

# The Effect of Empowerment Program on Participation of Mothers with Premature Infants Hospitalized in Neonatal Intensive Care Unit of Sayyed Shirazi Hospital in Gorgan, in 2018

Hanieh Sajadi<sup>1</sup>, Golbahar Akhoundzadeh<sup>2</sup>, Hamid Hojjati<sup>3</sup>

<sup>1</sup>Student, Department of Nursing Branch, Aliabad Katoul Islamic Azad University, Aliabad Katoul, Iran, <sup>2</sup>Assistant Professor, Department of Nursing Branch, Aliabad Katoul Islamic Azad University, Aliabad Katoul, Iran, <sup>3</sup>Assistant Professor, Department of Nursing Branch, Aliabad Katoul Islamic Azad University, Aliabad Katoul, Iran

## Abstract

**Introduction & Aim:** The birth of a premature infant who needs to be admitted to neonatal intensive care unit from birth impedes early communication and participation of mother in her infant's care. The best way to prevent infant's harm in hospital is to participate in the care of infant. The purpose of this study was to determine the effect of empowerment program on the participation of mothers with premature infants admitted to neonatal intensive care unit of Sayyed Shirazi hospital in Gorgan, Iran.

**Materials and Methods:** This study was a randomized clinical trial in 2018, which was conducted on a sample of mothers with premature infant who had randomly been divided into two intervention and control groups. The data collection tools were the Parents' Participation Inventory designed by Melnick in 1994. Data were analyzed by descriptive statistics (tables, mean and standard deviation) and inferential statistics (independent t-test, paired t-test and covariance) using SPSS-16 software.

**Results:** There was no significant difference in the level of mothers' participation in the care of their infants between the two groups before the intervention ( $p = 0.45$ ). But after the empowerment training program, the results showed that mothers' participation in the intervention group ( $19.10 \pm 3.09$ ) was higher than the control group ( $16.8 \pm 2.01$ ), ( $p = 0.01$ ).

**Conclusion:** The results of this study showed that implementation of empowerment training program increases mothers' participation in the care of their premature infants. Early intervention and the use of written information along with the booklet will increase the mothers' participation in the care of their infant.

**Key words:** Empowerment, Participation, Mothers of premature infants

## Introduction

Infants who are born before 37 weeks from the last menstruation day are called premature infants that often weight less than 2500 grams (1). Premature or

gestational age of less than 37 weeks is one of the most important health indicators in any society, and infant survival is directly related to gestational age and birth weight (2). Advances in technology and neonatal care have ensured the survival of pre-term infants and reduced their mortality rate (3, 4). Every year 140 million infants are born in the world, of whom around 15 million are premature, accounting for 98% of infant mortality in developing countries (5, 6). Unfortunately, despite all efforts made to prevent preterm births, the prevalence of preterm and low weight infant are still high (1). Various

---

## Corresponding Author:

**Golbahar Akhoundzadeh,**

Assistant Professor, Department of Nursing Branch, Aliabad Katoul Islamic Azad University, Aliabad Katoul, Iran. g-akhoundzadeh@aliabadiau.ac.ir

factors are involved in preterm birth, including maternal and fetal factors, etc. Maternal factors include maternal illness, chorioamnionitis, multiple birth, maternal smoking, placenta abruption and previa, uterine problems, etc (5). It has been recognized that premature infants require sophisticated treatment and care due to their physical, mental and psychological problems (1). Premature infant hospitalization immediately after birth is inevitable (7). Admission of a newborn infant to a neonatal intensive care unit (NICU) is a frightening and stressful experience for parents (8, 9). Number of adverse outcomes including increased risk of mental problems such as anxiety, depression, traumatic stress disorder, poor parent-infant interactions, and emotional, behavioral and cognitive problems are associated with the premature birth. It has been well documented that, the presence of scary medical equipment in the neonatal intensive care unit and other factors such as unfamiliar staff, restrictive patient policies, infant appearance, vague parental role and parent-infant interactions often create a frustrating and stressful condition for the parents of premature infants (10). As a result, mothers of preterm infants have very different experiences than mothers of term infants and will be challenged and faced with a crisis (11). Birth of a premature infant is not only an emotional and stressful experience for parents, but also an evolutionary stage of life for infant. Although experiencing the motherhood is a joyful one, with the birth of a premature infant the process of mental preparedness to become a mother will be stopped and parents often are not mentally, physically and emotionally ready for such event (6). Understanding the process of becoming a parent is difficult due to the fast and unexpected events that unfold, and having a premature infant can be a sad experience and difficult to cope with and sometime, this emotion is so severe that makes it difficult to control the situation (12). Numerous studies have shown that parental roles and responsibilities will change in these situations (13). Mothers of premature infants are less likely to have parental roles and often have doubts about their abilities to identify and meet their infant's needs (14). Parents need to be able to cope with these conditions and their new role, but this process is not always easy (13). It is known that the sense of tension is associated with the reduced supportive and protective behaviors and maternal anxiety and behavioral disorder (15). Undoubtedly, the parents of premature infants require support and currently, one of the best and most effective ways to prevent injuries and harm to premature infants is to actively involve their parents in

their care (16). Parents of premature infants repeatedly suffer a great deal of psychological distress during their infants' hospitalization due to lack of involvement and participation in the care process (17). Parents are an inevitable element of a hospitalized child's care (18). Providing a condition for the presence of parents by their infant will have many benefits for the parents and this is while, most parents are eager to attend and participate actively in the care of their infant (7). When a mother cares for her baby, the sense of motherhood and mother-child solidarity is strengthened. The mother-infant relationship in the intensive care unit is not only as important as the mother-infant relationship for a healthy child, but also is even more important (19). Among suggestions to encourage parents in this situation is to empower them in the care of their infant (17). This type of care was designed by Dr. Bernadette Melinck in 2008 in a form of a program called; "creating opportunities for parent empowerment (COPE)", (3). In this program in addition to the psychological support of parents, information about appearance and behaviors of premature infant, parental role, and the care environment are given to parents (20) in order to provide comprehensive care for premature infants and facilitate comprehensive participation of parents in the infant care (19). The empowerment program aims to increase self-awareness, knowledge, motivation, self-esteem, control and preventive behaviors in parents in order to promote health and quality of life (21).

Involving the family in the care and decision-making for their infant from birth is beneficial, as parents are considered primary caregivers and can work closely with the staff and implement the care plan. This type of care has been reported to improve respiratory function, nutrition, weight gain, and reduce hospital stay and treatment costs (22). One of the key components of empowerment considered by health educators is the family participation in care to enhance and improve the quality of life (21). Participation in care enhances family relationships, reduces the negative effects of child illness on the family, maintains family integrity, provides unique care and promotes infant and family health (18). This type of care delivery has many positive outcomes for the neonate such as weight gain, start of oral feeding, self-regulation, neurodevelopment, and family satisfaction (23). Family empowerment is needed for a better life (24) and is one of the main stages of knowledge enhancement and practical participation (24, 25). The purpose of this study was to determine the effect

of empowerment program on participation of mothers with premature infants hospitalized in neonatal intensive care unit of Sayyed Shirazi hospital in Gorgan, Iran.

### Materials and Method

This study is a randomized clinical trial which was conducted on the two groups of mothers with preterm infants. The setting of this study was Sayyad Shirazi Hospital at the city of Gorgan, Iran. The sample size in this study was determined based on the study of Gavami et al (2012) using G\*POWER software with the effect size of 0.94, significant level 0.05, confidence interval of 0.95 and test power 0.080. The samples were randomly divided into two groups of intervention (n=20) and control (n=20). Inclusion criteria were; being over 18 years old, having the ability to read and write, having no history of neonatal intensive care unit care, having no physical or mental illness leading to drug use, having a 26 to 37 weeks old infant who weigh less than 2500 grams, and lack of life-threatening condition in the infant. The simple random sampling method was used in this study. Data collection tools were demographic information questionnaire (maternal age, education, occupation, number of children) and Parents' Participation Inventory, which was designed by Melnick in 1997 to measure parental involvement in the neonatal intensive care unit. This questionnaire lists 25 activities that a mother can perform for her infant. Also, the mother is asked to tick every activity that she has performed. The questions in this questionnaire have two options, and the higher number of options selected by the mother indicate the greater care provided by the mother and the more involvement she has in the care of her infant. A score

of less than 9 indicates low level of participation, 10-18 indicates moderate level of participation, and score of 19 or more indicates the high level of participation. In Melnick's (1997) study, the Cronbach's alpha of this tool was 0.85.

This project was approved by the Faculty's Research Council, and a code of ethics was obtained from the University's Deputy for Technology. After explaining the purpose of study, the necessary permission was obtained from the hospital authorities. According to the inclusion criteria, purposeful sampling was done in the first step and then, the study samples were randomly divided into two intervention and control groups. The researcher, after introducing herself, explained the aims of study to the mothers, ensured them about the principles of confidentiality and anonymity, asked them to provide a written informed consent and informed them that they could withdraw from the study at any time with any reason. The first appointments were made with the participating parents and the meeting place was agreed upon. The interval between each intervention step was 4 days. Three phases of the parent empowerment program were implemented for the parents in the intervention group. The control group received no intervention other than routine care and support in the ward. At the beginning and the end of the study, pre-test and post-test questions were completed by the participants. Data were analyzed by SPSS-16 software.

After the study, audio tapes containing written information and booklets used for parents in the intervention group during the study were given to the control group, so that they could also benefit from the program.

No	Session	Intervention
1	One	Demographic information questionnaire was completed by mothers 4 days after the infant hospitalization and beginning of the intervention in this stage. Then, a 15-minute long audio tape containing information on the first stage along with the booklet was given to the mothers. The information on this stage was related to the appearance and behavioral characteristics of the premature infant, the differences between a pre-term and term infant, environmental characteristics of NICU, and strategies to enhance the maximum participation of parents in the infant care.
2	Two	It took place 4 days after the first stage. A 15-minute long audio tape containing information on the second stage along with the booklet was given to the mothers. In addition to providing support for the first stage, information on the behavior and evolutionary growth of infant and some suggestion for maximizing the parents' participation in the care was provided.
3	Three	It took place one day before the infant discharge. In addition to providing support for the last two stages, information on discharge, how to care for infant at home, how to identify the characteristics of behavior and evolutionary growth of infant and signs of distress were given to parents. After the intervention, mothers completed the post-test.

## Findings

The results of independent t-test showed no significant difference between the two groups in terms of mothers' age ( $p = 0.62$ ) and length of hospital stay ( $p = 0.27$ ). In the intervention group, 0.09 of the samples ( $N=18$ ) were housewives and 0.010 ( $N = 2$ ) were employed. Also in the control group, 0.080 of the samples ( $N = 41$ ) were housewives and 0.020 ( $N = 4$ ) were employed. The result of chi-square test showed no significant difference between the two groups in terms of mother's occupation ( $p = 0.66$ ), history of childbirth ( $p = 0.25$ ), delivery method ( $p=0.35$ ), history of abortion ( $p = 0.26$ ), and type of pregnancy ( $p = 0.36$ ). The Fisher test showed no significant difference between the two groups in terms of education ( $p = 0.69$ ), and the Mann-Whitney test also showed no significant difference between the two groups in terms of number of children ( $p = 0.31$ ), (Table 1).

**Table 1: Comparison of the mothers with premature infant based on demographic characteristics**

Demographic characteristics	Type	Intervention		Control		p-value
Age		27.25±4.41		26.65±3.26		P=0.62
Occupation	Housewife	18(0.90)		18(80%)		P=0.66
	Employed	2(0.10)		18(80%)		
Number of children		105±1.2		1±0.82		P=0.31
Education	Illiterate	2		6		P=0.62
	Primary	2		0		
	Secondary	4		0		
	High school	2		4		
	University	10		10		
Level of participation		frequency	Percentage	frequency	Percentage	P=0.45
	Low	10	5	7	35	
	Moderate	10	50	13	65	
Mean & SD		9.2±3.63		10.35±1.89		P=0.21
History of pregnancy	Yes	12		15		P=0.25
	No	8		5		
Delivery method	C-section	8		14		P=0.35
	Virginal	16		6		
History of abortion	Yes	8		11		P=0.62
	No	12		9		
Length of hospital stay		8.05±3.31		9.25±3.45		P=0.27

Chi-square test did not show a significant difference between the two groups before and after the intervention ( $p = 0.45$ ). Also the independent t-test showed no significant difference between the two groups in terms of the mean score of level of participation ( $p=0.21$ ), (Table 2).

**Table 2: Level of parents’ participation in the intervention and control groups before the intervention**

Chi-square test showed a significant difference between the two groups in terms of the level of participation after the intervention (p=0.01), so that the level of participation increased to 55% (N=11). Paired t-test showed a significant difference between the two groups in terms of the level of participation before and after the intervention (p=0.008), (Table 3).

**Table 3: level of parents’ participation in the intervention and control groups after the intervention**

Variable	Intervention		Control		p-value	
		frequency	Percentage	frequency		Percentage
Level of participation	Moderate	9	45	16	80	P=0.01
	High	11	55	4	20	
Mean & SD		19.10±3.09		16.8±2.01		P=0.008

Paired t-test showed a significant difference in the level of participation in the intervention group before and after the intervention (p<0.01, t=-11.2). It also showed a significant difference in the control group (p<0.01, t=-10.82), but the level of participation was more in the intervention group (Table 4).

**Table 4: Comparison of the level of parents’ participation in the intervention and control groups before and after the intervention.**

Time	Intervention group	Control group	p-value
Before intervention	9.2 ± 3.63	10.35 ± 1.89	P=0.21
After intervention	19.1 ± 3.09	16.8 ± 2.10	P=0.008
p-value	p<0.01	p<0.01	
	t=11.2	t=10.82	

Covariance test showed a significant difference before the intervention (p=0.004, Eta=0.2), so that 20% of the changes in parents’ level of participation was due to the empowerment training (Table 5).

**Table 5: The effect of empowerment training program on the level of parents’ participation**

Variance source	Sum of squares	Degree of freedom	Mean of squares	F-value	Significant level	Eta
Modified model	70.49	2	35.24	5.4	P=0.009	0.22
Post-test separator	17.59	1	17.59	2.69	P=0.1	0.06
Group	63.41	1	63.41	9.71	P=0.004	0.2
Error	241.4	37.5.6				
Sum	13200	40				
Total	311.90	39				

## Conclusion

Findings of the present study showed that mothers with premature infants who had an empowerment training program were more involved in the care of their infants. In a study by Melnick et al., four stages of the “creating opportunities for parent empowerment” (COPE) were implemented in the United States (3). In this program, parents learned about the premature infant, family’s abilities and activities that parents can perform. Also, psychological support was provided for parents and sufficient time was given to them for preparation. Consequently, the confidence of parents in caring for their premature infants increased (5). Jaw Brown conducted a study on parents of premature infants that showed that the knowledge of mothers increased after the training. Providing information on infant behavior and interaction with infant reduce mothers’ stress and have positive effects on the level of parents’ participation in the care of their infants (14). Results of studies by Fatemeh Alaei Karahroudi et al. (2012) showed that COPE program had a positive effect on mothers’ participation in the care of their infant and increased it in the intervention group (5). A study by Marzieh Akbarzadeh et al. (2012) showed that mothers’ education increased their positive attitude and self-confidence (26). Study of Noohi et al (2014) revealed that implementation of participatory care and intervention reduces the anxiety of mother more than conventional care (22). Study of Abdolali Zadeh et al. (2015) showed that a health promotion support program is effective in promoting the quality of life in mothers of premature infants (19). Empowering and involving parents and families in the care and decision-making for their infants promote health and wellbeing. People who are able to control their emotions can make the right decision (27). Family empowerment can be an important mechanism in changing care delivery to a better care (10-21). Therefore, empowerment model can be considered as an appropriate model for promoting health, increasing knowledge and enhancing parents’ participation in the care of their infants (22).

## Final Result

Considering the results and the impact of empowerment program on the participation of parents in the care of their premature infants, it can be said that the implementation of empowerment program can facilitate active participation of parents in the care of their premature infants. Thus, we suggest to implement this program from the first day of delivery for mothers

of premature infants.

**Acknowledgement:** The present study is part of an MSc dissertation in pediatric nursing with the number: IRCT20170512033932N6, and code of ethics: IR.GOMUS.REC1397.092 approved by Golestan University of Medical Sciences. We would like to express our gratitude to the officials of Golestan University of Medical Sciences and the neonatal intensive care unit of Sayyed Shirazi Hospital in Gorgan.

## References

1. Ghasemi M, Dehdari T, Mohagheghi P, Gohari M, Zargrzadeh Z. Mothers’ Performance on Caring for their Premature Infants: A Pilot Study. *Iran Journal of Nursing*. 2012;25(79):24-33. URL: <http://ijn.iuums.ac.ir/article-1-1436-en.html>.
2. Namakin K, Sharifzadeh G, Malekizadeh A. To Identify the Risk Factors in Prematurity Birth in Birjand, Iran: A Case – Control Study. *Iranian Journal of Epidemiology*. 2011;7(3):1-5. URL: <http://irje.tums.ac.ir/article-1-35-en.html>.
3. Melnyk B, M., Crean H, F., Feinstein N, F., 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. 2008;57(6):383-94. doi: 10.1097/NNR.0b013e3181906f59.
4. Zelkowitz P, Feeley N, Shrier I, Stremmler R, Westreich R, Dunkley D, et al. The Cues and Care Trial: a randomized controlled trial of an intervention to reduce maternal anxiety and improve developmental outcomes in very low birthweight infants. *BMC Pediatr*. 2008;8(38). doi: 10.1186/1471-2431-8-38.
5. Jafari Mianaei S, Alaei Karahroudi F, M R. Study of the impacts of rehabilitation program on mothers with premature hospitalized infants. *Journal of Education and Ethics in Nursing*. 2013;1(1):2-37. URL: <http://ethic.jums.ac.ir/article-1-28-en.html>.
6. Sohrabi S, Ahmadi Z, Mosayebi Z, Haghani H. Effect of Infant Massage by Mothers on Maternal Attachment Behavior in Infants Hospitalized in Neonatal Care Units. *Hayat*. 2014;20(2):59-68. <http://hayat.tums.ac.ir/article-1-813-fa.html>
7. Khajeh M, Karimi R, Hosseini A. The Impact of Parent Empowerment Program on Their Views

- on the Parents' Role, Behaviors and Features of Premature Infants Admitted to the Intensive Care Unit. *Journal of Urmia Nursing and Midwifery Faculty*. 2013;11(6):419-27 <http://unmf.umsu.ac.ir/article-1-1420-fa.html>.
8. Cooper L.G et al. Impact of a family-centered care initiative on NICU care, staff and families. *Journal of Perinatology*. 2007;27(2):32-7. DOI: 10.1038/sj.jp.7211840.
  9. Puthussery s, Chutiyami m, Tseng pc, Kilby l, j K. Effectiveness of early intervention programs for parents of preterm infants: a meta-review of systematic reviews. Puthussery et al *BMC Pediatrics*. 2018;18(1):233. <https://doi.org/10.1186/s12887-018-1205-9>.
  10. Melnyk B, M., Oswalt K, L., Sidora-Arcoleo K. Validation and psychometric properties of the neonatal intensive care unit parental beliefs scale. *Nurs Res*. 2014;53(2):15-105. doi: 10.1097/NNR.0000000000000023.
  11. Khanjari S, Mosavipoor S, Oskouie F, Haghani H. Quality of Life and Sense of Coherence in the Mothers with Term and Preterm Infants. *Iran Journal of Nursing*. 2017;30(106):57-67. DOI: 10.29252/ijn.30.106.57.
  12. Lindberg b, Ohrling k. Experiences of Having a Prematurely Born Infant From The Perspective of Mother In Northern Sweden. *International Journal of Circumpolar Health*. 2008;67(5):461-71. DOI: 10.3402/ijch.v67i5.18353.
  13. Valizadeh L, Akbarbegloo M, Asadollahi M. Supports Provided by Nurses for Mothers of Premature Newborns Hospitalized in NICU. *Iran Journal of Nursing*. 2009;22(58):89-98. URL: <http://ijn.iums.ac.ir/article-1-663-en.html>.
  14. 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 Journal of Research in Medical Sciences*. 2012;14(9):19-23. <http://zjrms.ir/article-1-1603-en.html>.
  15. Reyhani T, Gholami S, Behnam Vashani H, M. BT. Effect of an empowerment program on management of care related self-efficacy of epileptic child's mother. *JNKUMS*. 2017;8(4):655-64. <http://journal.nkums.ac.ir/article-1-1047-fa.html>.
  16. Abbasi S, Mehdizadeh S, kamali K, Afshin joo M. THE RELATIONSHIP BETWEEN NURSING SUPPORT AND PARENT'S STRESS IN MOTHERS OF PREMATURE'S INFANTS IN NEONATAL INTENSIVE CARE UNIT. *Journal of Nursing and Midwifery Urmia University of Medical Sciences*. 2017;15(9):652-8. <http://unmf.umsu.ac.ir/article-1-3310-fa.html>.
  17. Bastani F, Ali Abadi T, Haghani H. The Effectiveness of Participatory Care Program in Neonatal Intensive Care Unit on State Anxiety of Mothers of Preterm Newborns. *Journal of Babol University Of Medical Sciences*. 2012;14(3):59-65. URL: <http://jbums.org/article-1-4091-en.html>.
  18. Nouhi E, Karbalaizadeh M, Abazari F. The effect of mothers' participation and the family-centered care on mother's anxiety with children suffering from gastrointestinal infections: a randomized clinical trial. *Journal of Clinical Nursing and Midwifery*. 2015;3(4):47-55. URL: <http://jcnm.skums.ac.ir/article-1-168-fa.html>.
  19. salimi s, Jebreili m, Sayyedrassooli A, ghोजazadeh m. The Effect of Swaddling on Physiological Pain Responses of Premature Infants to Nasogastric Tube Insertion: Crossover Clinical Trial. *Avicenna Journal of Nursing and Midwifery Care*. 2014;22(3):55-63. URL: <http://nmj.umsha.ac.ir/article-1-1269-en.html>.
  20. Jafari Mianaei S, Alaei Karahroudi F, Rasouli M. Study of the impacts of rehabilitation program on mothers with premature hospitalized infants. *Education and Ethics in Nursing*. 2012;1(1):2-37. URL: <http://ethic.jums.ac.ir/article-1-28-en.html>.
  21. Alahyari A, Alhani F, Kazem nejad A, Ezadyar M. The effect of family-centered empowerment model on the Quality of Life of school-age B-thalassemic children Iranian *Journal of Pediatric Diseases*. 2006;16(4):-.
  22. Aliabadi T, Bastani F, Haghani H. Effect of Mothers' Participation in Preterm Infants' Care in NICU on Readmission Rates *Hayat*. 2011;17(2):71-7. <http://hayat.tums.ac.ir/article-1-65-fa.html>.
  23. Torkzahrani S, Soleimani F, Rafiey H, Salavati M, Nasiri M. Using Donabedian's model to evaluate quality of developmental care in neonatal intensive care units. *Journal of North Khorasan University of Medical Sciences*. 2016;8(2):225-35. DOI: 10.18869/acadpub.jnkums.8.2.225.
  24. Sanaie N, Nejati S, Zolfaghari M, Alhani F, KazemNejad A. The Effect of Family-Centered

- Empowerment in Self Efficacy and Self Esteem in Patients Undergoing Coronary Bypass Graft Surgery. *Journal of Research Development in Nursing and Midwifery*. 2013;10(2):44-53. URL: <http://goums.ac.ir/jgbfnm/article-1-455-en.html>.
25. karbandi S, Hosseini SM, Masoudi R, Mamori GA. The effect of relaxation training on breastfeeding self-efficacy of mothers with preterm infants: A randomized clinical trial. *Journal of Clinical Nursing and Midwifery*. 2014;3(2):37-45. <http://jcnm.skums.ac.ir/article-1-80-fa.html>.
26. Toosi M, Akbarzadeh M, Zare N, Sharif F. Effect of Attachment Training on Anxiety and Attachment Behaviors of first-time Mothers. *Hayat*. 2011;17(3):69-79. <https://doaj.org/article/ecc624d5fafb44f78f1334c15031aa0c>.
27. Abdolali zadh m, Kermanshahi S. The effect of health promotion support program on quality of life of mothers of preterm infants. *Evidence-based care*. 2015;5(2):37-48. doi: 10.22038/EBCJ.2015.4534.