

Evaluating the impact of discharge nurse activities on the re-hospitalization of premature neonates and mothers' quality of life

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Abstract

Introduction: Appropriate communication between mothers of premature neonates and nurse in the discharge process can have significant impact on enhancing the quality of neonate care after discharge, leading to reduced likelihood of re-hospitalization of premature neonates. Thus, the current research was conducted to evaluate the impact of discharge nurses on re-hospitalization and quality of life of mothers of neonates re-hospitalized in the neonatal intensive care unit.

Methodology: The population of the current research consisted of mothers of premature neonates who were re-hospitalized in the intensive care units of the hospital. They were randomly divided into intervention and control groups. All descriptive and inferential data were analyzed in SPSS software.

Findings: Research findings revealed that the rate of neonatal re-hospitalization was 35.33 in the control group before intervention, while it was 37.36 in the intervention group. In addition, the mean rate of re-hospitalization after the intervention was 34.33 in the intervention while it was 37.40 in the control group. The mean score of quality of life before and after the intervention in the control group was lower than that in the intervention group.

Discussion and conclusion: Using the findings of the current research, nurses should pay much more attention to training of parents at the time of discharge and evaluate the training provided for parents before neonate discharge.

Key words: nurse discharge, neonate re-hospitalization, quality of life, preterm neonate

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Introduction

Human infants are born by completing the embryo development-process within 37 weeks. Sometimes the infant is born sooner than normal. A preterm infant is an infant born at an age less than 37 weeks based on the Last Menstrual Period (LMP) [1]. Among the most important effects on preterm and sick infants' birth is jeopardizing the transition process to the parenting stage, where the mother is more vulnerable due to the important role of the mother being distanced from the infant and its particular conditions [2].

The likelihood of death in preterm infants is very high. In Iran, five thousand infants are born every day, 5 to 15% of whom are preterm [3]. Physiologically, these infants need special care for survival and natural growth process in the neonatal intensive care unit (NICU), lasting from a few days to several months depending on the condition of the infant and its requirements [4]. The lack of awareness of the parents, especially the mother, of the required care for the growth of preterm infants and the discharge of the infant without training the mother can lead to anxiety and concern [5], which accentuates the importance of having a discharge plan.

Discharge process is a plan depending on cooperation, commitment, accountability, and professional competence of the medical staff. Although this decision is primarily made based on the medical status of the infant, many factors including family readiness for discharge, facilities, home-care, and pressure from hospital costs affect it [6]. The central focus of providing the discharge plan is the discharge nurse, who coordinates team members and is responsible for referring and following up different aspects of patient care [7]. Especially in the neonatal unit, this discharge is very effective in treatment and the interaction with parents in the discharge process, and following up the physiological growth of the preterm infant [8]. By combined review of the published articles regarding the discharge of preterm infants from NICU, Lopez et al. (2012) figured out that interventions regarding parental awareness from the beginning of admission until discharge would reduce the length of hospitalization of preterm infants [9]. Researchers believed that empowerment of parents would improve their mental condition and may have an impact on child readmission.

Readmission is unplanned re-admitting to NICU lasting for at least one night. The probability of readmission in preterm infants is higher compared to other infants [4]. Dashti et al. (2014) studied 245 preterm infants admitted to NICU in three educational hospitals of Shahid Beheshti University of Medical Sciences through convenience sampling aimed at identifying the factors associated with readmission in NICU. Findings suggested a significant difference in discharge-readiness score between re-admitted infants and those not experiencing this ($p < 0.001$) [6]. Readmission is one of the main challenges of the health system as besides increasing treatment cost, it reduces the quality of life by increasing parental concerns [10]. This is because

they may feel helpless, guilty, and horrified regarding survival or long-term effects of illness on the child. Thus, parental quality of life is heavily influenced (Rasti et al., 2013). Reduction in parental quality of life can cause many problems in recovery of the infant [11].

Quality of life is a multi-dimensional concept whose components are physical, mental, psychological, social and spiritual performance of the individual, and different conditions, such as the individual's economic and personal circumstances affect it. Overall, it means a sense of satisfaction with life [12]. Measuring the quality of life and considering life conditions, environmental factors, and attitudes, and interests, goals of individuals and values of society is very important for nurses in planning health promotion [13].

The findings of Abdolalizadeh and Kermanshahi (2014) - who evaluated the effect of health-promotion support program (HPSP) on the quality of life of mothers of preterm infants - indicated that HPSP is effective on the quality of life of mothers of preterm infants, so its application is recommended for improving the quality of life of mothers [14]. The results of other studies have indicated a significant difference in the level of awareness among mothers of infants with readmission and those without readmission. Thus, by planning for the discharge process, in addition to behavioral changes in the family, one can make savings in extra costs and reduce the heavy economic burden on the patient's family [6,15].

Thus, this study examined the effect of discharge nurse activities on the readmission of preterm infants admitted to NICU as well as the quality of life of the mothers of these infants.

Methodology

The study was semi-experimental. The sampling, which was conducted from late October to mid-January 2016-2017, consisted of 50 mothers of preterm infants admitted to NICUs of selected hospitals of Alborz University of Medical Sciences. The samples were selected purposively considering inclusion criteria such as mothers having physical and mental health, ability to read and write, infant being the first child, and the absence of a serious health problem, such as congenital anomalies in the infant. They were divided into intervention and control groups in the two selected hospitals of the medical university (Kamali and Bahonar) and were randomly assigned to the group. After explaining the goals and obtaining informed and written consent, according to the same policy of the Alborz University of Medical Sciences regarding discharge and admission in NICUs, the mothers of the intervention group were selected from Kamali Hospital and mothers of the control group from Bahonar Hospital. The mothers of the intervention group received the necessary education from the discharge nurse during the period of hospitalization in 6 sessions based on the study of Moghadam et al. (2014). Mothers of the control group received only regular training and routine programs [16].

Exclusion criteria were 1) refusing to complete the questionnaires, 2) incomplete questionnaires, 3) the occurrence of any serious disorder in the health of the infant or mother, and 4) transferring the infant to other treatment centers.

The data collection tool included two questionnaires and a checklist. The questionnaire of the demographic characteristics of the infant and parents included the age of the infant, birth weight, infant gender, multifetal incidence, length of hospitalization, mother's age and fixed and mobile phone numbers for contacting parents to ensure re-admission or lack of it. The World Health Organization Quality of Life (WHOQOL) questionnaire had 26 items in terms of physical, psychological, social and environmental health. The infant care checklist contained 30 titles regarding the conditions for keeping and maintaining the infant's health. Content validity was evaluated by the faculty members of the university, supervisor, and advisors to determine the validity of the demographic questionnaire. Concerning the content validity of the checklists, it was approved by faculty members, nurses of NICU, and neonatal specialist with a coefficient of 0.94.

Content validity and face validity were used to determine the validity of WHOQOL. Concurrent validity was used to determine the validity of the scale, and the relationship between the total score of the test and its subscales was assessed with the total score and subscales of the general health questionnaire through correlation coefficient. For determining the validity, the correlation of the overall score of each dimension was used with each of the questions forming that dimension. The correlation coefficients range was obtained from 0.45 to 0.83 with all coefficients being significant at level of 0.01. Each item had the most correlation with its related dimension. Then 12 professors of faculty, nursing faculty members, and infant specialists examined and judged the contents of the questions regarding relevance, clarity, and simplicity and the comments were added to the list after conclusion.

Content validity was evaluated and confirmed by calculating the ratio and content validity index based on the viewpoint of 15 faculty members of the Faculty of Nursing and Midwifery and Neonatal Specialists [17]. According to the study by Moghadam et al. [16], inter-rater coefficient was used to determine the reliability of the infant's home care checklist. The researcher and rater, who were similar in terms of accuracy and knowledge, completed the checklist simultaneously, and knowledge and awareness were simultaneously completed for 10 observations. Then, the intra-class correlation coefficient (ICC) was calculated between the results obtained from observations of the two observers. ICC was calculated as 0.98, and given that numbers above 0.75 are acceptable [18], the reliability of the checklist was confirmed. Face validity was based on the views of 10 mothers who had the criteria for entering the study.

Mothers were invited to participate in the training sessions organized in person in NICU in mothers' training unit to intervene. The classes were held in general twice a week,

on Saturdays and Wednesdays, for 30 minutes, of which the first five minutes was familiarization and problem statement, 15 minutes explanation of the subjects and the last 10 minutes were for questions and answers. All the stages of the training class were filmed, so that if a mother did not have the opportunity to attend the class, she could use the video. The mothers of the control group were given some descriptions on the importance of conducting the research and asked to collaborate in the progress of the research. Educational materials like how to properly get the infant to sleep and how to properly breastfeed were trained through role play. The researcher gave some explanations on being pre-term and appropriate care for passing through this course, including lactation, how to replace diapers, skin care and bathing for the infant, identifying risk symptoms and post-discharge follow-ups, including vaccinations, how to improve the quality of maternal health, sleep, nutrition, exercise, control of mental conditions and self-care for the family.

Furthermore, a booklet containing all the teaching materials along with the appropriate educational pamphlets, were distributed among them. Routine training was provided to mothers in the control group. During the discharge, the information of the mothers in the intervention and control groups was assessed using the checklist for discharge and WHOQOL. Readmission of the infants was pursued after four weeks in the presence of the mothers in the hospital and, otherwise by telephone. The role of discharge nurse in readmission of infants and mothers' quality of life in both intervention and control groups were compared and statistically analyzed. At the beginning of admission and four weeks after admission, mothers' information in the intervention and the control groups was obtained using demographic questionnaire and WHOQOL. Readmission of the infants and mothers' quality of life were followed by telephone over a period of four weeks. The role of the activities of the discharge nurse in readmission of infants and quality of life of mothers in both intervention and control groups were compared and statistically analyzed.

Data were analyzed by SPSS20 and parametric and non-parametric statistical tests. In data analysis, 95% confidence level and p-value less than 5% were considered to study the significance of the relationship between variables.

Results

In this study, the majority of infants were boys (54%) and 40% had a history of admission from 1 to 15 days. Table 1 shows some of the demographic variables. The level of knowledge of mothers after intervention was significantly different in the two groups. Table 2 shows this value. Moreover, there was a significant difference between the mean and the rate of hospitalization in intervention and control groups. Table 3 shows this difference. Mean score of quality of life before and after the intervention in the control group was less than the mean score of this variable in the intervention group, but with no statistically significant differences. Table 4 shows the quality of life in both groups before and after intervention.

Table 1: Frequency distribution of demographic variables

Variable		Frequency	Frequency percent
Gestational age (week)	26-27	19	38
	28-29	17	34
	30 - 31	14	28
Weight of infants (g)	600-800	10	20
	900-1100	26	52
	1200-1300	14	28
Gender	Boy	27	54
	Girl	23	46
Admission time (day)	1-15	20	40
	16-30	5	10
	31-45	10	20
	46 and more	15	30
The age of infants' mothers	Less than 20	3	6
	21 to 25 years old	12	24
	26 to 30 years old	29	58
	More than 31	6	12

Table 2: Comparison of the mean of knowledge of mothers in intervention and control groups after activities of discharge nurse

Variable	Control group	Intervention group	T test	Sig.
Knowledge of mothers after activities of discharge nurse	30.33	36.37	2.87	0.03

Table 3: The average readmission of preterm infants after activities of discharge nurse

Variable	Class	Group	Mean	SD	T test	Sig.
The average infant readmission	After intervention	Intervention	34.35	8.90	1.25	0.04
		Control	37.40	6.54		

Table 4: Mean of quality of life of mothers of preterm infants before and after activities of discharge nurse in intervention and control groups

Quality of life of infant family		Mean	SD	T test	Sig.
Intervention	Before the intervention	95.15	20.29	1.251	0.65
	After the intervention	98.18	25.58	0.985	0.89
Control	Before the intervention	89.28	13.15	1.251	0.65
	After the intervention	95.85	17.18	0.985	0.89

Discussion

The results indicated that 46% of the infants were girls and 54% boys. Some other studies have shown that most preterm infants in NICUs are boys. Perhaps this shows the vulnerability of male sex during infancy and them requiring more intense care [19].

According to the results, there was a significant difference in the level of mother's knowledge about the status of the infant after intervention, which increased after intervention. The goal of training was to enhance and improve knowledge.

The average rate of readmission of the infants after the intervention was reduced compared to before the intervention. Considering this, the results of the studies suggest that due to bearing the infant's preterm the shock and the physical condition of the mother, it is likely that the mother's preparation for taking care of her preterm infant is not sufficient. The care for the preterm infant, with a particular physiological condition, the delayed growth process, and aggravating factors in the lack of special needs of preterm infants have led to ineffectiveness in maternity, so the likelihood of returning and readmission to the NICU is much higher than that of normal infants [20]. According to Ambalavanan et al. (2011), more than 45% of the preterm infants with high weight deficiency in the United States need readmission, as preterm infants need parents' care at home after discharge from NICU and in

case of lack of mother's ability to take care of their children readmission occurs [4]. Thus, readmission of preterm infants is one of the major challenges that increase the length of hospitalization and infant mortality, the parents' anxiety, and the costs of the health system [10].

Given the studies conducted, the results indicated that the average quality of life of mothers before the intervention was less, but there was no significant difference between control and intervention groups. Many studies have shown that the effects of stress on the birth of a preterm infant have had a long negative effect on the quality of life of parents, especially the mother [21]. Quality of life is a multidimensional concept including all the physical, mental, social, and spiritual functions of an individual and in a sense of satisfaction with life [12].

Conclusion

The results of this study showed the importance of education in reducing the probability of readmission of preterm infants after discharge from NICU and improving the quality of life of mothers. Therefore, nurses as one of the most important individuals in the treatment team and the discharge nurse as team coordinator responsible for referring different dimensions of patient care and follow up, play an important role in this regard. It is recommended that preterm infants' fathers and mothers' quality of life after the activities of discharge nurse be measured and compared. Among the limitations of this study were the difference in admission criteria and the threshold for readmission (the minimum requirements for the readmission of the infant). Hospital differences in terms of admitting and discharge criteria can be effective in readmission of infants. Hospitals with mild or strict admission criteria may have different levels of readmission. This criterion and conditions may vary between centers or even within the centers by the admitting physicians.

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