Evidence Based Care Journal
http://ebcj.mums.ac.ir/

The Effect of Implementing a Discharge Program on Quality of Life of Mothers with Premature Infants

Azam Neyestani, Reza Saeidi, Maryam Salari, Soheila Karbandi

The online version of this article can be found at
http: //ebcj.mums.ac.ir/article_8479.html

Evidence Based Care Journal 2017 07:60 originally published online 01 April 2017
DOI: 10.22038/ebcj.2017.21095.1482

Online ISSN: 2008-370X

Address: Mashhad Nursing and Midwifery School, Ebn-e-Sina St., Mashhad, Iran
P.O.Box: 9137913199
Tel.: (098 51) 38591511-294
Fax: (098 51) 38539775
Email: EBCJ@mums.ac.ir

Evidence Based Care Journal

Original Article

OPEN ACCESS JOURNALS

The Effect of Implementing a Discharge Program on Quality of Life of Mothers with Premature Infants

Azam Neyestani[1], Reza Saeidi[2], Maryam Salari[3], Soheila Karbandi[4]*

Received: 01/01/2017
Accepted: 13/03/2017

Evidence Based Care Journal, 7 (1): 60-71

Abstract

Background: Quality of life is low among mothers of premature infants; therefore, developing a post-discharge care program can be effective.

Aim: This study aimed to investigate the effect of implementing a discharge program on the quality of life of mothers with premature infants.

Method: This randomized, controlled, clinical trial was conducted on 60 mothers with premature infants in the neonatal intensive care unit (NICU) of BentolHoda Hospital, Bojnord, Iran, during 2015-2016. The participants were divided into two groups of intervention (four training sessions on caring for premature infant, screening, and four-week telephone counseling post-discharge) and control (routine care in NICU). Maternal quality of life was evaluated using the short form of the World Health Organization Quality of Life Questionnaire at the onset of the study, at discharge, and four weeks after discharge. The data was analyzed in SPSS, version 16, using repeated measures analysis of variance (ANOVA).

Results: The mean ages of the intervention and control groups were 26.8±5.1 and 29.5±5.3 years, respectively. According to the findings of independent t-test, the total mean score for maternal quality of life before the intervention showed no significant differences between the intervention and control groups (P=0.48). However, the results of repeated measures ANOVA revealed statistically significant differences between the scores of quality of life at three-time measurements within both study groups (P<0.001).

Implications for Practice: The designed premature infant discharge program can improve quality of life of mothers. Thus, we suggest it as an effective method for promoting quality of life among mothers of preterm infants.

Keywords: Discharge program, Premature infants, Quality of life

1. MSc in Neonatal Intensive Care Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran
2. Assistant Professor of Neonatology, Neonatal Research Center, Imam Reza Hospital, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran
3. The Expert Responsible for the Statistics and Information Technology Management, Mashhad University of Medical Sciences, Mashhad, Iran
4. Evidence-Based Care Research Centre, Instructor of Nursing, Department of Pediatric Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

* Corresponding author, Email: karbandis@mums.ac.ir

Introduction

The birth of premature infants can impose considerable stress on families owing to no physical, emotional, and mental preparation among parents to have a premature infant, as well as the numerous requirements that arise in this situation (1). In this regard, Leigh et al. (2003) in their study on mothers of premature newborns concluded that such mothers suffer from much more mental tensions and show symptoms of depression more frequently than mothers of full-term infants (2). In addition, Barimnejad et al. demonstrated that apnea, sudden color change, pain, frailty, as well as abnormal respiratory patterns among infants with mechanical ventilation were considered the main stressful factors affecting mothers (3).

Besides, Borhani (2012) in a study on the experiences of mothers with premature infants admitted to neonatal intensive care units (NICUs) argued that mothers were exposed to three main themes of a) encountering unfamiliar conditions (i.e., unfamiliarity with NICU and no information about prematurity), b) need for understanding (i.e., support from family and healthcare team), and c) limited participation in care of neonates and unpredictability of neonate's conditions (4).

Moreover, Arzani (2015) analyzed interviews conducted with mothers of premature infants and reported somatic symptom disorder caused by commutes, no opportunity for rest and enough sleep, lack of appetite, lack of self-care, difficulty and pain in taking care of premature infants due to their special needs, mental stress, decreased tolerance threshold, sensitivity, irritability, destroyed wishes for a full-term and healthy baby, insufficient time to maintain relationships with friends and relatives, no control over time, confinement to such infants and their care, lack of autonomy in performing duties, as well as overnight care (5).

Other studies similarly suggested that mothers of premature infants have lower levels of quality of life from physical and mental aspects compared to mothers of normal neonates (6). According to the World Health Organization (WHO), quality of life is defined as the feelings of an individual towards her/his life conditions consisting of physical, mental, and social dimensions (7). Furthermore, quality of life in medical investigations is considered as an indicator of quality of healthcare (8). In this respect, Frans mentioned that quality of life of families is affected by factors such as socioeconomic status, mental and psychological state, as well as health and disease conditions. In addition, educational level of women and their husbands, number of children, and marital relationship were considered as the factors influencing quality of life among women (9, 10).

Hill et al. (2007) in a study on maternal lifestyle after premature birth concluded that mental aspect of quality of life among mothers of preterm newborns was at a lower level compared to mothers of full-term or near-term infants (11). It should be noted that the majority of such infants are discharged from hospital when they are in dire need of care and precise monitoring; thus, these newborns are often affected with complications, management of which at home requires the knowledge acquired during NICU stay (12). Accordingly, transferring an infant to home raises parental anxiety and fear (13, 14). High levels of tension can change mother-infant interactions and disturb mother's relationship with the healthcare personnel. Tension is correlated with decreased affectionate and responsible behaviors among mothers; thus, maternal anxiety is associated with impaired parenting behaviors (1). It is also obvious that survival and health promotion among infants is heavily dependent on maternal health (15).

Furthermore, the survival and health status of premature infants is directly related to quality of care and its maintenance even after hospital discharge. Thus, there is a need to grant special importance to mothers as the ones playing the leading role in infant care. Since the burden caused by prematurity (physical, mental, and emotional) is mostly carried by mothers, health systems are required to design and implement intervention programs to support mothers to reduce care pressures in the long term (not just limited to the length of hospital stay) (13). Preparation for discharge and transfer of infants from hospital to home is a process that should be initiated since the admission time (16).

In a study by Mok et al. (2006) entitled as supports by nurses for mothers of premature neonates, such mothers were inclined to obtain continuous information in this respect (17).

In an investigation by Malakooti et al. (2013), sense of exclusion among mothers was related to lack of receiving enough information about infant's condition. Such mothers were willing to receive exact information about their infants, their medications and neonate recovery time, reasons for tests, as well as disease complications (18).

The results of a study by Jackson (2003) showed that mothers of infants admitted to NICUs needed more involvement and control on neonatal care (19). In addition, some researchers believed that support measures taken after childbirth could improve maternal quality of life, whereas other investigations revealed that postpartum support could only affect spiritual-mental aspects of quality of life among women (6). Furthermore, a group of scholars concluded that postnatal interventions did not have a positive impact on physical and mental health status (20).

A study by Aaeen et al. (2009) demonstrated that lack of time and high volume of tasks due to no balance between human resources and needs, insufficient skills of nurses to communicate, and the nature of physician-nurse interactions could marginalize relationship with parents (21). Furthermore, Namnabati et al. (2014) stated that efforts are made to discharge infants from NICU to enable mothers take care of the newborn at home; however, hospital discharge programs are not fully implemented in this regard. Therefore, there is a need to develop and implement standard programs to reach favorable outcomes (22).

Researchers indicate that caring for premature infants admitted to NICU is infant-oriented and caring for parents of these infants, especially mothers facing numerous tensions, is less considered and even sometimes overlooked (18). On the other hand, few interventions were conducted in Iran on quality of life of mothers with premature infants. Therefore, the purpose of the present study was to determine the effect a hospital discharge program on quality of life of mothers of preterm infants.

Methods

This clinical trial was performed on 60 mothers with premature infants (30-35 weeks of gestation). The newborns were admitted to the NICU of BentolHoda Hospital of Bojnord, Iran, during December 2015-May 2016. The participants were chosen through convenience sampling and randomly assigned to two groups through coin flipping. Before initiating the study, written informed consent was obtained from the subjects.

The sample size was determined using the formula of comparison of two population means. Variance was obtained from a study on quality of life of postpartum women after cesarean section and normal delivery (that study had a similar population to that used in the current one) (23). The confidence interval and test power were equal to 90% and 80%, respectively. The expected value of difference was put in the formula according to the views of the researchers. The sample size was calculated to be 27 in each group. Considering 10% probability of attrition, the total number of 30 mothers was assigned to each group (60 individuals in total).

The inclusion criteria for the infants were 30-35 weeks of gestation, weight over 1200 g, five-minute Apgar score of 7 or higher, no need to use mechanical ventilation, lack of any obvious abnormalities or genetic disorders (malformation of the gastrointestinal tract, cardiac, as well as urinary, nervous, and trisomy of 21, 13, 18), and single birth. Moreover, the inclusion criteria for the mothers consisted of age range 18-35 years, no addiction, no smoking or tobacco use, no severe stressful events over the past six months, no history of mental illnesses, depression, or chronic anxiety (according to mothers' statement), Iranian nationality, ability to speak Persian, having at least primary school education, access to telephone, living with husband, monogamy, no education in the field of Medical Sciences, no history of medical problems (cardiovascular problems, renal diseases, epilepsy, and psychiatric disorders), no disabilities or debilitating illnesses among family members (husband and children), completion of informed consent form, no loss of parents before the age of 11 years, wanted pregnancy, satisfaction with infant's gender, as well as presence at infant's beside during the first 48 hours of NICU admission.

The exclusion criteria for the infants were infection or diagnosis of any disorder leading to hospitalization for less than one week and more than one month, and neonatal death. Furthermore, the exclusion criteria for the mothers were somatic or mental problems (severe postpartum depression, as well as acute respiratory, renal, cardiovascular, infectious, and psychiatric problems), Edinburgh postnatal depression score of 13 or higher, mother's willingness to withdraw from the study, absence from the infant's bedside for a maximum of seven consecutive days, lack of cooperation and attendance in the training sessions (maximum of two consecutive sessions), refusal to participate in telephone counseling or unavailability, lack of referral by mothers four weeks after discharge to complete the questionnaire, occurrence of anxiety-causing events during the study (e.g., mental and financial crises or divorce), disabilities

or debilitating diseases among family members (husband and children), as well as transfer of the infant to other healthcare centers.

The data collection instruments included a demographic information form, the World Health Organization Quality of Life Questionnaire-Short Form (WHOQOLQ-BREF), the Edinburgh Postnatal Depression Scale (EPDS), and the Multidimensional Scale of Perceived Social Support (MSPSS). The demographic information form comprised of items on characteristics of mother, husband, and children, marital life, obstetric information, as well as type of delivery. Content validity of the form was established by professors of Department of Nursing and Midwifery at Mashhad University of Medical Sciences, Mashhad, Iran.

The WHOQOL-BREF consisted of 26 items in four sub-scales of somatic (7 items), psychological (6 items), social (3 items), and life status (8 items). The first two items are not associated with the given domains and they just evaluate health status and quality of life in general. The items are rated using a five-point Likert scale (1 to 5 including never, low, medium, or high, as well as completely dissatisfied, no satisfaction, moderately dissatisfied, satisfied, and completely satisfied and the like). The higher scores obtained from this questionnaire indicate higher level of quality of life (23, 25).

The EPDS also contains 10 items rated using a four-point Likert scale based on the severity of symptoms with the minimum and maximum possible scores of 0 and 30. Lower scores show better status of a person and score 13 or higher suggest possible signs of postnatal depression (23).

MSPSS was developed by Zimet et al. in 1988 and includes 12 items measuring perceived support from family, friends, and others (individuals other than family members and friends). Each item is scored using a Likert-type scale ranging from 1 (completely disagree) to 7 (completely agree). The minimum and maximum scores obtained from this questionnaire are 12 and 84, respectively, with higher scores indicating more perceived social support (26, 27).

All the given questionnaires were employed several times in various studies in Iran, and their validity was confirmed. To determine the reliability of these questionnaires, Cronbach's alpha coefficient was employed which was equal to 0.82, 0.72, 0.68, and 0.70 for WHOQOL in the domains of physical, psychological, social, and environmental health, respectively. Furthermore, Cronbach's alpha coefficients were 0.73 and 0.83 for EPDS and MSPSS, respectively.

To prevent data transfer within groups, time block was used. For this purpose, the researcher conducted simple random sampling (convenience sampling) to select the mothers meeting the inclusion criteria, and then placed these individuals in the intervention group. Following the completion of the number of samples in this group, sampling was stopped until the last mother participating in the study was discharged. Afterwards, the subjects of the control group were selected in the same way and it continued until completion of the number of samples.

To collect data, infants meeting the study inclusion criteria were initially identified, then their mothers' medical records were reviewed; these mothers were subsequently interviewed. Provided that the mothers met the inclusion criteria, as well, the researchers introduced themselves to the mothers and explained the study procedure in accordance with their level of knowledge. In case of mothers' consent to participate in the study, the demographic information form was completed by the researcher via interviews with mothers.

In the intervention group, maternal quality of life was measured though WHOQOL-BREF before the intervention. Afterwards, the discharge program was implemented for the intervention group in the form of four training sessions for the mothers (two 35 to 40-minute sessions per week) based on premature infant discharge program in the maternal break room bedside infants through direct and face-to-face training during the first 48 hours lasting from the time of mothers' attendance to NICU to the discharge time.

The first training session was associated with the characteristics of premature infants and the causes of hospitalization. The second session was related to maintaining and controlling body temperature, position of the neonate, method of feeding and using medications, and infection prevention. The third session was concerned with skin irritation, apnea, safe sleeping environment, and kangaroo care. Finally, the fourth session was about the growth and development of infants, vaccination, and the necessity of screening (in terms of hearing and vision), as well as medical ultrasound (sonography).

Moreover, a booklet on the given training course was provided to the participants. The first visit

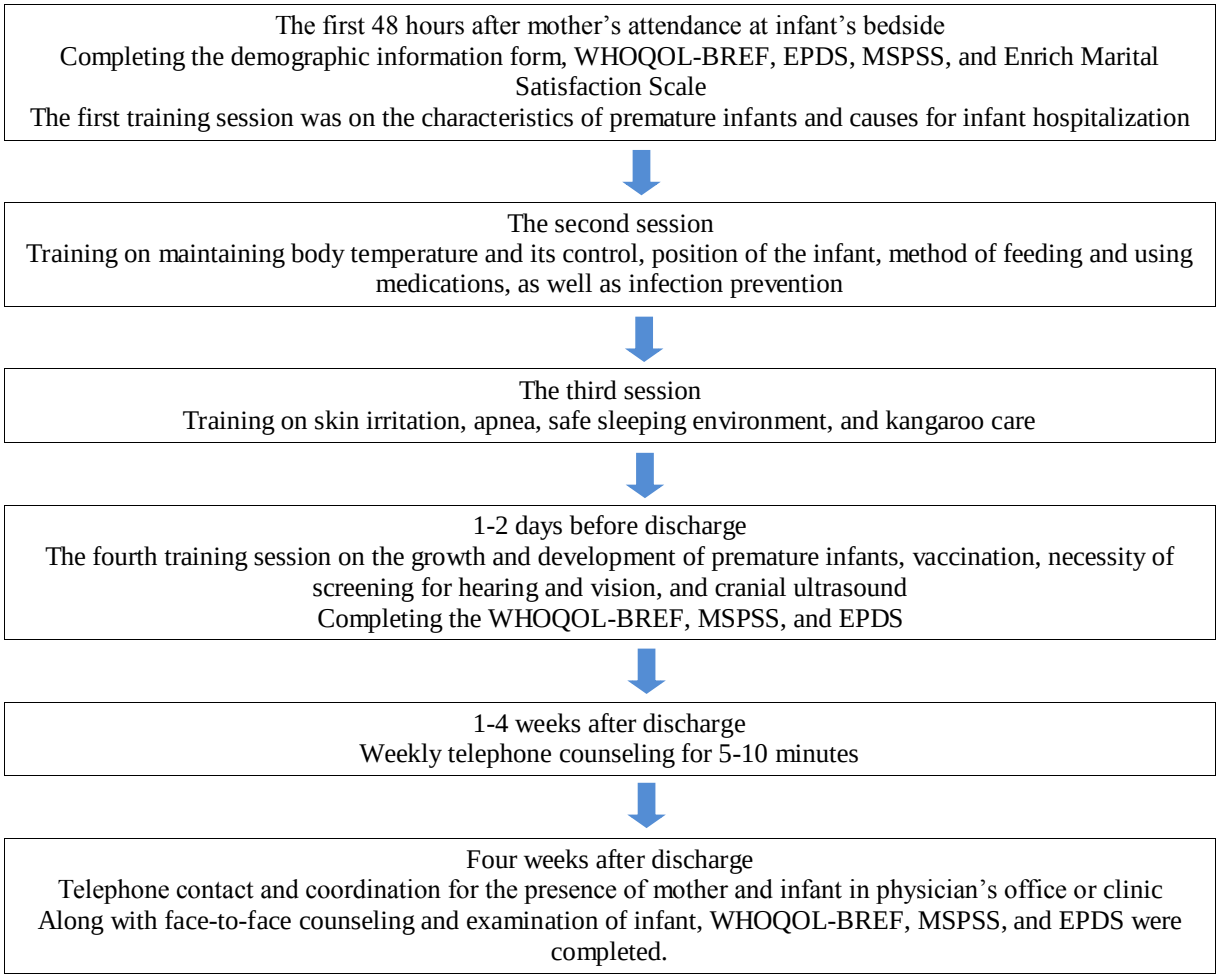

Figure 1. Steps of the study procedure for the intervention group

was made within the first presence at beside of the preterm infant within 48 hours, and then appointments were set for subsequent visits to provide the necessary training. The last face-to-face meeting was 1-2 days before hospital discharge. Furthermore, the mothers were ensured that, if required, they could call nurses at any time of day and receive telephone counseling.

After discharge, telephone counseling was conducted (lasting for 5 to 10 minutes) once a week for four weeks in order to continue the training process and perform follow-up screening. At discharge and four weeks after neonatal discharge, quality of life and postpartum depression were evaluated using WHOQOL-BREF and EPDS, respectively. By the end of the data collection procedure, two subjects from the intervention group were excluded due to length of stay more than one month, obtaining a score higher than 13 from the EPDS, and not responding to telephone counseling. In the control group, two participants were excluded due to obtaining a score higher than 13 from the EPDS and two mothers due to not completing the questionnaire four weeks after delivery. The participants were assured of confidentiality of the data and they were allowed to withdraw from the study at anytime. Furthermore, the study participants were ensured that the intervention does not have any physical or mental harm for them and their infants.

To analyze the data, normal distribution of the quantitative variables was first determined by Kolmogorov-Smirnov test. To describe the demographic information and the personal characteristics, mean, standard deviation, and frequency distribution tables were used. Homogeneity of the study groups was examined through Chi-square test and independent t-test. To compare the mean scores in both groups, t-test was employed. Since the data was obtain at different stages (before the intervention, at discharge, and four weeks post-discharge) using the same instruments, repeated measures analysis of variance (ANOVA) was run to determine the differences in total scores of quality of life (before discharge and four weeks after discharge) in the intervention and control

groups. Data was analyzed in SPSS, version 16. P-values less than 0.05 were considered statistically significant.

Results

The mean age of the mothers in the present study was 28.2±5.3 years and the majority of them were housewives with primary school and junior high school education. The mean age of the fathers was 32.9±6.2 years and most of them were had associate's degree or higher with enough level of income and their own houses.

Most of the infants were male with the mean gestational age of 32.7±1.7 weeks and the mean weight, height, and head circumference at birth of 2008.6±576 g, 44.2±4.4 cm, and 30.7±1.7 cm, respectively. Most of the infants were hospitalized due to respiratory system distress at birth and they were breastfed. The two groups were not significantly different in terms of demographic characteristics (Table 1).

Table 1. Comparison of demographic characteristics of the intervention and control groups

Variable		Group		Test results
		Intervention	Control	
Maternal age (year) mean±standard deviation		26.8±5.1	29.5±5.3	*0.85
Maternal occupation	Employed number (percentage)	4 (15.4)	3 (11.5)	**0.68
	Housewife number (percentage)	22 (84.6)	23 (88.5)	
Maternal level of education	Primary school number (percentage)	7 (26.9)	7 (26.9)	**0.98
	Junior high school number (percentage)	6 (23.1)	7 (26.9)	
	High school number (percentage)	7 (26.9)	6 (23.1)	
	Associate's degree or higher number (percentage)	6 (23.1)	6 (23.1)	
Level of income	More than enough number (percentage)	6 (23.1)	5 (19.2)	**0.73
	Less than enough number (percentage)	20 (76.1)	21 (80.8)	
Husband's age (year) mean±standard deviation		31.8±5.9	33.9±6.5	*0.93
Infant's gender	Male number (percentage)	14(53.8)	15 (57.7)	**0.78
	Female number (percentage)	12(46.2)	11 (42.3)	
Gestational age (week) (mean±standard deviation)		32.1±1.8	32.7±1.7	*0.28
Infant weight (g) (mean±standard deviation)		1941.1±580	2076.1±567	*0.40
Infant length (cm) (mean±standard deviation)		43.9±4.6	44.5±4.3	*0.063
Infant head circumference (cm) (mean±standard deviation)		30.4±2.7	31.05±2.2	*0.36
Type of delivery	Natural vaginal delivery number (percentage)	13 (50)	15 (57.7)	**.57
	Cesarean section number (percentage)	13 (50)	11 (42.3)	
Number of children	One number (percentage)	12 (46.2)	10 (38.5)	**0.85
	Two number (percentage)	6 (23.1)	7 (26.9)	
	Three and more number (percentage)	8 (30.7)	9 (34.6)	
Causes of preterm delivery	Rupture of membranes number (percentage)	16 (61.5)	18 (69.3)	***0.92
	Hypertension number (percentage)	3 (11.5)	2 (7.7)	
	Diabetes number (percentage)	1 (3.8)	2 (7.7)	
	Fetal and gestational cause number (percentage)	5 (19.2)	3 (11.5)	
	Others number (percentage)	1 (3.8)	1 (3.8)	

*Independent t-test
**Chi-square test
***Fisher's exact test

Comparison of quality of life before the intervention, at discharge, and four weeks after hospital discharge revealed that mean scores of the physical domain of quality of life at discharge increased from 17.4±2.7 to 25.4±4.0. These mean scores increased four weeks after discharge (from 17.2±2.2 to 26.7±4.3; P<0.001). At discharge, the mean scores of the psychological domain of quality of life

Table 2. Comparing changes in different dimensions of quality of life in both study groups before the intervention, at discharge, and four weeks after discharge

Quality of life dimensions	Condition	The control group	The intervention group	Hunh-Fedlt	Greenhouse Geisser	Mauchly's W
		Mean±standard deviation	Mean±standard deviation			
Physical	Before the intervention	19.7±4.3	20.2±4.8	P<0.001	P<0.0001	P=0.0001
	At discharge	17.4±2.7	25.4±4.0			
	Four weeks after discharge	17.2±2.2	26.7±4.3			
Psychological	Before the intervention	18.5±2.9	19±3.1	P=0.45	P<0.0001	P=0.113
	At discharge	15.8±2.3	22.5±3.2			
	Four weeks after discharge	14.8±1.9	23.1±2.7			
Social	Before the intervention	8.8±1.7	9.4±2.1	P=0.60	P<0.0001	P=0.10
	At discharge	7.0±1.1	10.9±2.2			
	Four weeks after discharge	7.3±1.0	11.7±1.8			
Environmental	Before the intervention	22.6±3.5	23.2±4.0	P=076	P<0.0001	P=0.34
	At discharge	18.3±2.6	27.3±4.0			
	Four weeks after discharge	16.9±2.4	29.3±3.6			

similarly raised from 15.8±2.3 to 22.5±3.2, and it had an upward trend four weeks after discharge (from 14.8±1.9 to 23.1±2.7; P<0.001). In the social domain, mean score of quality of life at discharge increased from 7.0±1.1 to 10.9±2.2, which was also on a rising trend four weeks after discharge (from 7.3±1.0 to 11.7±1.8; P<0.001). In the environmental domain, the mean scores of quality of life at discharge raised from 18.3±2.6 to 27.3±4.0, which further increased four weeks after discharge (from 16.9±2.4 to 29.3±3.6; P<0.001; Table 2). Moreover, the results of repeated measurement ANOVA suggested a significant difference between the three-time measurements of quality of life in physical, psychological, social, and environmental domains within both groups (P<0.0001).

The mean scores of quality of life before the intervention, at discharge, and four weeks after discharge in the control group were respectively 69.7±11.08, 58.6±6.9, and 56.4±6.1, while these values in the intervention group were respectively 72.07±12.8, 86.1±11.4, and 90.9±9.9, indicating an increase in quality of life scores within the intervention group at discharge and four weeks after it (Table 2).

The results of repeated measures ANOVA showed a significant difference between the scores of quality of life at three-time measurements (before discharge, at discharge, and four weeks after hospital discharge; P<0.001; Table 3).

The results of repeated measures ANOVA revealed statistically significant differences between the scores of quality of life at three-time measurements within both study groups (P<0.0001).

Table 3. Comparison of changes in total score of quality of life in the intervention and control groups

Quality of life	No.	The control group	The intervention group	Independent t-test result	Repeated measures
		Mean±standard deviation	Mean±standard deviation		
Before the intervention	26	69.7±11.1	72.0±12.8	P=0.48	P<0.001
At discharge	26	58.6±6.9	86.1±11.4	P<0.001	
Four weeks after hospital discharge	26	90.9±9.9	90.9±9.9	P<0.001	

Discussion

We aimed to determine the effect of implementing the designed hospital discharge program on maternal quality of life. The dependent variable in this study was maternal quality of life (we considered its physical, psychological, social, and environmental domains). Following the intervention, the mean scores of quality of life at discharge and four weeks after discharge showed significant differences in all the dimensions of quality of life between the intervention and control groups.

Moreover, the results showed that the given program had a positive impact on the quality of life of mothers with premature infants and could enhance quality of life in all dimensions (physical, psychological, social, and environmental) in the intervention group.

In this regard, a study by Adolalizadeh et al. (2015) entitled "the impact of a support program for health promotion on quality of life of mothers with premature babies" conducted on mothers of premature newborns admitted to NICU revealed significant differences between the two groups regarding the mean scores of all dimensions of quality of life, except for the physical dimension (P=0.4), one and three months after intervention (6). In the investigation by Abdolalizadeh, the emotional, training, and counseling support program influenced mental, social, physical, and environmental dimensions of mothers' lives in both groups in a comprehensive manner and there was no significant difference between the groups in this respect. In the present study, all the life dimensions of mothers with premature infants were different from those of the control group and there was a statistically significant difference. This issue could be due to mere consideration of preterm infants in this study. Although special physical care for mothers was not highlighted and only care for premature infants was considered in this study, all the dimensions of quality of life among mothers were affected, which could be due to enhanced ability of mothers to care for their premature infants.

The study by Khakbazan et al. (2008) examining the impact of telephone counseling on women's quality of life after parturition revealed that telephone counseling could influence physical and mental dimensions of quality of life, but it had no effect on social and environmental dimensions (9). Given that telephone counseling is a part of the designed hospital discharge program, the effect of the present study on social and environmental dimensions along with physical and mental aspects could be the result of the type of interventions from the admission time to the discharge time and its four-week phone follow-up as well as the use of educational CDs and booklets.

The results of Willis (2008) also indicated that family-oriented educational programs in the form of support, training, and telephone counseling after NICU discharge could promote satisfaction and confidence regarding neonatal care (28).

A study by Ghodsbin et al. (2013) entitled "the effects of training health-promotion behaviors during the first six weeks after delivery on quality of life among primiparous women" revealed a significant difference in mean scores of quality of life in both control and intervention groups before and after intervention. Such changes in the intervention group were 6.5 times stronger than those in the control group, showing that health-promotion behaviors could effectively improve quality of life among these women (29).

Furthermore, the results of a study by Payman and Shishegar (2006) suggested that postpartum training could increase awareness and quality of life among mothers (30). Sadeghi et al. (2013) conducted a study on the effect of a discharge program on quality of life among school-age children suffering from congenital heart disease and undergoing surgery. The study population comprised of 60 individuals divided into control and intervention groups. That study revealed a significant difference in the mean scores of quality of life between the two groups (31).

The study by Mirmolaie (2012) conducted on the effect of providing postnatal care at home on quality of life of low-risk women yielded discrepant results. That study was carried out on 200 parturient women selected through convenience sampling method and randomly divided into two groups of control and intervention. The control group received care at healthcare centers, while the intervention group received these care services at home. According to the results of that study, none of the dimensions of quality of life, including physical, mental-psychological, general health, social performance, and the total score postpartum, showed significant differences between the intervention and control groups (20). This finding was inconsistent with the present results. Their study was conducted on low-risk mothers while the present one evaluated mothers of premature infants who are among high-risk mothers and require more care and support.

The reason for the effect of the present study on all the dimensions of quality of life could be the nature of the designed program; the program was initiated at admission and continued until discharge, and it included telephone follow-up four weeks after discharge. Additionally, the mothers were in dire need of educational, social, and emotional support, which was provided during the designed hospital discharge program for the participants.

Payamani, Foroughi et al. (2008) performed a study entitled "comparing quality of life in normal and high-risk pregnancies" on 120 pregnant women, who were referred to healthcare centers in the city of Aligoudarz, Iran, for prenatal care. They concluded that the total scores of quality of life and the mean scores of its psychological and social dimensions in the high-risk group were lower than those of women experiencing normal pregnancy (32). It should be noted that mothers of premature infants are included among high-risk women. The quality of life measurement instrument in that study was different from that used in the present investigation.

Moreover, the results of a study by Karbandi et al. (2016) on the impact of maternal empowerment program strategies to cope with stress and boost mother-infant attachment demonstrated that implementation of maternal empowerment program could increase attachment between mothers and premature newborns (33).

Besides, the study by Melnyk (2006) showed that implementation of empowerment programs for parents of premature infants in the form of educational-behavioral intervention at NICU admission could improve mental health of parents and reduce length of hospital stay (34).

Results of the study by Mohamaddoost et al. (2016) on the effect of an empowerment program for mothers to prepare them for caring for their premature infants at the time of hospital discharge revealed that the training program based on maternal empowerment was an effective strategy to improve the ability of these mothers in the care of preterm newborns (35).

The findings of the study by Balantyne (2007) also demonstrated that the implementation of training programs on physical and behavioral characteristics of premature newborns through videotapes and notes could lower parental stress in NICU, increase the quality of relationship with infant, and improve beliefs about parenting roles (36).

Likewise, the results of the study by Khajeh et al. (2014) on the impact of parental empowerment program on beliefs about parenting roles, as well as behaviors and characteristics of premature infants admitted to NICU demonstrated that this program could enhance beliefs about parenting role, as well as behaviors and characteristics of preterm infants (37).

Furthermore, Bahadoran, Abbasi et al. (2006) in a study entitled "evaluating the effect of physical exercise on maternal quality of life post-delivery" concluded that the differences in all the dimensions of general health, as well as social and mental health status within both groups were statistically significant. However, no significant differences were reported among the study groups in terms of physical health (38).

Although there was no focus on maternal physical care in the present study, all the dimensions of quality of life among mothers, including the physical dimension, increased, indicating the importance of attention to infant care and the special needs of mothers to receive training regarding premature infant care.

Therefore, comparison of the above-mentioned results with the present ones revealed that improved quality of life in all dimensions could be due to the characteristics of the designed discharge program.

Ultimately, it can be argued that quality of life is a mental concept expressed by a person; thus, the accuracy and precision of responses by the participants is considered as one of the limitations of the present study. In addition, individual differences among the study participants, emotional characteristics, and different interests among mothers with premature infants, likelihood to be affected by somatic diseases or mild or hidden mental health problems, and the difference in the length of hospital stay among infants were the limitations of the present study.

Implications for Practice

The results of this study showed that the designed hospital discharge program was effective in promoting the quality of life of mothers with premature infants. Therefore, it is suggested to use the given program as an effective method for mothers of premature newborns. In this respect, its implementation through holding training sessions and distributing educational CDs and booklets could lead to the empowerment of mothers with premature infants admitted to NICU. Furthermore,

providing hospitals with the designed discharge program for infants, their results, the implementation method for such programs, and more emphasis on its advantages could result in increased levels of satisfaction among parents of premature infants. Moreover, it is recommended to examine the impact of implementing the designed discharge program on quality of life, anxiety, and tension among fathers of premature infants, as well as depression, anxiety, and stress among mothers of preterm newborns.

Acknowledgments
This study was derived from a Master's thesis in NICU Nursing submitted to School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran. This project was approved in the Research Committee on July 28th, 2015 (Regional Committee for Medical Research Ethics on August 14th, 2015) with the code number 940502. This study was indexed with the code number IRCT2015062922978N1 in the Iranian Registry of Clinical Trials.
We wish to thank the Deputy of Research of Mashhad University of Medical Sciences for financial support, as well as the Deputy of Research of Bojnord University of Medical Sciences, all the personnel, and mothers with premature infants admitted to the NICU of BentolHoda Hospital for their cooperation with this study.

Conflicts of Interest
The authors declare that there is no conflict of interest.

References

1. Rasti M, Aliabadi F, Shafarodi N, Rafiee F, Kalani M. Specification of the educational needs of parents with premature infants admitted to neonatal intensive care unit. J Modern Rehabilit. 2013;8(4):21-9. (Persian)
2. Davis L, Edwards H, Mohay H, Wollin J. The impact of very premature birth on the psychological health of mothers. Early Hum J. 2003;13(1-2):61-70.
3. Borim Nejad L, Mehrnosh N, Seyyed Fatemi N, Haghghani H. Maternal stressor agents with premature infants in neonatal intensive care units. J Crit Care Nurs. 2011;4(1):39-44. (Persian)
4. Kohan M, Borhani F, Abbaszadeh A, Soltan Ahmadi J, Khajehpoor M. Experience of mothers with premature infants in neonatal intensive care unit. J Qualitat Res Health Sci. 2012;1(1):41-51. (Persian)
5. Arzani A, Valizadeh L, Mohammadi E. Mothers' experiences of caring for prematurely born infants: growth sparks in the face of caregiver burden. J Qualitat Res Health Sci. 2014;3(3):217-29. (Persian)
6. Abdolalizadeh M, Kermanshahi S. The effect of a supportive health promotion program on the quality of life of mothers of premature newborns. Evid Based Care. 2015;5(2):37-48. (Persian)
7. Taheri Kamali F, Mommy S, Dyrkond Moghadam A, Delpishe A. Comparison of the effect of labor on the quality of life in women attending health centers in the cities of Ilam. J Med. 2014;16(2):90-6. (Persian)
8. Bahrami N, Bahrami S. The survey of quality of life in first-time women in postpartum period. Iran J Nurs Res. 2011;6(23):58-64. (Persian)
9. Khakbazan Z, Golian Tehrani S, Peyghmbardoost R, Kazemnejad A. Effect of telephone counseling during post-partum period on women's quality of life. J Hayat. 2007;15(4):5-12. (Persian)
10. Wang P, Liou SR, Cheng CY. Prediction of maternal quality of life on preterm birth and low birth weight: a longitudinal study. BMC Pregnancy Childbirth. 20013;13:124-32.
11. Hill PD, Aldag JC. Maternal perceived quality of life following childbirth. J Obstet Gynecol Neonatal Nurs. 2007;36(4):328-34.

12. American Academy of Pediatrics. Hospital discharge of the high-risk neonate-proposed guidelines. Pediatrics. 2008;122(5):1119-26.
13. 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. J Babol Univ Med Sci. 2012;14(3):59-65. (Persian)
14. Lopez GL, Anderson KH, Feutchinger J. Transition of premature infants from hospital to home. Neonatal Netw. 2012;31(4):207-14.
15. 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. J Clin Nurs Midwifery. 2014;3(2):37-45. (Persian)
16. Mohseni M, Bahadoran P, Abedi A. The quality of postpartum care from mothers' viewpoint. Hakim. 2009;12(1):27-34. (Persian)
17. Mok E, Leung SF. Nurses as providers of support for mothers of premature infants. J Clin Nurs. 2006;15(6):726-34.
18. Malakouti J, Jabraeeli M , Valizadeh S, Babapour J. Mothers' experience of having a preterm infant in the Neonatal Intensive Care Unit, a Phenomenological Study. Iran J Crit Care Nurs. 2013,5(4):172–181.
19. Jackson K, Ternestedt BM, Schollin J. From alienation to familiarity: experiences of mothers and fathers of preterm infants. J Advan Nurs. 2003;43(2):120-9.
20. Mirmolaei ST, Amelvalizade M, Mahmoudi M, Tavakol Z. Effect of home postpartum care on quality of life of low risk mothers. J Hayat. 2011;17(2):42-51. (Persian)
21. Aein F, Alhani F, Mohammadi E, Kazemnejad A. Marginating the interpersonal relationship: nurses and parent's experiences of communication in pediatric wards. Iran J Nurs Res. 2008;3(9):71-83. (Persian)
22. Namnabati M, Zamanzadeh V, Valizadeh L. Preparations for infants discharge from neonatal intensive care unit: a content analysis. Med Surg Nurs J. 2012;1(1):1-5. (Persian)
23. Nikpour M, Abedian Z, Mokhber N, Ebrahimzadeh S, Khani S. Comparison of quality of life in women after vaginal delivery and cesarean section. J Babol Univ Med Sci. 2011;13(1):44-50. (Persian)
24. Nejat S, Montazeri A, Holakouee C, Mohammad K, Majdzadeh SR. Standardization of the World Health Organization Quality of Life Questionnaire (WHOQOL- BREF): translation and psychometric Iranian species. J Sch Health Res Instit. 2006;4(4):1-12. (Persian)
25. Salehi S. Scoring and statistical profile Quality of Life Questionnaire-26 items. Ravanbonyan site. Available at: URL: http://ps-g.blogsky.com/1393/12/11/post-10/; 2014. (Persian)
26. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. J Pers Assess. 1988;52(1):30-41.
27. Zimet GD, Powell SS, Farley GK, Werkman S, Berkoff KA. Psychometric characteristics of the multidimensional scale of perceived social support. J Pers Assess. 1990;55(3-4):610-7.
28. Willis V. Parenting preemies: a unique program for family support and education after NICU discharge. Adv Neonatal Care. 2008;8(4):221-30.
29. Ghodsbin F, Yazdani K, Jahanbin I, Keshavarzi S. The effect of education on health-promoting behaviors at the first six weeks post-delivery on the quality of life of primiparous women. Armaghane Danesh. 2012;17(4):279-88. (Persian)

30. Shishegar F. Comparison effect of breast feeding education on knowledge and function of cesarean and normal vaginal delivery mothers. J Urmia Nurs Midwifery Facul. 2007;5(4):53-63. (Persian)
31. Sadeghi F, Kermanshahi S, Memarian R. The effect of the designed discharge planning on the quality of life in school-age children with congenital heart disease undergoing heart surgery. Sci J Hamadan Nurs Midwifery Facul. 2013;21(1):15-24. (Persian)
32. Payamani F, Forughi S, Kamali M, Goudarzi F, Miri M, Bayat M, et al. Quality of life in women with normal pregnancy and high risk. J Lorestan Univ Med Sci. 2009;5(14):59-64. (Persian)
33. Karbandi S, Momenizadeh A, Hydarzadeh M, Mazlom R, Hasanzadeh M. The effect of mother empowerment program on mothers' attachment to their hospitalized premature neonates. Evid Based Care. 2015;5(2):7-14. (Persian)
34. Melnyk B, Feinstein N, Alpert-Gillis L, Fairbanks E, Crean HF, Sinkin RA, et al. Reducing premature infants' length of stay and improving parents' mental health outcomes with the Creating Opportunities for Parent Empowerment (COPE) neonatal intensive care unit program: a randomized, controlled trial. Pediatrics. 2006;118(5):1414-27.
35. Peyrovi H, Mosayebi Z, Mohammad-Doost F, Chehrzad MM, Mehran A. The effect of empowerment program on "perceived readiness for discharg e" of mothers with premature infants. J Maternal Neonat Med. 2016;29(5):752-7. (Persian)
36. Ballantyne M. An educational-behavioral intervention for parents of preterm infants reduced parental stress in the NICU and infant length of stay. Evid Based Nurs. 2007;10(2):41-50.
37. Khajeh M, Karimi R, Sadat Hosseini AS. The effect of parents empowerment program on their beleif about parental role, behavier and characteristic of their premature infants in NICU. J Urmia Nurs Midwifery Facul. 2013;11(6):419-27. (Persian)
38. Bahadoran P, Abbasi F, Yousefi AR, Kargarfard M. The effect of postpartum exercise on mothers' quality of life. Iran J Nurs Midwifery Res. 2010;10(4):17-20. (Persian)