

The Effects of an Empowerment Program on the Knowledge, Self-Efficacy, Self-Esteem, and Attitudes of Mothers of Preterm Neonates

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Abstract

Background and Aim: Hospitalization of a preterm neonate is a major crisis for the involved family that significantly affects parents' quality of life. The main goal of empowerment programs is behavioral modification. The aim of this study was to assess the effects of an empowerment program on the knowledge, self-efficacy, self-esteem, and attitudes of the mothers of preterm neonates.

Methods: This pretest-posttest quasi-experimental study was conducted in 2014 on a convenience sample of 30 mothers whose preterm neonates were hospitalized in the neonatal intensive care unit of Valiasr (PBUH) hospital, Birjand, Iran. An empowerment training program was implemented based on the personal empowerment model in seven 30-min personal face-to-face training sessions. The data were collected using a maternal and neonatal demographic questionnaire, a researcher-made knowledge and attitude questionnaire, the Vahdaninya and colleagues' self-efficacy questionnaire, and the Rosenberg Self-Esteem Scale. Finally, the data were entered into the SPSS software (v. 18.0) and described using the measures of descriptive statistics (such as mean and standard deviation). Besides, the normality of the variables was assessed through the Kolmogorov-Smirnov test, while the paired-sample t test was used to compare the pretest and posttest scores of knowledge, attitude, self-efficacy, and self-esteem at a significance level of 0.05.

Results: The mean age was 27.93 ± 6.6 years for mothers and 10.9 ± 7.54 days for neonates. The mean scores of mothers' knowledge, attitude, and self-efficacy were significantly greater in the posttest than the pretest. Moreover, the posttest mean score of empowerment (69.5 ± 9.25) was significantly greater than the pretest mean score (60.30 ± 7.61).

Conclusions: Implementation of the empowerment program is effective in improving mothers' knowledge, attitude, and self-efficacy. Appropriate education should be provided for the parents of preterm neonates hospitalized in neonatal intensive care units in order to involve them in the process of care delivery and improve their relationships with their preterm neonates.

Keywords: Empowerment, Knowledge, Attitude, Self-Esteem, Mothers, Neonatal Intensive Care

1. Background

About 9% of neonates, particularly the preterm ones, need intensive care services (1). Almost 19000 neonates die each year in the world due to complications such as preterm birth, low birth-weight, congenital defects, and sepsis. Due to their physiological problems, preterm neonates need quality care for survival, normal growth, and development.

Hospitalization of neonates in neonatal intensive care units (NICUs) makes their parents anxious. Moreover, mothers' failure to participate in the process of care delivery to their neonates gives them feelings of insufficiency, depression, and anxiety and changes their parental roles. Such feelings and changes may last for long periods of time after hospital discharge (2). Studies show

that mothers' participation in the process of neonatal care improves neonates' pulmonary function, nutrition, and weight gain, shortens their hospital stay, and reduces healthcare costs and re-hospitalization rate (3-6).

One of the effective methods for preventing hospitalization-associated damages to parents and post-discharge consequences is the empowerment of parents to participate in the process of care delivery. Such an empowerment can shorten hospital stay and reduce healthcare costs, nosocomial infection risk, and re-hospitalization rate (2).

One of the main goals of empowerment is family-centered nursing. This model improves families' knowledge, self-esteem, self-efficacy, and attitudes and thus, helps them identify their weaknesses and empowers them

to change their immediate situations (7-10). Previous studies showed the positive effects of family-centered empowerment model (FCEM) on mothers' self-efficacy, stress, and depression (11), knowledge and attitudes of mothers who had a child with thalassemia (12), quality of life of children with asthma and their mothers (7), self-efficacy of patients with diabetes mellitus (8, 12, 13) and patients who received hemodialysis (14), iron deficiency anemia among girls (9), mothers' stress (6), and health-promoting behaviors of women (15).

One of the concepts of FCEM is self-efficacy. Perceived self-efficacy is the individual's perception of his/her abilities to act and control those events which affect his/her life. It can be quantified through measuring self-management behaviors and their effects. Role playing helps determine self-efficacy. Another concept of the model is self-esteem, i.e. the degree of self-approval, self-acceptance, and self-worth. Self-efficacy and self-esteem are two main components of learning and they are important to parental empowerment (8). The other concept of the model is attitude which includes perceptions and beliefs of a mother about her preterm neonate. Attitude, in turn, is affected by environmental and socio-cultural factors. Attitude promotes mother's responsibility towards her childrearing behaviors (16).

The first step in attitude change and behavioral modification is to have adequate knowledge about the intended subject (17). De Rouck and Johnson reported that needs of the parents whose neonates were hospitalized in NICU included: precise information about neonatal care; visiting and protecting their neonates; communicating with neonates; recognition or positive perceptions of their attendance in the unit healthcare providers; self-care; therapeutic communication with healthcare providers; and information about nutrition, hypothermia prevention, skin care, respiratory care, and home care (18, 19). They concluded that the length of hospital stay is significantly correlated with the need for information and post-discharge care (18).

Implementing empowerment programs is essential due to the high levels of stress in NICUs (6, 20), parents' poor communication with their neonates and healthcare providers (1), diversity of their needs, and mothers' inability to provide neonatal care (4, 18) and cope with the immediate environment (20). The aim of this study was to assess the effects of an empowerment program on the knowledge, self-efficacy, self-esteem, and attitudes of the mothers of preterm neonates.

2. Methods

This pretest-posttest quasi-experimental study was conducted in 2014 in the NICU of Valiasr (PBUH) hospital, Birjand, Iran. 30 mothers whose neonates were hospitalized in the NICU were recruited via convenience sampling. The inclusion criteria were: having basic literacy skills, having good physical and mental health, having no chronic illnesses, having no previous history of preterm birth for mothers and having no congenital defects, having birth weight of less than 2,500 g, having gestational age of 37 weeks, and feeding by breast milk for neonates. Those mothers who voluntarily withdrew from the study or their neonates died during the study were excluded.

The data collection tool was a 5-part questionnaire. The first part was related to the mothers' demographic characteristics such as age, job, and educational status as well as the birth rank of the preterm neonate. The second part was a researcher-made knowledge questionnaire which contained 10 multiple-choice questions. Correct and wrong answers were scored as 1 and 0, respectively, resulting in a total knowledge score of 0-10. The face and the content validity of this questionnaire were assessed and approved by a panel of experts. For reliability assessment, 10 external mothers who had similar conditions as the participants but were external to the study were asked to complete the questionnaire. Then, Cronbach's alpha was calculated which gave the value of 0.88.

The third part was a researcher-made attitude questionnaire which contained 8 questions. The questions were answered on a 4-point scale, the points of which ranged from "Completely disagree" (scored 0) to "Completely agree" (scored 3). Therefore, the total attitude score could range from 0 to 24. The face and the content validity of this questionnaire were assessed and approved by a panel of experts, and its reliability was assessed through asking 10 mothers who had similar conditions as the participants to complete the questionnaire. Finally, Cronbach's alpha was calculated as 0.88.

The fourth part of the study tool was the self-efficacy questionnaire developed by Vahdaninya et al. which was reported to have an acceptable validity and a Cronbach's alpha of 0.88. This questionnaire contained 12 items which were scored in the same way as the attitude questionnaire. Thus, the total self-efficacy score could range from 0 to 36 (21).

The fifth part of the study tool was the 10-item Rosenberg self-esteem scale. The items of this scale were scored from 0 ("Strongly disagree") to 3 (Strongly agree), yielding a total score of 0 - 30. The correlation coefficient between the score of each item and the total score of the scale was reported to be 0.44 - 0.73 (22). The total scores of the knowl-

edge, attitude, self-esteem, and self-efficacy were summed and converted into a 0 - 100 score.

On the first day of hospitalization, the aims of the study were explained to the eligible participants and they were asked to complete the study questionnaires under the supervision of one of the NICU staff. After the pretest, the empowerment program was implemented based on the personal empowerment model in seven 30-min personal face-to-face training sessions. In the first step of the program, mothers were taught about the characteristics of preterm neonates in order to improve their knowledge and attitudes about the importance of care-giving to them. The second and the third steps of the program aimed at improving mothers' self-efficacy and self-esteem through providing them with practical training about how to care for preterm neonates. Accordingly, mothers were personally taught by the NICU staff about procedures such as neonatal care, hand washing, tube feeding, and vital signs monitoring. Then, the mothers were allowed to practice the learned skills for several times in order to attain mastery over them. In the final step, which was taken one week after the last training session, mothers were asked to re-complete the study questionnaires.

The gathered data were entered into the SPSS software (v. 18.0) and the normality of the variables was assessed through the Kolmogorov-Smirnov test. The demographic characteristics of the participants were described using the measures of descriptive statistics (such as mean and standard deviation). Moreover, the paired-sample t test was used to compare the pretest and posttest scores of knowledge, attitude, self-efficacy, and self-esteem at a significance level of 0.05. During the study, we frequently reassured the participants about the confidentiality of their data. The ethics committee of Birjand University of Medical Sciences, Birjand, Iran, approved the study (approval code Ir.BUMS.REC.1394.384).

3. Results

This study was carried out on 30 mothers whose neonates were hospitalized in an NICU. The means of the mothers' and the neonates' ages were 27.93 ± 6.6 years and 10.9 ± 7.54 days, respectively. Most neonates (73.3%) were hospitalized for more than 10 days. About 36.7% of mothers were below diploma, while the others had either a secondary school diploma or university degrees. Moreover, the majority of mothers (96.7%) were housewives and only one of them (3.3%) was a white-collar worker. Table 1 shows the demographic characteristics of the participants.

The results of the paired-sample t test illustrated that the posttest mean scores of mothers' knowledge, attitude, and self-efficacy were significantly greater than their

Table 1. Participating Mothers' Demographic Characteristics

Characteristics		N (%)
Age	25 years old or younger	13 (43.3)
	Older than 25	17 (56.7)
Educational status	Below diploma	11 (36.7)
	Higher	19 (63.3)
Job	Housewife	29 (96.7)
	White-collar worker	1 (3.3)

pretest scores. Moreover, the mean score of empowerment in posttest (69.5 ± 9.25) was significantly greater than the mean score in pretest (60.30 ± 7.61). However, there was no significant difference between the pretest and posttest scores of self-esteem (Table 2).

Table 2. Comparing the Pretest and Posttest Scores of Knowledge, Attitude, Self-Efficacy, Self-Esteem, and Empowerment^a

Variables	Before	After	P Value
Knowledge	3.2 ± 2.0	6.8 ± 2.20	0.001 >
Attitude	15.4 ± 3.60	16.8 ± 2.6	0.04
Self-esteem	$19.6 \pm 2/5$	20.4 ± 3.4	0.2
Self-efficacy	21.8 ± 4.6	25.5 ± 4.1	0.001 >
Empowerment	60.3 ± 7.61	69.5 ± 9.3	0.005

^aValues are expressed as mean \pm SD.

4. Discussion

The posttest mean scores of mothers' knowledge, attitude, and self-efficacy were significantly greater than the pretest scores. These findings confirmed the effectiveness of the study intervention in empowering mothers of preterm neonates. Previous studies also showed that empowerment programs improved mother-neonate relationships.

Browne and Talmi (2005) indicated the effectiveness of knowledge and self-confidence in improving mother-child relationships (23). Tilokskulchai et al. (2002) also reported that nurses' education and services were essential to mothers. Moreover, they reported that empowerment strengthened mother-neonate relationship (24). Alaei et al. (2006) found that based on the received educations, mothers had a wide range of behaviors toward their neonates from caring to emotional ones. Their findings denote the dramatic effects of empowerment on mothers' behavioral patterns (25). Liu et al. (2010) also reported

that their empowerment program improved parents' self-efficacy and alleviated their depression and stress (11). Similarly, Melnyk (2008) demonstrated the effectiveness of an empowerment program in alleviating mothers' stress, anxiety, and depression (i.e. the emotional outcomes of adaptation), improving mother-neonate relationships (i.e. the scientific outcomes of adaptation), and positively changing their attitudes (26). Borimnejad et al. (2013) also suggested that knowledge transfer from nurses to parents can promote parents' participation in the care process, strengthen behaviors such as breastfeeding, and hence, improve neonates' weight gain (16). Sarajarvi et al. (2006) and Lindberg and Ohrling (2008) also reported that their empowerment programs significantly alleviated anxiety and stress of families and mothers who had preterm neonates and highlighted that families need neonatal care education in order to get more involvement in the process of care-giving to their neonates (10, 27). In addition, Jafari-Myanaie et al. (2011) found the positive effects of education on mothers' anxiety and tension (1).

Our findings revealed an insignificant increase in the mean score of self-esteem after the study intervention. This finding contradicts the findings of previous studies (11, 23, 26). This contradiction may be due to the differences in the cultural context, sample size, empowerment intervention, and participants in these studies. Previous studies reported that FCEM significantly improved parents' self-esteem, reduced length of hospital stay, healthcare costs, and risk of infection (26), and fulfilled parents' needs for emotional support, sense of comfort, neonate-related information, closeness to their neonates, therapeutic communication with nurses, and reassurance about neonatal outcomes and protection (18, 28). Yet, it is noteworthy that the type of education and behavioral outcomes can propel mothers into certain types of behaviors and result in getting interested in certain types of reactions (25).

4.1. Conclusions

Implementation of FCEM-based programs can change mothers' attitudes, promote their knowledge about the process of care delivery to their preterm neonates, and enhance their self-efficacy. Such simple, inexpensive, and safe interventions can help and support mothers.

One of the best methods for preventing damages to parents after the hospitalization of their preterm neonates is to actively involve them in the process of care delivery. Yet, hospitalization is associated with parent-neonate separation, causing parents great tension, and imposing negative effects on parent-child relationships as well as on neonatal developmental outcomes. Thus, mothers of preterm neonates need to be prepared for dealing and communicating with their hospitalized neonates. FCEM

can also be used for parents of children with chronic conditions or maladaptive children.

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References

1. Jafari Myanaie S, Karahrud Alaei F, Rasuly M, Zaery F. The effect of creating growth opportunities for parents on Anxiety and Stress in mothers of preterm infants admitted to neonatal intensive care units. *Payesh J.* 2011;**11**(2):239-44.
2. Aliabadi T, Bastani F, Haghani H. Effect of mothers' participation in preterm infants' care in NICU on readmission rates. *J Hayat.* 2011;**17**(2):71-7.
3. Ghasemi M, Dehdary T, Ghohary M, Zargharzadeh Z. Maternal behavior in the care of premature infants: a pilot study. *Iran J Nurs.* 2012;**25**(79):24-33.
4. Kohan M, Borhani F, Abbaszadeh A, Sultan Ahmadi J, Khajehpoor M. Experience of Mothers with Premature Infants in Neonatal. *J Qual Res Health Sci.* 2012;**1**(1):41-51.
5. Nourian M, Fatimian S. Effects of mother's participation on anxiety taking care of hospitalized children. 2001 ;**7**(1):87-90.
6. Borimnejad L, Mehrnoosh N, Fatemi NS, Haghani H. Impacts of creating opportunities for parent empowerment on maternal stress: A quasi-experimental study. *Iran J Nurs Midwifery Res.* 2013;**18**(3):218-21. [PubMed: 23983758].
7. Teymouri F, Alhani F, Kazemnejad A. The effect of family-centered empowerment model on the Quality of life of school-age asthma children. *Nurs Res.* 2011;**6**(20):52-63.
8. Shojaeizadeh D, Tal A, Sharifirad GH, Mohajery Tehrani M, Alhani F. Evaluation of educational programs based on an empowerment on model self efficacy and its relationship to diabetes control in patients with diabetes. *J Diabetes Metab.* 2011;**11**(5):474-82.
9. Alhani F, Niknami S, Kimiyagar SM, Kazem Nejad A, Heidarnia AR. Family-centered empowerment model and assess its impact on the prevention of iron deficiency anemia in adolescent girls. *Shahid Beheshti Univ Med Sci.* 2003;**8**(4):9-15.
10. Sarajarvi A, Haapamaki ML, Paavilainen E. Emotional and informational support for families during their child's illness. *Int Nurs Rev.* 2006;**53**(3):205-10. doi: 10.1111/j.1466-7657.2006.00479.x. [PubMed: 16879183].
11. Liu CH, Chao YH, Huang CM, Wei FC, Chien LY. Effectiveness of applying empowerment strategies when establishing a support group for parents of preterm infants. *J Clin Nurs.* 2010;**19**(11-12):1729-37. doi: 10.1111/j.1365-2702.2009.03082.x. [PubMed: 20579207].
12. Kargar Najafi M, Borhani F, Dortaj R, Sabzevari S. The effect of family-centered empowerment model on the mothers' knowledge and attitudes about thalassemia disorder. *Iran J Pediatr Hematol Oncol.* 2011;**1**(3):98-103.
13. Shabbodaghi Z, Borhani F. The effect of empowerment program on hemoglobin A1C in type 2 diabetes patients. *Med Surg Nurs J.* 2012;**1**(2):23-9.
14. Moattari M, Ebrahimi M, Sharifi N, Rouzbeh J. The effect of empowerment on the self-efficacy, quality of life and clinical and laboratory

- indicators of patients treated with hemodialysis: a randomized controlled trial. *Health Qual Life Outcomes*. 2012;**10**:115. doi: [10.1186/1477-7525-10-115](https://doi.org/10.1186/1477-7525-10-115). [PubMed: [22992449](https://pubmed.ncbi.nlm.nih.gov/22992449/)].
15. Karimy M. Evaluation of the effect of educational intervention based on empowerment model of health promotion behaviors on menopausal women. *Daneshvar Med*. 2011;**18**(94):63-72.
 16. Borimnejad L, Mehrnush N, Seyed-Fatemi N, Haghani H. The effect of Empowerment Program on mother-infant interaction and weight gain in preterm infants. *Zahedan J Res Med Sci*. 2012;**14**(9):19-23.
 17. Izadi M, Sajjadi AA, Ghafourian AR. Effect of education on the knowledge of soldiers about smoking hazards. *J Mil Med*. 2009;**11**(2):81-7.
 18. De Rouck S, Leys M. Information needs of parents of children admitted to a neonatal intensive care unit: a review of the literature (1990-2008). *Patient Educ Couns*. 2009;**76**(2):159-73. doi: [10.1016/j.pec.2009.01.014](https://doi.org/10.1016/j.pec.2009.01.014). [PubMed: [19321288](https://pubmed.ncbi.nlm.nih.gov/19321288/)].
 19. Johnson AN. Promoting maternal confidence in the NICU. *J Pediatr Health Care*. 2008;**22**(4):254-7. doi: [10.1016/j.pedhc.2007.12.012](https://doi.org/10.1016/j.pedhc.2007.12.012). [PubMed: [18590871](https://pubmed.ncbi.nlm.nih.gov/18590871/)].
 20. Newnham CA, Inder TE, Milgrom J. Measuring preterm cumulative stressors within the NICU: the Neonatal Infant Stressor Scale. *Early Hum Dev*. 2009;**85**(9):549-55. doi: [10.1016/j.earlhumdev.2009.05.002](https://doi.org/10.1016/j.earlhumdev.2009.05.002). [PubMed: [19520525](https://pubmed.ncbi.nlm.nih.gov/19520525/)].
 21. Vahdaninya Z, Nakhaei M, Nasiri A, Sharifzadeh G, Abdolrazaghezhad M. Training Based on Orem's Model on Knowledge, Attitude and Self-efficacy of Mothers in Preventing Domestic Accidents. *Mod Care J*. 2015;**12**(3):119-24.
 22. Rosenberg M. Society and the adolescent self-image. 11. Princeton university press Princeton, NJ; 1965.
 23. Browne JV, Talmi A. Family-based intervention to enhance infant-parent relationships in the neonatal intensive care unit. *J Pediatr Psychol*. 2005;**30**(8):667-77. doi: [10.1093/jpepsy/jsi053](https://doi.org/10.1093/jpepsy/jsi053). [PubMed: [16260436](https://pubmed.ncbi.nlm.nih.gov/16260436/)].
 24. Tilokskulchai F, Phatthanasiriwethin S, Vichitsukon K, Serisathien Y. Attachment behaviors in mothers of premature infants: a descriptive study in Thai mothers. *J Perinatal Neonat Nurs*. 2002;**16**(3):69-83.
 25. Alaei F, Shahabi M, Mohammadi R, Alavi-Majid H. Maternal attachment behaviors at first neonatal visit in a hospital affiliated to Shahid Beheshti Medical University. *J Nurs Midwifery Shahid Beheshti Univ Med Sci*. 2006;**15**(51):31-9.
 26. Melnyk BM, Crean HF, Feinstein NF, Fairbanks E. Maternal anxiety and depression after a premature infant's discharge from the neonatal intensive care unit: explanatory effects of the creating opportunities for parent empowerment program. *Nurs Res*. 2008;**57**(6):383-94. doi: [10.1097/NNR.0b013e3181906f59](https://doi.org/10.1097/NNR.0b013e3181906f59). [PubMed: [19018213](https://pubmed.ncbi.nlm.nih.gov/19018213/)].
 27. Lindberg B, Ohrling K. Experiences of having a prematurely born infant from the perspective of mothers in northern Sweden. *Int J Circumpolar Health*. 2008;**67**(5):461-71. [PubMed: [19186767](https://pubmed.ncbi.nlm.nih.gov/19186767/)].
 28. Cleveland LM. Parenting in the neonatal intensive care unit. *J Obstet Gynecol Neonatal Nurs*. 2008;**37**(6):666-91. doi: [10.1111/j.1552-6909.2008.00288.x](https://doi.org/10.1111/j.1552-6909.2008.00288.x). [PubMed: [19012717](https://pubmed.ncbi.nlm.nih.gov/19012717/)].