http:// ijp.mums.ac.ir
Original Article (Pages: 11783-11791)

The Effect of Home-visit Training Program on the Maternal Anxiety of Preterm Infants: A Clinical Trial Study

Maryam Valiollahi Bishe[1], *Parvin Aziznejadroshan[2], Mohsen Haghshenas Mojaveri[3], Mahmod Hajyahmadi[4], Reza Jaafaritabar bishe[5]

[1]Student Research Committee, Babol University of Medical Sciences, Babol, I.R. Iran. [2]Assistant Professor, Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, I.R. Iran. [3]Associate Professor, Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, I.R. Iran. [4]Assistant Professor, Non-Communicable Pediatric Disease Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, I.R. Iran. [5]Beheshti Hospital, Operation Room Ward, Babol University of Medical Sciences, Babol, I.R. Iran.

Abstract

Background

Infants' discharge from neonatal intensive care unit (NICU) creates high level of anxiety for parents, especially mothers; therefore, some strategies are needed to reduce parental anxiety. The aim of this study was to investigate the effect of home-visit training program on the anxiety of mothers of preterm infants.

Materials and Methods: In this clinical trial study, 70 mothers whose preterm infants were discharged from the NICU of Ayatollah Rouhani and Amirkola Children's Hospitals in 2018 were divided into intervention and control groups (n=35 in each) based on inclusion criteria. The premature infant care package was presented to the mothers in the intervention group using lectures, practical education, and pamphlets through four sessions held twice a week at their homes. The mothers of both groups completed the State-Trait Anxiety Inventory (STAI) after infants' discharge and one month after training sessions.

Results: Mean age of mothers was 29.17±6.05 and 29.09±6.56 years in intervention and control groups, respectively. Mean gestational age was 33±2.27 and 32.76±2.92 weeks in intervention and control groups, respectively. The mothers of the two groups did not differ in age and other demographic factors (P>0.05). In the intervention group, the mean anxiety decreased from 88.77± 15.53 before the intervention to 64.02 ±11.9 after the intervention, but in the control group, it enhanced from 80.25±20.33 to 103.05±26.69 the difference was significant (p< 0.001).

Conclusion

It seems that home-visit training program decreases maternal anxiety of preterm infants; it can be used as a supportive care to decrease maternal anxiety.

Key Words: Anxiety, Education, House Calls, Mothers, Preterm infants.

*Please cite this article as: Valiollahi Bishe M, Aziznejadroshan P, Haghshenas Mojaveri M, Hajyahmadi M, Jaafaritabar bishe R. The Effect of Home-visit Training Program on the Maternal Anxiety of Preterm Infants: A Clinical Trial Study. Int J Pediatr 2020; 8(8): 11783-791. DOI: **10.22038/ijp.2020.44964.3705**

Corresponding Author:

Parvin Aziznejadroshan , Department of Nursing, School of Medicine, Babol University of Medical Sciences, Babol, I.R Iran; Fax: +9801132196109.

Email: aziznejadroshan@yahoo.com

Received date: Mar.14, 2020; Accepted date: Jun.22, 2020

1- INTRODUCTION

Anxiety is one of the most common mental disorders characterized by excessive and uncontrollable anxiety and is associated with physical symptoms. Anxiety is an unpleasant and vague state felt when predicting an unknown danger (1). The prevalence rate of any mood anxiety disorder was 18.2% during pregnancy, which is more prevalent during pregnancy and after birth, especially in the premature birth (2). Birth and hospitalization of premature neonates create enormous challenges for the family with serious impacts on parents' mental and emotional health (3). Although the survival of preterm infants is increased, these infants are discharged from hospital in a situation that needs relatively more careful care and follow-up and often has complications requiring management at home based on parents' sufficient knowledge (4). Though preterm infants' discharge often makes their mothers happy, they develop anxiety and depression when taking care of them (5).

Moreover, it not only has the physical and psychological effects on the mother, but it also impedes the early and proper communication between the mother and neonate and delays the mother's participation in the care of the baby, affecting future developmental outcomes of the infant (6). Also, it causes inappropriate maternal reactions to the infant and decreases maternal attachment to the newborns (7). Mothers of premature infants need more attention and support because the birth of such infants carries a great deal of stress (8). The infant transfer from the hospital to the home is a critical point in the continuity-of-care chain and is the only real opportunity to prevent readmission and family education regarding care of patient (9). This is very vital for parents since from the hospital setting, they return home where they are fully responsible for taking care of the neonate and if they have no sufficient knowledge and skills, they will have trouble taking care of the infant (10). Home visits are a well-known strategy for assessing infant's health and development. Home visits can reduce infant's mortality and disability as well as improve well-being in high-risk families. The results have shown that home visits have positive consequences for infants and mothers and lead to increased maternal satisfaction and cost savings (11). The findings of a study, Effect of a Home Visit Educational Program on Mortality and Morbidity of Preterm Newborn (2012), indicated that infants' medical problems in the group visited at home by nurses during the first ten days after delivery were not significantly different from those in the control group (12). Moreover, Ahn et al. found that mothers' anxiety and stress were not decreased after the end of the training sessions (13). However, the main findings of Bostanabad et al. represented that the anxiety level of mothers of preterm infants was reduced after discharge in the intervention group (14).

The results of Welch et al. demonstrated that there was a significant difference between two groups in the symptoms of depression and anxiety in mothers of preterm infants after family nurture intervention (15). Home visiting is a satisfactory and known strategy for examining the health and evolution of neonates. It also has positive outcomes for mothers. It increases maternal satisfaction and reduces the costs. The transfer of the neonate to the home produces anxiety in parents and it is substantially important to offer solutions for mitigating parental anxiety. Besides, since no study has been carried out in Iran to analyze maternal anxiety at home following discharge from hospital, the present research was conducted to study the effect of the home visiting training program on the anxiety of mothers of premature infants.

2- MATERIALS AND METHODS

2-1. Study design and population

The present study was fulfilled using random sampling method in four blocks, consisting of 70 mothers and the samples were divided into intervention and control groups (n=35 in each), whose infants were discharged from the NICU of Ayatollah Rouhani and Amirkola Children's Hospitals in Babol, Iran, 2018.

$$n = \frac{(\sigma_1^2 + \sigma_2^2)}{(\mu_1 - \mu_2)^2}(Z_{1-\alpha/2} + Z_{1-\beta})^2$$

$$n = \frac{(14^2 + 9^2)}{(8)^2}(1.96 + 0.84)^2 = 35$$

2-2. Methods

In the first stage, the questionnaire was completed by the mothers of both groups after the discharge (before the beginning of the training program); and in the second stage, the questionnaire was filled out in the intervention group one month after the end of training sessions.

2-3. State-Trait Anxiety Inventory (STAI)

Spielberger designed this scale in 1970 and it was revised in 1983. The statements are ranked from 1 (very low) to 4 (very high); the minimum and maximum scores are between 40 and 160 (1). In the present study, the average score of the study was used to determine the cut-off point. The content validity method was used to confirm the scientific validity of the scale. Therefore, after translating the aforementioned questionnaires into Persian, the questionnaires were provided to 10 faculty members at Babol University of Medical Sciences for assessments. Thereafter, modifications were made to the questionnaires after receiving the opinions, under the supervision of the supervisor. To collect the questionnaire related to anxiety, the STAI included 40 items on the Likert scoring scale. Twenty items were related to state anxiety subscale, i.e. the feeling that one has at current state of anxiety and at a time of responding, and 20 items were allocated to trait anxiety subscale, i.e. general and ordinary feelings of individual most often when the individual's underlying anxiety or readiness of anxiety is present (1). In 1993, STAI was standardized in Iran with reliability of 0.91 and concurrent validity of 99% (16). In Jafari Mianaie et al.'s study (2013), the internal consistency was 93% for state anxiety subscale and 87% for trait anxiety subscale (6).

2-4. Intervention

For the intervention group, the home-visit training program (Premature infant care training package, **Table. 1**) was presented at home during four sessions, twice a week with an average time of 60 minutes (30 minutes practical and 30 minutes theoretical) according to previous coordination with their mothers. Parents' questions were also answered, and the researcher's telephone number was provided for mothers to call if needed, but the control group received routine hospital care and was referred for examination.

Table-1: Premature infant care training package.

Training session	Subject of training	Duration of training	Person providing training
First session	Acquaintance of mother with the difference between preterm and term infants, how to maintain preterm infant, nutritional care and benefits of breastfeeding and infant burping, and getting a baby burp, umbilical cord care, hand washing before care, importance of	One hour (30 minutes theoretical and 30 minutes practical)	Master Student of Neonatal Intensive Care Nursing

	skin contact and answering mother's questions about taking care of a premature infant.		
Second session	Prevention and management of infection, evaluation of hyperbilirubinemia and body temperature regulation, recognition of illness symptoms, prevention of dermatitis and answering mother's questions about taking care of a premature infant.	One hour (30 minutes theoretical and 30 minutes practical)	Master Student of Neonatal Intensive Care Nursing
Third session	Follow-up of hearing assessment and eye examinations, vaccination, bathing instructions and answering mother's questions about taking care of a premature infant.	One hour (30 minutes theoretical and 30 minutes practical)	Master Student of Neonatal Intensive Care Nursing
Fourth Session	Prevention of violence on infant, infant shaking syndrome and answering mother's questions about taking care of a premature infant.	One hour (30 minutes theoretical and 30 minutes practical)	Master Student of Neonatal Intensive Care Nursing

2-5. Ethical consideration

Ethical considerations in this study are specified as following:

- Ethics approval was obtained from the Ethics Committee of the Babol University of Medical Sciences (approved by the Ethics Committee: MUBABOL.HRI.1396.277).
- Mothers full consent forms were signed.
- This project was registered at the Clinical Trial Center with number of IRCT20180729040621N1.

2-6. Inclusion and exclusion criteria

Inclusion criteria were a) preterm infants 28-37 weeks of age and without congenital anomalies, b) parents with no other child having serious illness, without previous experience of hospitalization or infant death and with no stressful event at the time of intervention and last six months, and c) mothers who were not a member of the health care team and mothers with reading and writing ability of Farsi, no addiction to any type of drug and taking no anxiolytic drugs.

2-7. Data Analysis

The data were coded and the SPSS software version 23.0 was used for comparison of demographic characteristics, the chi-square, paired t-test and Independent t-test were applied for comparison of the effect of intervention in two groups as well as the Kolmogorov-Smirnov and ANCOVA test which were utilized to check normality of data. P-value< 0.05 was considered as significant level.

3- RESULTS

The present study was comprised of 70 mothers and the samples were divided into intervention and control groups (n=35 in each group). Mean age of mothers was 29.17±6.05 and 29.09±6.56 years in intervention and control groups, respectively. Mean gestational age was 33±2.27 and 32.76±2.92 weeks in intervention and control groups, respectively so that there was no statistically significant difference between two groups before the study (P>0.05) (**Table. 2**).

Table- 2: Comparison of demographic variables in two groups.

Variables	Variable levels	Intervention	Control	P- value
		Number (%)	Number (%)	
Type of delivery	C.S	29(82.8)	27(77.1)	0.38
	NVD	6(17.14)	8(22.9)	
Economic status	Undesirable	0(0)	1(2.9)	0.40
	Medium	33(94.3)	30(85.7)	
	Optimal	2(5.7)	4(11.4)	
Mother's level of education	Elementary	7(20)	8 (22.9)	0.88
	Diploma	14(40)	12(34.3)	
	Academic	14(40)	15(42.9)	
Father's level of education	Elementary	10(28.57)	11(31.4)	0.83
	Diploma	16(45.71)	14(40)	
	Academic	9(25.71)	10(28.6)	
Mother's job	Housewife	30(85.7)	33(94.3)	0.42
	Employed	5 (14.3)	2(5.7)	
Father's job	Free	31(88.6)	29(82.9)	0.49
	Employed	4(11.4)	6(17.1)	
Infant's gender	Female	16(45.7)	13(37.1)	0.46
	Male	19(54.3)	22(62.9)	
Mother's age (years), mean ± SD	-	29.17±6.05	29.09±6.59	0.95
Gestational Age (week), mean ± SD	-	33.0±2.27	32.76±2.92	0.69

C.S: Cesarean Section; NVD: Normal Vaginal Delivery; SD: Standard deviation.

In the intervention group, the mean of state anxiety decreased from 44.89±9.25 before the intervention to 32.83±5.52 after the intervention whereas in the control group, it increased from 40.11±12.28 to 51.26 ±13.45, indicating a significant difference. Therefore, it could be concluded that the intervention had an effect on the level of state anxiety, leading to a decrease in the state anxiety of the intervention group versus control group. Besides, the mean of trait anxiety declined from 44.88±9.25 before the intervention to 31.20 ±7.09 after the intervention in the intervention group while it increased from 40.14±9.08 to 51.80±14.0 in the control group so that this difference was significant. According to the results, it could be concluded the intervention had an effect on the level of trait anxiety and reduced the state anxiety of the intervention group compared to control group (**Table. 3**).

Table-3: Comparison of state and trait anxiety scores before and after intervention in the two groups.

Anxiety	Sub-group	Before Intervention	After Intervention	P-value
State	Intervention	25.9±89.44	52.5±83.32	<0.001
	Control	28.12±11.40	45.13±26.51	<0.001
	P- value (t-test)	0.071<	0.001<	
Trait	Intervention	25.9±88.44	09.7±20.31	<0.001
	Control	08.9±14.40	01.14±80.51	<0.001
	P- value (t-test)	0.062<	0.001<	

In the intervention group, the mean anxiety decreased from 88.77±15.53 before the intervention to 64.02±11.92 after the intervention, but in the control group, it enhanced from 80.25±33.20 to 103.05±26.69, representing a significant difference. Based on the results, it could be concluded that the intervention had an effect on anxiety, resulting in the decrease of anxiety in the intervention group compared to control group (**Table. 4**). The **Table. 5** shows that by eliminating the effect of the pretest variable, there are significant differences between the estimated mean scores of anxiety ($p<0.001$) in terms of group membership.

Table-4: Comparison of anxiety scores before and after intervention in the two groups.

Group	Before intervention	After intervention	P-value*
Intervention	53.15±77.88	92.11±02.64	0.001<
Control	33.20±25.80	69.26±103.05	0.001<
P-value**	053.0	0.001<	

*Paired t-test, **Independent t-test.

Table-5: Results of ANCOVA of post-test total scores on anxiety in both groups.

Statistical indices of variables		Degree of freedom	Mean squares	F	P-value	Statistical effect	Statistical Power
Anxiety	Pre- intervention	1	57.1396	38.3	07.0	04.0	44.0
	Group	1	02.27616	85.66	001.0<	50.0	0.1

4- DISCUSSION

The main purpose of this study was to determine the effect of the home visiting training program on the anxiety of mothers of premature infants. In the intervention group, the mean anxiety score decreased from 88.77±15.53 before the intervention to 64.02±11.92 following the intervention. However, it increased from 80.25±33.20 to 103.05±26.69 in the control group, reflecting a significant difference. That is, the home-visit training program reduced the anxiety of mothers of premature infants. In this regard, Milan et al. (2018) conducted a study entitled "The Effect of Family-Centered Care Educational Program on Performance of Mothers of Premature Infants Hospitalized in NICU of Jahrom Hospital". The findings of their study indicated that the maternal anxiety was decreased (17), which is consistent with those of the current study. Mianaie et al. (2014) in a study titled "The effect of creating opportunities for parent empowerment program on maternal stress, anxiety, and participation in NICU affiliated to Isfahan University of Medical Sciences" explained that this program was a four-stage behavioral-training program so that the first two stages of this program were performed in their study. They concluded that the maternal stress and anxiety reduced (18), which is similar to the results of the present study. Bastani et al. (2012) investigated the effect of participatory care program in NICU on state anxiety of mothers of preterm newborns. The intervention program was presented to the intervention group in the form of a training session on maternal presence and participation in infant care. Results showed that mothers' anxiety was lower in the intervention group than in the control group (19), which is the same as the results of the current study. In a study by Welch et al. in 2015, the symptoms of depression and anxiety in preterm infants

were reduced at the end of four months with family nurture intervention in NICU. Their findings demonstrated that the family nurture intervention reduced mothers' anxiety (15), which supports the results of the present study. Nouhi et al. (2014) also conducted a study on "The effect of mothers' participation and family-centered care on anxiety of mothers with children suffering from gastrointestinal infections". They found that participation and family-centered care reduced mothers' anxiety (20), which confirms the findings of the present study. Motahari Niya et al. (2019) also conducted a study on the influence of education on anxiety in mothers of children with surgery. They found that Training Program reduced mothers' anxiety (21), which confirms the findings of the present study.

Also, the research results revealed that home visiting reinforces and improves maternal mental health (22), which is in line with the present study. In a study by Zahedpasha et al. (2019), there was not a statistically significant difference between the average state and trait anxiety scores of the control and intervention groups (23), which did not comply with the present study. Seemingly, the duration of the electronic training intervention in this study was approximately four days, whereas training in our study was provided through four sessions (using lectures, practical education, and pamphlets).

Both the training duration and the method can affect the research results. The effectiveness of familiarization program in NICU on anxiety reduction of preterm newborn mothers was assessed by Heidarzadeh et al. (2016) who revealed that the anxiety level was not statistically significant (24), which is inconsistent with the present study. In this study, the training program was implemented for mothers through three 20-minute face-to-face sessions. However, in our study, training was provided to the mothers through four 60 minute sessions within two weeks using lectures, practical education, and pamphlets. Training duration and practical education probably influence the research results. Ahn et al. in Korea conducted lecture-style training sessions with questions and answers and found that mothers' anxiety and stress were not decreased after these sessions (13). The reason for the discrepancy of their study with the present study can be due to the method of holding training sessions and the information which was not provided in written form for the studied samples. Glazebrook et al. in Germany implemented a training program to reduce the maternal stress and obtained results different from those of the current study (25). It is likely that group training sessions for mothers could influence the results, but this program was carried out individually in the current study.

4-1. Study Limitations

Failure to follow up the mothers at different stages in this study was among the limitations on this research.

5- CONCLUSION

Based on the results, the home visiting training program mitigates anxiety in mothers of premature infants. The authorities of health and treatment centers are recommended to use neonatal intensive care nurses to implement the home visiting training program in society and empower parents. They are also recommended to set the scene following the discharge of premature infants. Hence, this strategy can be used as a supportive care method for mitigating maternal anxiety.

6- ACKNOWLEDGMENT

The authors would like to thank the Research Deputy of Babol University of Medical Sciences and the mothers of the premature infants who helped us in this research. The present study is based on a

masters MSc thesis (registered thesis code 197- 9604975).

7- CONFLICT OF INTEREST

8- REFERENCES

1. Kadivar M, Seyedfatemi N, Zolfaghari M, Mehran A, azizkhani L. The effect of virtual education on neonatal nurses' caring ability at the neonatal intensive care unit. J Pediatr Nurs 2017 Dec;3(3):32-9.

2. Uguz F, Yakut E, Aydoga S, Baymam MG, Gezginc K. Prevalence of mood and anxiety disorders during pregnancy: A case-control study with a large sample size. Psychiatry Res 2019 Feb; 27(2):316-18.

3. Dadkhahtherani T, Eskandari N, khalajinia Z, Ahmari-Tehrani H. Experiences of Fathers with Inpation Premature Neonates: Phenomenological Interpretative Analysis. Iran J Nurs Midwifery Res 2018 Jan-Feb;23(1):71-8.

4. Chang Lee SN, Long A, Boore J. Taiwanese women's experiences of becoming a mother to a very-low-birth weight preterm infan A grounded theory study. IJNS 2009 Mar;46(3):326-36.

5. Rasti M, Aliabadi F, Shafarodi N, Rafiee F, Kalani M. Specification of the parents with premature infants admitted to educational needs of neonatal intensive care unit. mrj 2014 Sep;8(4):21-9.

6. Jafari Mianaei S, Alaei Karahroudi F, Rasouli M. Study of the impacts of rehabilitation Program on mothers With Premature hospitalized infants. J Educ Ethics Nurs 2013 Winter;1(1):29-37.

7. Shariat M, Abedinia N. The Effect of Psychological Intervention on Mother-Infant Bonding and Breastfeeding. IJN 2017;8(1):7-15.

8. Hollywood M, Hollywood E. The lived experiences of fathers of a premature baby on a neonatal intensive care unit. J Neonatal Nurs 2011;17(1):32-40.

9. Mirmolaei T, Amel Valizadeh M, Mahmoodi M, Tavakkol Z.The effect of postpartum care at home on maternal received care and satisfaction. Evidence Based Care 2011;1(1):35-50.

10. Boykova M, Kenner C. Transition from hospital to home for parents of preterm infants. JPNN 2012;26(1):81-7.

11. Seki K, Iwasaki S, An H, Horiguchi H, Mori M, Nishimaki S, et al. Early discharge from a neonatal intensive care unit and rates of readmission. IJP 2011;53(1):7-12.

12. Edraki M, Moravej H, Rambod M. Effect of a Home Visit Educational Program on Mortality and Morbidity of Preterm Newborn. JSSU 2012;19(6):736-44.

13. Ahn YM, Kim NH. Parental perception of neonates, parental stress and education for NICU parents. Asian Nurs Res 2007;1(3):199-210.

14. Arshadi Bostanabad M, Mostafa Gharehbaghi M, Seyedielmabad S. Effect of discharge planning program on stress of preterm infant mothers in NICU. JPEN 2015;2(1):52-60.

15. Welch MG, Halperin MS, Austin J, Stark RI, Hofer MA, Hane AA, et al. Depression and anxiety symptoms of mothers of preterm infants are decreased at 4 months corrected age with Family Nurture Intervention in the NICU. Arch Womens Ment Health 2016;19(1):51-61.

16. Mahram B. The guideline for state and trait anxiety test of Spielberger and the instruction for its explanation based on normality test research in Mashhad [MSc. Thesis]. Tehran: Allameh Tabatabaiee University; 1993. 126 p [Persian].

17. Milan M, Nasimi F. The Effect of Family-centered Care Educational Program on Anxiety of Mothers of Premature Infants Hospitalized in Neonatal Intensive Care Unit. IJNR 2018;13(3):49-53.

18. Jafari Mianaei S, Alaei Karahroudi F, Rasouli M, Zayeri F. The effect of Creating Opportunities for Parent Empowerment program on maternal stress, anxiety, and participation in NICU wards in Iran. Iran J Nurs Midwifery Res 2014;19(1):94–100.

19. 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.

20. 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. J Clin Nurs Midwife 2014;3(4):47-55.

21. Motahari Niya H, Hojjati H. The Influence of Education on Anxiety in Mothers of Children with Surgery. JPEN 2019;5(4):50-55.

22. Goyal NK, Folger AT, Hall ES, Ammerman RT, Van Ginkel JB, Pickler RS. Effects of Home Visiting and Maternal Mental Health on Use of the Emergency Department among Late Preterm Infants. JOGNN 2015;44(1):135–144.

23. Zahedpasha Y, Arzani A, Khafri S, Darvish A, Esmaieli S. The Effectiveness of Training Program Based on Virtual Participation on Stress and Anxiety of Parents with Premature Infants Hospitalized in Neonatal Intensive Care Units. J Babol Univ Med Sci 2019;21:364-71.

24. Heidarzadeh A, Taheri Z, Dehghan M, Azizadeh-Forouzi M, Akbari A. The effect of neonatal intensive care unit orientation program on decreasing the anxiety of premature infants mothers. Nurs Pract Today 2016;3(4):152-60.

25. Glazebrook C, Marlow N, Israel C, Croudace T, Johnson S, White IR, Whitelaw A. Randomized trial of a parenting intervention during neonatal intensive care. Archives of Disease in Childhood - Fetal and Neonatal Editio 2007;92(6):438-43.