

The Effect of Family-Based Empowerment Program on the Weight and Length of Hospital Stay of Preterm Infants in the Neonatal Intensive Care Unit

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Abstract

Background: Preterm infants need to be hospitalized in the Neonatal Intensive Care Unit (NICU) and receive specific systematic care in order to survive. Nonetheless, long hospital stay leads to parents' separation from the infant and disturbance in the family life. It also has many undesirable effects on the infant. The present study aimed to determine the effect of family-centered empowerment program on the weight and duration of hospital stay of the infants in NICU. **Materials and Methods:** In this clinical trial, 100 mothers with preterm infants hospitalized in NICU were divided into an intervention and a control groups. The mothers in the empowerment group took part in a multi-stage training program and received the necessary information regarding preterm infants and how to cooperate in taking care of them through face-to-face training, working at the bedside, educational film, and illustrated booklet. Then, the two groups' infants' weight and length of hospital stay were compared. **Results:** The mean length of hospital stay was 10.5 ± 7.7 and 17.4 ± 11.2 days in the intervention and the control group, respectively, and the results of independent T-test showed that the difference was statistically significant ($P=0.001$). The mean of weight changes was -42.4 ± 172.9 grams in the control group and -22.6 ± 162.0 grams in the intervention group; no significant difference was found between the two groups ($P=0.55$). **Conclusion:** The family-centered empowerment program in the NICU significantly reduced the infants' length of hospital stay, but had no effects on their weights. [GMJ. 2013;2(3):114-119]

Keywords: Premature Infant; Empowerment Program; Hospital Stay

Introduction

Every year, about 13 million preterm infants are born all over the world and this number is still growing. Moreover, due to achieving significant technology and progress

in neonatology, the preterm infants' survival has increased [1]. However, complications are still high and lots of emotional as well as economic problems are imposed on the family, society, and the health system [2, 3]. In order to survive and gain their natural growth pro -

GMJ

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cess, preterm infants need to be hospitalized in Neonatal Intensive Care Unit (NICU) [4-6]. Research findings have shown that the mothers who have been separated from their newly born infants feel a high level of stress, anxiety, and frustration [7]. One of the best and most effective ways to avoid hospitalization damages is the active involvement of the parents in infant care [4]. Although the early NICU admissions cause some limitations for the parents, nowadays the role of the parents is not just watching their babies from behind the glasses but their complete cooperation in taking care of them, which is called family-centered care, is required [8,9]. The advantages of the parents' participation in care programs include improvements in their psychological health, self confidence, skills for taking care of their infants after discharge and infant's health (decreasing apnea and increasing their sleeping time)[10,11]. In addition to these benefits, this kind of care would increase the staff's satisfaction and create a positive feeling leading to their better service provision [12, 13]. Creating Opportunities for Parent Empowerment (COPE) is one of the programs that bring the parents into full participation in their infant's care. This program was designed for preterm infants' parents by Dr. Bernadette Melnyk in 2001 [2, 3]. COPE is a behavioral-educational intervention that facilitates the parents' participation and interaction with their child [2, 3, 11].

Parent Empowerment prepares the parents for continuing the care after discharging from hospital. It is also expected to affect the duration of hospitalization in the NICU.

This research aims to study the effect of the family-centered empowerment program on the length of hospital stay and weight of preterm infants hospitalized in NICU, Shiraz, South-west Iran.

Materials and Methods

This randomized clinical trial was performed on 100 mothers of preterm infants hospitalized in NICU of Namazi hospital in Shiraz in 2012. The study samples were selected through convenience sampling and randomly divided into a control and an intervention groups.

The inclusion criteria of the study were being mothers eighteen years old or above, willing to participate in the program, having reading and writing capability, and having a hospitalized infant with a gestational age of lower than 37 weeks and birth weight of lower than 2500 grams, and singleton birth without any abnormalities. On the other hand, in case of the mother's absence in any stage of the intervention for more than four days, the infant's discharge before the end of the program, and the infant's death, the samples were excluded from the study.

In this study, the data were collected using a demographic characteristics questionnaire, a checklist of length of hospitalization in NICU, and weighting appliances for weighting the infants.

Intervention Procedure

This program was done in three stages the first of which being 2-4 days after the infant's hospitalization. Before executing the intervention, the demographic characteristics questionnaire was completed with the mother's cooperation. Then, the mothers were provided with the first stage instructions, including the necessary information about physical and behavioral features of the preterm infants, getting familiar with the NICU environment and the infant's care conditions, the required points for entering the unit, the number of times of feeding the baby, breast feeding, how to keep and preserve the milk, and how to use the frozen milk. In addition to face to face training and bedside caring, for better understanding, an educational booklet was given to mothers.

The second stage was performed 2-4 days after the first stage. The mothers watched an educational film of kangaroo mother care (prepared in infant's health department of Iran's ministry of health, treatment, and medical training). Furthermore, trainings regarding meeting the infant's needs, the importance of skin touch, and how to do kangaroo mother care were performed similar to the first stage; i.e., face to face and bedside trainings. At the end, the illustrated booklet including these materials was presented to the mothers for further reference. Finally, the third stage was performed 2-4 days after the second stage. The educa-

tional film, including the information related to enhancing the interactions, facilitating the infant's development, massage, and touching stimulation, was shown to the mothers. The essential points about continuing the care at home and preparing for discharge were also clearly expressed. Teaching the bedside massage to mothers and providing them with the booklet were the final activities in this stage. When the intervention was finished, on the discharge day, the final assessment was done and the length of infant hospitalization was noted. On the other hand, no intervention was carried out for the control group subjects and they only received the usual services in the unit. In order to observe the ethics, educational booklets were given to the control group after the final evaluation.

Outcome measures

The main outcome measures were the length of hospital stay and weight of preterm infants hospitalized in the NICU. The infants' birth weight and discharge weight were measured without any clothing or covering using a digital scale with an accuracy of ± 10 grams which was checked by a standard one kilogram weight.

Ethical considerations

The study was approved by the Ethics Committee of Shiraz University of Medical Sciences, Shiraz, Iran. A consent form was then

received from the parents if they agreed to participate in the study.

Data analysis

All data analyses were performed using the SPSS statistical software (v. 16). Descriptive statistics, including frequency distribution tables, mean, and SD, were used in order to describe the study sample. In addition, independent T-test was used to compare two means. Also, the correlations among the study variables were determined through Chi-square test.

Results

No significant differences were found between the two groups regarding the demographic features. The mean age of the mothers in the study was 27.7 years most of whom were housewives and had under-diploma degrees (Table-1).

No significant differences were found between the two groups regarding the gestational age, birth weight and Apgar score (Table-2).

Moreover, our findings indicated that the mean length of hospitalization in the intervention and the control group was 10.5 ± 7.7 and 17.4 ± 11.2 days, respectively and the results of independent sample T-test showed that the difference was statistically significant ($P=0.001$) (Table-3). In addition, for the assessment of the effect of the family-centered empower

Table 1. Distribution of the study samples in the two groups based on the individual characteristics of the mothers

	Control group (%)	Intervention group (%)	P-value
Mother's Education			
Above Diploma	4 (8%)	7 (14%)	0.77
Diploma	16 (32%)	12 (24%)	
Under Diploma	30 (60%)	31 (62%)	
Employment Status			
Housewife	47 (94%)	43 (86%)	0.18
Employed	3 (6%)	7 (14%)	
Number of Children			
One	30 (60%)	31 (62%)	0.06
More than One	20 (40%)	19 (38%)	
Kind of Childbirth			
Caesarean	32 (64%)	32 (64%)	0.83
Normal-Vaginal-Delivery	18 (36%)	18 (36%)	

Table 2. Distribution of the study samples in the two groups based on the individual characteristics of the infants

	Control group M (SD)*	Intervention group M(SD)*	P-value
Birth weight (gram)	1692.2 (383.0)	1806.2 (343. 7)	0.12
Gestational age (week)	32.0(1.5)	32.2 (1.3)	0.31
Apgar Score (5 minutes)	8.3(0.8)	8.3 (0.8)	0.80

*Mean (standard deviation)

Table 3. Comparison of the mean length of hospital stays (days) and infants' weight changes (gram) after the intervention between two groups

	Control group M (SD) *	Intervention group M(SD) *	P-value
Length of hospitalization (day)	17.4 (11.2)	10.5 (7.7)	0.001
Infants' weight changes (gram)	-42.4 (172. 9)	-22.6 (162.0)	0.556

*Mean (standard deviation)

ment program on weight of preterm infants' hospitalized in NICU, the mean difference of the infants' birth weight and discharge weight was also compared in both groups. The mean of weight changes was -42.4+172.9 grams in the control group and -22.6+162.0 grams in the intervention group. Nevertheless, no significant difference was observed between the two groups in this regard (P=0.55) (Table-3).

Discussion

The present study showed that implementing the parents' empowerment program for preterm infants' mothers lessened the length of hospitalization in NICU, which is consistent with the results of the research performed by Ortenstrand et al in Stockholm. The current study results showed that the parents' presence and involvement positively affected the preterm infants' length of hospital stays; in a way that, a 3-5 day decrease was reported in these infants' length of hospital stay [14]. Bhutta et al also came to similar outcomes in another study performed in Karachi, Pakistan. The results of that study revealed that parents' active involvement in infant care before discharge lessened the length of hospital stay [15].

The present study was prompted by COPE designed by Dr. Melnyk for preterm infants' parents, and 3 out of its four stages were carried out in this study. In the study by Melnyk et al the parents who had actively participated in COPE had less stress, anxiety, and depression compared to the control group. Moreover, a 3-8 days reduction in the length of NICU stay was observed in the intervention group [2]. These findings are quite in agreement with those of the present research.

Regarding the length of preterm infants' hospital stay, the outcomes of this study are the same as those of Bastani et al. According to the results, the preterm infants whose mothers were involved in the care program and were actively present at bedside had lower readmission rates compared to those whose parents were less involved in their care. The mean length of hospital stay was 6.96 days in the intervention group and 12.96 days in the control group (P<0.001) [4]. However, in Karami's research conducted in Ahvaz on the effect of educational and supportive programs on the stress level of the mothers with premature infants and the infants' length of hospital stay, no significant difference was observed between the two groups regarding the length of hospital stay [16]. However, it seems to be due to the short research period.

In this study, the educational program was presented through several stages using a mixture of training methods, such as educational films, illustrated booklets, and experimental training at the infants' bedside. The educational programs were continued during the infants' hospitalization in the unit. These are in fact strong points of this study leading to the effectiveness of the empowerment program in the length of the infants' hospital stay.

However, implementing the empowerment program was not effective in the preterm infants' weight, which might be due to the short study period. Infants normally lose 5-10% of their weight after birth and start to gain weight again after two weeks [17]. Thus, since the infants' hospital stay did not last for long, particularly in the intervention group, no significant changes were observed in their mean weight. Borimnejad et al also conducted a study in Tehran in 2010 and revealed the empowerment program to be effective in preterm infants' weight. In that study, they measured the infants' birth weight as well as their weight two months after discharge [18].

Conclusion

Considering the results of the present study and other similar researches, implementing

the appropriate programs to enhance the family-centered care in NICU seems to be necessary and beneficial. Nursing staff have to prevent disruption of the mother-infant relationship and offer the mothers to have full participation in their infants' care by providing them with enough information and the required trainings. Hence, they will be able to improve the parents' quality of parental role and efficiency and the infants will also benefit from the outcomes. Moreover, further studies are suggested to be conducted on the effect of supportive and educational programs for preterm infants' parents on other infant health indices or promoting their respiratory function and nutrition in longer time periods.

Acknowledgements

Authors would like to appreciate the research Improvement Center of Shiraz University of Medical Sciences and Ms. A. Keivanshekouh for improving the use of English in the manuscript and all the NICU staff of clinical-educational center of Shiraz Hazrat Zeinab Hospital as well as the mothers who kindly participated in this research.

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