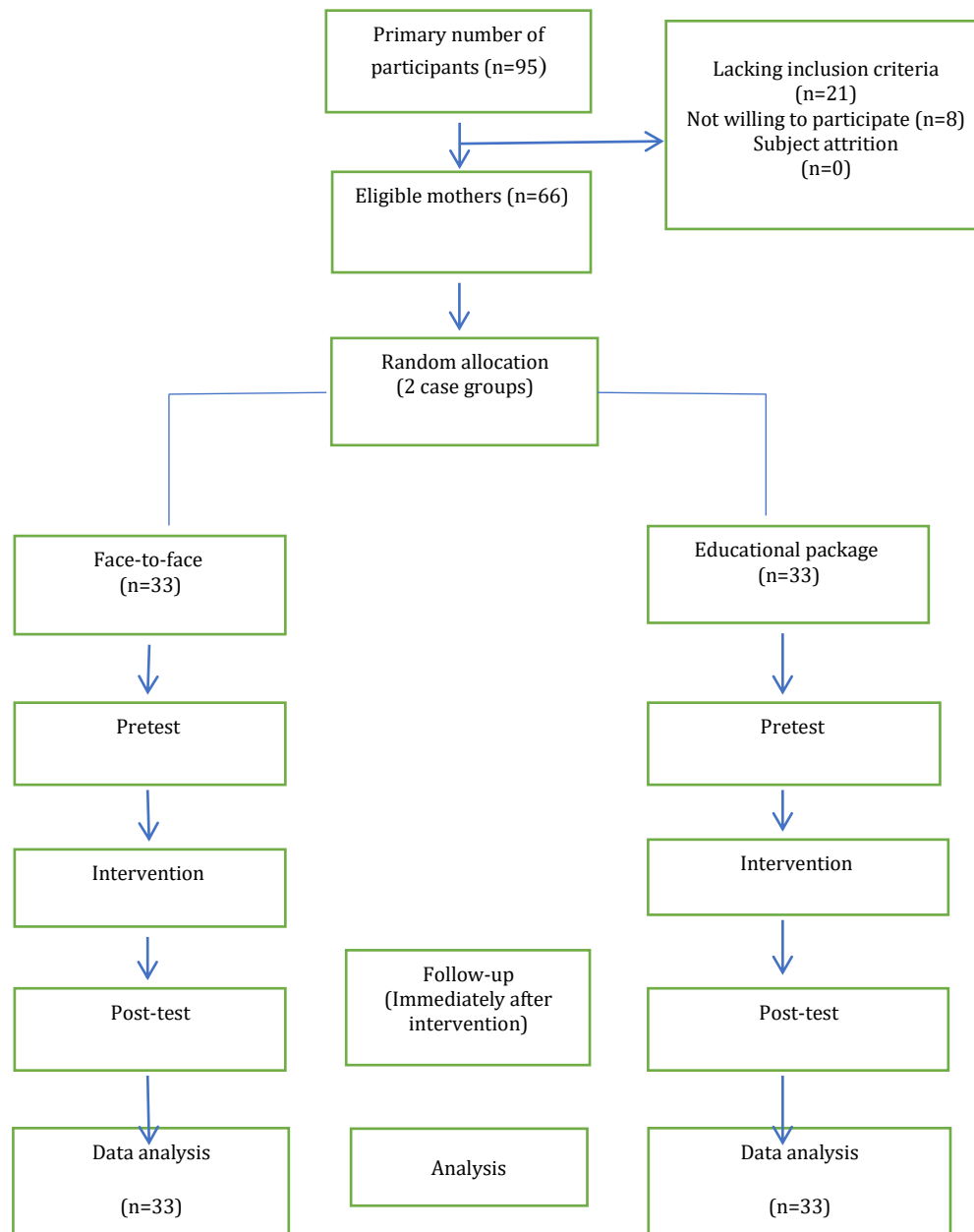


Diagram 1. Consortium diagram of participants

"relevance," "simplicity," and "clarity." Each criterion was answered on a 4-part Likert scale: 1: not related, 2: somewhat related, 3: related, and 4: completely related. To calculate the content validity index for each item, the formula of total points of 3 and 4 on the total number of voters was used; numbers higher than 0.79 were accepted. To establish the reliability of the questionnaire, it was given to 60 mothers with premature neonates, and they were asked to complete the questionnaire again ten days later. Kuder-Richardson-20

reliability coefficients calculated the information. In the studies where participants' responses are two-part and do not follow the Likert spectrum, Kuder-Richardson's coefficient (KR20) equals Cronbach's α (15). This method accepts the test or tool when the reliability coefficient is ≥ 0.64 . This study's obtained reliability coefficient was 0.883, which is an acceptable value. A visual analog scale (VAS) was also used to check the inclination toward breastfeeding. Considering the acceptable range obtained, all items were included in the final

version of the questionnaire. The questionnaire entailed 12 items, each assigned from 1 to 2 points. The minimum score of the questionnaire was 12, and the maximum score was 24; a higher score was considered to be a more positive attitude of the participant. To establish the reliability of the questionnaire, the items were given to 60 mothers with premature neonates hospitalized in the neonatal intensive care unit. These mothers were told that the purpose of completing the questionnaire was to check their attitude and that the questionnaire had nothing to do with whether or not to start feeding with donated milk. After guidance was given to them to complete the questionnaire and obtain informed consent, the questionnaire was provided. This study's obtained reliability coefficient was 0.883, which is an acceptable value. The data were imported into SPSS22 and analyzed using paired t-test and independent t-test.

Ethical approval

This paper was distilled from a research thesis with the code of ethics No.:IR.SSU.REC.1401.079.

Results

The mean age of mothers was 30.53 ± 2.95 years. The results of the chi-square analysis showed no significant difference between the two groups regarding demographic variables (Table 1).

The mean score of the attitude towards the two educational package and face-to-face training methods was 18.58 ± 2.70 and 18.67 ± 2.07 , respectively, before the intervention. The independent t-test did not indicate any significant difference between the two groups ($P=0.88$). The mean attitude score was more significant in the face-to-face method (20.09 ± 2.46) after the intervention compared to the educational package method (22.85 ± 2.04), which was statistically significant ($P=0.03$). The paired t-test showed a significant difference between the mean score of the attitude towards the educational package method before and after the intervention ($P=0.03$). Moreover, there was a significant difference between the mean face-to-face attitude score before and after intervention ($P=0.003$) (Table 2).

Table 1. Distribution of qualitative demographic variables in the two studied groups (n=33 in each group)

Variable		Method				P-value
		Educational package		Face-to-face		
		F	%	f	%	
Type of delivery	CS	21	63.6	25	75.8	*0.28
	Normal vaginal delivery	12	36.4	8	24.2	
Number of pregnancies and deliveries	1	13	39.4	17	51.5	*0.59
	2	13	39.4	11	33.3	
	3+	7	21.2	5	15.2	
Number of offsprings	1	15	45.5	18	54.5	*0.76
	2	12	36.4	10	30.3	
	3+	6	18.2	5	15.2	
Mother's education level	Primary school	2	6.1	1	3	*0.64
	Secondary school	6	18.2	8	24.2	
	High school diploma and associate degree	11	33.3	14	42.4	
	BS and higher	14	42.4	10	30.3	
Father's education level	Primary school	1	3	1	3	*0.79
	Secondary school	4	12.1	5	15.2	
	High school diploma and associate degree	20	60.6	16	48.5	
	BS and higher	8	24.2	11	33.3	
Economic status	Weak	7	21.2	4	12.1	*0.39
	Moderate	21	63.6	26	78.8	
	Good	5	15.2	3	9.1	
Father's occupation	Employed	32	97	31	93.9	*0.55
	Unemployed/idle	1	3	2	6.1	
Mother's occupation	Employed	9	27.3	8	24.2	*0.77
	House-keeper	24	72.7	25	75.8	

*: χ^2

Table 2. Comparison of the mean score of mothers' attitude towards feeding with donated milk in the two study groups before and after intervention

Group	Time		T	P (paired t-test)
	Before intervention M±SD	After intervention M±SD		
Face-to-face	18.67±2.07	22.85±2.04	3.26	0.003
Educational package	18.58±2.70	20.09±2.46	2.26	0.03
T	0.15	2.22		
P (independent t-test)	0.88	0.03		

n=33 in each group range=12-24

Table 3 suggests that based on the independent t-test, there was no significant difference between the mean score of inclination to breastfeed by the two methods of the educational package and face-to-face education before intervention (P=0.57). An important difference was observed between the mean score of inclination to breastfeed by two methods of educational package and face-to-face education after intervention (P= 0.01). A comparison of the

mean score of inclination to breastfeed using the educational package before and after the intervention showed a significant difference (P=0.001). Comparison of the mean score of inclination to breastfeed by face-to-face method before and after intervention based on paired t-test showed a significant difference between the mean score of inclination to feed by donated breast milk by face-to-face method before and after intervention (P=0.001).

Table 3. Comparison of the mean score of mothers' inclination to feed with donated milk in the two study groups before and after intervention

Group	Time		T	P (paired t-test)
	Before intervention M±SD	After intervention M±SD		
Face-to-face	3.09±1.79	5.33±2.65	7.28	0.001
Educational package	2.82±2.11	4.68±2.24	4.98	0.001
T	0.56	2.40		
P (independent t-test)	0.57	0.01		

n=33 in each group range=1-10

Discussion

Before intervention, the mean attitudes towards feeding with donated milk in mothers with premature neonates were average in both groups (close to the questionnaire's median score), yet the mean inclination to use donated milk before intervention was weak. The study's findings by Bulut and Aksu (2022) indicated that mothers did not have enough information about donated milk and were not inclined to donate and request milk from the milk bank (16). In the study by Pal et al. (2019), mothers still lacked inclination and awareness to accept donated milk, which required education and awareness for mothers (14). The study by Tu et al. (2022) found that the inclination to receive donated milk was low (17). Besides, the study by Iyoha et al. (2015) showed that mothers did not want to use milk banks due to the fear of disease transmission and not having enough milk for their neonates (13). The study by Akpinar et al. (2022) stated that only 7.27% were willing to use donated milk for their neonates. Religious concerns, fear of infectious diseases, and mistrust of people they did not know were among the reasons for women's negative

attitudes (18). The mean score of attitude and inclination to feed with donated milk increased in both educational methods after the intervention compared to before, which was statistically significant. However, a comparison of the two methods suggested that face-to-face education was more effective than training with the help of an educational package. The study by Qavami et al. (2023) showed that face-to-face educational interventions effectively increased the knowledge and attitude of mothers and improved breastfeeding (19). According to one study, the face-to-face educational method positively affected the neonate's feeding pattern, mother's performance, satisfaction, beliefs about breastfeeding, and self-efficacy (20). The study by Bahri et al. (2013) revealed that breastfeeding education through the workshop method leads to higher awareness, more favorable health beliefs, and more correct breastfeeding behavior after delivery than booklets (21). Pilus et al. (2022) conducted a study to evaluate the effect of face-to-face and WhatsApp-based health education interventions. They found that face-to-face

participation methods and WhatsApp-based education help improve self-efficacy and attitudes towards breastfeeding (22). Furthermore, the findings of the study by Titaley et al. (2022) confirmed the benefits of integrated and multi-layered behavior change interventions to promote breastfeeding practices (23). Breastfeeding counseling through an educational package, including text, audio, and video messages on a smartphone, increases maternal self-efficacy as much as face-to-face counseling, especially in highly educated and employed mothers (24). The study by Saba et al. (2005) indicated that face-to-face training had a more significant effect on increasing breastfeeding exclusively with breast milk than the training provided with educational pamphlets during pregnancy (25). Furthermore, the study by Qavami et al. (2023) demonstrated that face-to-face training interventions and distance breastfeeding training both effectively increased mothers' awareness and attitude (19). Mokhtary et al. (2014) found that face-to-face training was a more effective method than the presentation of pamphlets on the awareness of mothers about breastfeeding (26). The reason for the effectiveness of face-to-face training methods can be attributed to the presence of the trainer and their interaction with the mothers, the correct recognition of their needs and problems during training based on a scientific model, as well as their increased confidence, and finally the greater effect of this training method on the mothers' awareness. Adults have the best learning with direct participation. Hence, using educational methods that provide the most support for the mother's independent performance in the learning process will have the most significant effect on the results of education (27). Consequently, the authorities should use more participatory educational methods in their planning. According to the present study's findings, face-to-face education of mothers was a more effective method; thus, to increase mothers' awareness in educational planning based on their needs and demographic characteristics, it is possible to use appropriate and cost-effective methods to raise their awareness and continue breastfeeding. Given that the lack of manpower in medical centers makes it challenging to teach patients directly, training packages, training manuals, and multimedia training can be prioritized to save money and time. Multimedia education gives learners more freedom and space to study at the

desired time and place. In general, it seems necessary to teach breastfeeding in the early stages after childbirth to primiparous mothers who need more experience and information in the field of breastfeeding. In this regard, providing a suitable educational package that can recall the material in a better environment at home can be helpful (28). Noorian et al. stated that in environments where healthcare workers are faced with workload and time pressure and do not have enough time for face-to-face verbal training to provide the necessary information to patients, educational appropriately-prepared pamphlets can be used (12). It is recommended that in environments where mothers are under psychological pressure and anxiety caused by hospitalization, face-to-face education along with question-and-answer sessions be prioritized, and educational packages related to the training session be provided to them to read.

Additionally, it is advised that training methods be measured in longer time intervals. The results of the present study showed that considering the important impact that people's knowledge and attitude can have on the acceptance and acceptability of the milk bank and donated milk in society, and based on the fact that the personnel of health and treatment centers are one of the basic and important elements in education, they can directly identify some of these concerns and obstacles with continuous support and training and by changing macro policies, in the matter of promotion and Promoting exclusive feeding. They can also effectively increase mothers' inclination and attitude towards exclusive feeding with donated breast milk as much as possible, especially for needy premature neonates, and increase breast milk donation.

Conclusion

Both face-to-face educational methods and educational package exert some effect on the attitude and inclination of mothers with premature neonates to feed with donated milk. Face-to-face education was more effective in educating mothers than educational package. It is suggested that face-to-face education, along with other training methods, be used if possible.

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Conflicts of interest

The authors declare that they have no conflicts of interest.

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