

Original Article



Follow-up Plan as a Necessity for Nursing Care: A Decrease of Stress in Mothers with their Children in Pediatric Surgical Units

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Stress***Corresponding Author:**Mahboobeh Namnabati,
Email: namnabat@nm.mui.ac.ir**Abstract****Introduction:** Children are vulnerable to damage. Health problems in children, especially if necessitate hospitalization, can cause stress in their parents that may persist even long after discharge. This study aimed to investigate the effect of implementing follow-up care plans on stress in mothers of children discharged from pediatric surgical units.**Methods:** A quasi-experimental study was conducted on 64 mothers whose children were hospitalized in the surgical wards of two educational hospitals affiliated to Isfahan University of Medical Sciences, Iran. The participants were randomly assigned into two groups of control and experimental. The data collection tools included a demographic data questionnaire and stress response inventory (SRI). The interventions were performed using a four-stage follow-up care plan. The data were analyzed using SPSS software version 13 and descriptive statistics, independent t-test, repeated measures analysis of variance (ANOVA), and least significant difference (LSD) test.**Results:** The mean (SD) stress scores of the experimental group were 64.1 (28.8), 20.4 (12.4), and 11.6 (7.5) before, one week, and one month after the intervention, respectively. In the control group, these scores were 61.2 (29.2), 59.9 (25.5), and 46.7 (19.1), respectively. The results showed the mean score was significantly lower than that of the control group at one week and one month after the intervention in the experimental group.**Conclusion:** Our results demonstrated that a follow-up care plan can decrease the stress levels of mothers as a continuity of patient care even after discharge.**Introduction**

Hospitalization is a stressful event for both the patient and the family.¹ Studies have revealed that discharge and transition from hospital to home can be challenging for the parents of hospitalized children. Considering experienced stress and adaptation situation require supporting measurements. The stress may endure long after the discharge due to the lack of knowledge and insufficient care information about the child's illness, making the mother unable to adopt the hospital situation and support her child.^{2,3} Family stress may also persist long after the treatment period. According to the results of several studies conducted on such families, mothers may have various physical, psychological, and emotional problems with the patient.^{4,5}

Some other studies have indicated that mothers may adopt hospital situations and care-giving behaviors if they are supported by care providers during their children's hospitalization; however, they may regain their stress

within the last days of hospitalization. Children's discharge or transfer to home can cause stress in the family, and this stress is even more severe when the patients have had surgical operations.⁶⁻⁹

Due to the daily increase of outpatient surgeries in children and transfer of caregiving roles to parents, especially to mothers, we recommend parents' proper preparation through different correct methods of pre- and post-surgery care so as to decrease stress. Normally, the parents are not trained sufficiently for such cares leading them to stress and long-term behavioral disorders.^{10,11} Therefore, the treatment staff, especially the nurses, should participate in preparation process at the discharge occasion.¹² Although the development of training pamphlets and process specifications is the first basic step toward preparing the patient and the family during hospitalization and discharge, a follow-up plan is still inevitable.¹³ No matter how we follow up the patient's treatment, such low-cost and convenient methods as

leading the patient to the care-giving centers, home visits by the care providers, and use of telecommunication media are preferred.¹⁴ Meanwhile, managing the outcomes of surgical procedures is a necessity. In a retrospective cohort study on healthy patients aged 0-18 years, it was reported that more than one-half of the patients needed consultation after surgery. It was also demonstrated that the patients did not experience any complications, but they needed continuity of care. The follow-up plan, as a nursing intervention, has been developed to specify patients' needs and problems, sensitize them to adopt health behaviors, and to help promote their health. In addition, there would be a continuous and effective care relationship with the patient in the plan that fully conform to his/her characteristics and severity of the problems.^{15,16}

Despite the importance of follow-up care plan on patient's health and the family, patients are currently trained shortly and the parents are given a training pamphlet in the hospital throughout Iran at the time of discharge. As far as the researchers investigated, the effects of follow-up care have not been evaluated on children undergoing surgery in Iran so far. Regarding some evidence-based results, the nurses' knowledge may affect their responsibility in playing different roles. The present study aimed to determine the level of mothers' stress after their children's discharge from pediatric surgical units. In addition, it assessed the effect of a four-stage follow-up program.

Materials and Methods

The population of this quasi-experimental study were 64 mothers of hospitalized children in surgical pediatric units of two educational hospitals affiliated to Isfahan University of Medical Sciences (Alzahra and Imam Hossein hospitals). According to the statistical formula for comparing two means with type I error of 0.05, and a power of 0.80, 95% confidence interval, the values of $S1=0.7$, including a 10% drop the sample size was calculated 64 mothers. Convenience sampling was done. After excluding six mothers who did not meet the inclusion criteria, 64 mothers were included in the study. (Figure 1) The inclusion criteria were mother ability to being read and write, children aged from 6 months to 5 years and hospitalized for at least 3 days, being above 18 years old, and no history of taking psychiatric or anti-depression drugs. Using lottery cards, the participants were randomly divided into two groups.

All mothers in both groups filled a questionnaire. Using SRI scale, the data was collected in before, one week, and one month after the intervention. The SRI has been developed by Koh et al., and contains 39 self-rated items, including seven subscales: tension (24 Score), aggression (16 Score), somatization (12 Score), anger (24 Score), depression (32 Score), fatigue (20 Score), and frustration (28 Score). Each item was rated on a 5-point Likert scale (from never = 0 to always = 4). The minimum

and maximum scores, showing the lowest and highest stress levels in self-reporting manner were zero and 156, respectively.¹⁷

Test-retest reliability for scores on the seven subscales and for the total score was significantly high, ranging from 0.69 to 0.96. Cronbach's alpha for the seven subscales ranged from 0.76 to 0.91 and emerged as 0.97 for the total score. The reliability of the subscales was tension = 0.69, aggression = 0.82, somatization = 0.87, anger = 0.92, depression = 0.92, fatigue = 0.87 and frustration = 0.93, respectively.

The intervention was a follow-up plan, including four stages of familiarization, sensitizing, follow-up, and evaluation. In the familiarization stage, the mothers were oriented with the program 24-48 hours before the discharge by the researcher in the pediatric ward of a hospital. The second stage (sensitization) took one hour on the second day of discharge with the presence of mother and other family members (father, older sister and brother) at home. In this stage, the disease treatment, nursing care, and side effects of surgery were described to those taking care of the child. The third stage of the program was performed one week after discharge through making three phone calls. The content of program was about the child's diet, pain alleviation, the physician appointment, and dress changing. In specific cases, she referred them to a sergeant for the issues out of her specialty. The mothers' stress was measured on the seventh day after intervention in the fourth stage. Those who were included in the control group received routine care trainings at discharge. After intervention, they received the training pamphlets.

SPSS software version 13 was used for data analysis. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used for reporting demographic variables. Independent *t* test, ANOVA and LSD were used to compare the mean scores of the two groups. Statistical significance was considered at $P < 0.05$.

Results

The demographic characteristics are shown in Table 1. The results of the study indicated that the maximum score and mean (SD) stress score before the intervention was 115, 64.1 (28.8) and 103, 61.2 (29.2) in experimental and control groups, respectively. (Tables 2 and 3) The scores decreased after the intervention. Table 3 shows mothers' stress in before, one week, and one month after the intervention. Based on the results of independent *t*-test, the mean scores of stress in both groups were not significantly different ($t=0.40$, $P=0.69$); however, the scores were lower in experimental group one week ($t=7.88$, $P<0.001$) and one month ($t=9.67$, $P<0.001$) after the intervention compared to the control group. As indicated by variance analysis with repeated observation, the scores in the experimental group were different immediately, one week, and one month after the intervention ($P<0.001$). Moreover, the results of the least significant difference

Table 1. The comparison of demographic characteristics in experimental and control groups

Variable	Experimental group (n=32) N (%)	Control group (n=32) N (%)	P value
Gender			
Male	19 (59.4)	21 (65.6)	0.61 ^a
Female	13 (40.6)	11 (34.4)	
Maternal education			
High school	11 (34.4)	6 (18.7)	0.19 ^b
Diploma	13 (40.6)	15 (46.9)	
College degree	8 (25)	11 (34.4)	
Occupation of mothers			
Employed	2 (6.2)	4 (12.5)	0.34 ^b
Housewife	30 (93.8)	28 (87.5)	
Pediatric surgery history			
Yes	10 (31.2)	11 (34.4)	0.79 ^a
No	22 (68.8)	21 (65.6)	
Siblings surgery history			
Yes	0 (0)	3 (9.4)	0.12 ^b
No	32 (100)	29 (90.6)	
Surgery type			
Cleft palate	11 (34.4)	11 (34.4)	0.71 ^a
Colostomy	2 (6.2)	2 (6.2)	
Hypospadias	12 (37.6)	15 (47)	
Cleft lip	4 (12.5)	1 (3.1)	
Cleft lip/palate	2 (6.2)	1 (3.1)	
Hirschsprung	1 (3.1)	2 (6.2)	

^a Chi-square test; ^b Fisher exact test.

(LSD) test indicated that the mean score of stress in the experimental group was significantly lower one week after the intervention ($P < 0.001$) compared to the score before the intervention, and it was lower one month after the intervention ($P < 0.001$) compared to one week after the intervention. The test also indicated that the mean stress score in the control group was not significantly different before and one week after the intervention ($P = 0.34$), but it significantly decreased one month after the intervention ($P < 0.001$).

Discussion

Mothers experience a high level of stress while their children are hospitalized and even after the discharge. The current study assessed the effect of implementing the four-stage follow-up care plans on stress in mothers of children discharged from pediatric surgical units. The mean stress scores of the mothers one week and one month after the intervention were significantly lower in experimental group than in control group. Surgery is an important and stressful event in the lives of the families. Annually, around 234 million operational procedures are

Table 2. The comparison of stress level

Time	Experimental group		Control group	
	Min	Max	Min	Max
Before intervention	8	115	15	103
One week after intervention	3	51	21	135
One month after intervention	2	30	13	91

Table 3. The comparison of mean score of mothers' stress at different times

Time	Experimental group (n=32)	Control group (n=32)	P value ^a
	Mean (SD)	Mean (SD)	
Before intervention	64.1 (28.8)	61.2 (29.2)	0.69
One week after intervention	20.4 (12.4)	59.9 (25.5)	<0.001*
One month after intervention	11.6 (7.5)	46.7 (19.1)	<0.001*
P value ^b	<0.001*	<0.001*	

^a t test was used; ^bANOVA was used; *Statistically significant.

done worldwide.^{18,19} Most parents who take their children to hospitals for surgical procedures feel guilty for not being able to protect them against pain and suffering. In addition, wound, dressing, pain, and side effects of the surgery persist long after the surgery leading to high levels of stress in families.¹

Support and consultation from treatment staff was essential to cope with parents' stress resulting from their infants and children's illness.²⁰ In a study, the interventions for reducing stress were successful in parents of the children who underwent surgical operations. A proper informing plan along with family preparation prior to the operation up to the child's full recovery were the most important stages. It is the responsibility of treatment staff, especially the nurses, to find an effective, cost-efficient, and suitable way to reduce stress in parents.²¹

The existing evidence proves that preparing the information given to the parents on the discharge day can greatly reduce their stress.¹ Therefore, the results of the above studies were based on the effect of the follow-up care plan and rendering information.

The results of current study indicated that a follow-up care plan, conducted after discharge by training pamphlets and follow-up phone calls, can greatly reduce the level of stress in mothers. Similarly, the effect of follow-up telenursing on stress management among the families of patients with heart diseases was assessed; the results indicated that the stress decreased after making follow-up phone calls once a week during 30 days after discharge.²²

According to some previous studies, the implementation of pro-discharge care can result in a better quality of life in patients and family members after discharge. The researchers emphasized that follow-up phone calls

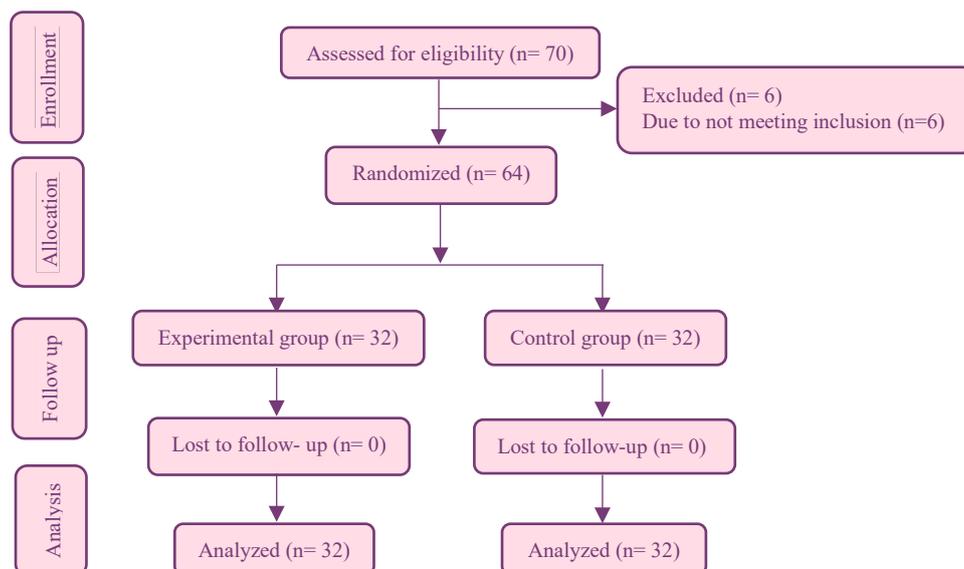


Figure 1. Flowchart of the study

and generalized care plans are needed; however, the parents experience loneliness and lack of support at the discharge.²¹⁻²³ The children might face serious problems if they are not followed up after surgery, especially delay in the diagnosis of surgery side effects. Since the mothers' need to support and care is an important issue, implementation of a follow-up care plan was noticed.

This study had some limitations. First, our sample size was relatively small. Second, most mothers were reluctant to inform other family members about their children's illness. Finally, there were some difficulties in scheduling, making phone calls, and convincing parents to participate in the study.

Conclusion

Stress can persist in parents long after their children's discharge from hospital, and this might negatively affect their caregiving role at home. The results of the current study showed that performing follow-up care plans can considerably decrease post-discharge stress in mothers. It is evident that routine discharge trainings are not sufficient to decrease the stress. Furthermore, more accurate trainings along with follow-up care plans can be helpful in this regard.

Conflict of Interest

The authors declare no conflict of interest in this study.

Research Highlights

What is the current knowledge?

Although hospital discharge is a pleasant process for families, transferring children from hospital to home is a stressful event for parents. The mothers' stress may also persist long after the treatment period.

What is new here?

The follow-up plan can provide continuous care for children and reduce the mothers' post-discharge stress.

Ethical Issues

The participants were requested to sign a written consent. The study was approved by the research ethics committee of Isfahan University of Medical Sciences (NO: 394; Code: IR.MUI.REC.1394.394151).

Authors' Contributions

ZA: Supervised the study, participated in designing the study; MN: Involved in the study conception and design; FO: Collected and analyzed the data. All authors participated in drafting and final approval of the manuscript.

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References

- Hockenberry MJ, Wilson D. Wong's Nursing Care of Infants and Children-E-Book. 11th ed. United States: Mosby; 2018.
- Nakazuru A, Sato N, Nakamura N. Stress and coping in Japanese mothers whose infants required congenital heart disease surgery. *Int J Nurs Pract*. 2017; 23 Suppl 1: e12550. doi: 10.1111/ijn.12550
- Namnabati M, Zamanzadeh V, Valizadeh LV, Nyqvist KH. Theory of infants' transition management from the neonatal intensive care unit to home: a qualitative study. *Int J Pediatr*. 2017; 5(1): 4151-62. doi: 10.22038/ijp.2016.7887
- Peiravi Dehsorkhi T, Behnam Vashani H, Ramezani M, Shojaeian R. Effect of maternal empowerment program on neonatal colostomy complications and maternal distress tolerance. *Evid Based Care*. 2020; 10(3): 23-32. doi: 10.22038/ebcj.2020.50642.2360
- Masoumi Z, Abdoli F, Esmaeilzadeh S, Sadeghi T. The

- effect of supportive-training intervention on the burnout of mothers with disabled child: a randomized clinical trial. *J Caring Sci.* 2020; 9(3): 133-9. doi: 10.34172/jcs.2020.020
6. Hill C, Knafl KA, Santacroce SJ. Family-centered care from the perspective of parents of children cared for in a pediatric intensive care unit: an integrative review. *J Pediatr Nurs.* 2018; 41: 22-33. doi: 10.1016/j.pedn.2017.11.007
 7. Ballantyne M, Benzies KM, Trute B. Depressive symptoms among immigrant and Canadian born mothers of preterm infants at neonatal intensive care discharge: a cross sectional study. *BMC Pregnancy Childbirth.* 2013; 13 Suppl: S11. doi: 10.1186/1471-2393-13-s1-s11
 8. Kaplan H, Sadock V. *Comprehensive Textbook of Psychiatry.* 10th ed. Philadelphia: Lippincott Williams & Wilkins; 2017.
 9. Ari AB, Peri T, Margalit D, Galili-Weisstub E, Udassin R, Benarroch F. Surgical procedures and pediatric medical traumatic stress (PMTS) syndrome: assessment and future directions. *J Pediatr Surg.* 2018; 53(8): 1526-31. doi: 10.1016/j.jpedsurg.2017.10.043
 10. Foster M, Whitehead L. Parent and staff perceptions of parental needs during a child's hospital admission to a paediatric high-dependency unit: a New Zealand study. *J Paediatr Child Health.* 2017; 53(12): 1167-75. doi: 10.1111/jpc.13645
 11. Rennick JE, Dougherty G, Chambers C, Stremler R, Childerhose JE, Stack DM, et al. Children's psychological and behavioral responses following pediatric intensive care unit hospitalization: the caring intensively study. *BMC Pediatr.* 2014; 14: 276. doi: 10.1186/1471-2431-14-276
 12. Verklan MT, Walden M, Forest S. *Core Curriculum for Neonatal Intensive Care Nursing.* 6th ed. Netherlands: Elsevier; 2020.
 13. Votroubek WL, Tabacco A. *Pediatric Home Care for Nurses: A Family-Centered Approach.* 3rd ed. United States: Jones & Bartlett Learning; 2010.
 14. Blanco E, Samuels S, Kimball R, Patel D, Citty S, Spader H. Impact of telephone follow-up on patient satisfaction in a pediatric neurosurgery clinic. *J Patient Exp.* 2020; 7(6): 1255-9. doi: 10.1177/2374373520919210
 15. Melvin JE, Zuckerbraun NS, Nworgu CR, Mollen KP, Furtado AD, Manole MD. Management and outcome of pediatric patients with transient small bowel-small bowel intussusception. *Pediatr Emerg Care.* 2021; 37(3): e110-e5. doi: 10.1097/pec.0000000000001503
 16. Rahimi A, Ahmadi F, Gholyaf M. Effects of applying continuous care model on quality of life in hemodialysis patients. *Razi J Med Sci.* 2006 Sep 10;13(52):123-34. (Persian).
 17. Koh KB, Park JK, Kim CH, Cho S. Development of the stress response inventory and its application in clinical practice. *Psychosom Med.* 2001; 63(4): 668-78. doi: 10.1097/00006842-200107000-00020
 18. Krois W, Dingemans AJM, Hernández PX, Metzelder ML, Craniotis Rios J, Reck-Burneo CA. Sociodemographics and the impact of a colostomy to indigent families and children with colorectal disorders in Honduras. *J Pediatr Surg.* 2018; 53(4): 841-6. doi: 10.1016/j.jpedsurg.2017.05.009
 19. Hagstrom S. Family stress in pediatric critical care. *J Pediatr Nurs.* 2017; 32: 32-40. doi: 10.1016/j.pedn.2016.10.007
 20. Heidari H, Hasanpour M, Fooladi M. Stress management among parents of neonates hospitalized in NICU: a qualitative study. *J Caring Sci.* 2017; 6(1): 29-38. doi: 10.15171/jcs.2017.004
 21. Leeds IL, Boss EF, George JA, Strockbine V, Wick EC, Jelin EB. Preparing enhanced recovery after surgery for implementation in pediatric populations. *J Pediatr Surg.* 2016; 51(12): 2126-9. doi: 10.1016/j.jpedsurg.2016.08.029
 22. Ramelet AS, Fonjallaz B, Rio L, Zoni S, Ballabeni P, Rapin J, et al. Impact of a nurse led telephone intervention on satisfaction and health outcomes of children with inflammatory rheumatic diseases and their families: a crossover randomized clinical trial. *BMC Pediatr.* 2017; 17(1): 168. doi: 10.1186/s12887-017-0926-5
 23. Mannarino CN, Michelson K, Jackson L, Paquette E, McBride ME. Post-operative discharge education for parent caregivers of children with congenital heart disease: a needs assessment. *Cardiol Young.* 2020; 30(12): 1788-96. doi: 10.1017/s1047951120002759