



Original Article

The effect of the supportive program on the anxiety of mothers of infants with gastrointestinal anomaliesAlehe Seyedrasooli¹, Jamileh Malakouti², Mahnaz Jabraeili^{3*}, Soraya Heykalabadi³, Morteza Ghogazadeh⁴¹Department of Medical Surgical Nursing, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran²Department of Midwifery, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran³Department of Pediatrics, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran⁴Woman's Reproductive Health Research Center, Faculty of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran

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ABSTRACT

Background & Aim: The birth of an abnormal infant and his admission to the intensive care unit creates various mental health effects on their mothers and increases their anxiety. The goal of this study was to determine the effect of supportive programs on the anxiety of mothers of infants with gastrointestinal anomalies.

Methods & Materials: This randomized controlled clinical trial was conducted in the Neonatal Intensive Care Unit in Tabriz, Iran. In this study, 50 mothers who had infants with gastrointestinal anomalies were assigned randomly to control and intervention groups. The control group received routine care, and the intervention group received special supportive care: emotional, informational, self-esteem, and caring support during four sessions for a 45-minute duration. Maternal anxiety was measured using the State-Trait Anxiety Inventory. Data were analyzed by using SPSS/19 and paired-sample and independent t-test.

Results: The results showed that both groups of mothers had high-level anxiety in the pre-test. In the post-test, the mothers' anxiety level in the intervention group was significantly lower than the control group. ANCOVA test to compare the mean difference of state and trait anxiety in both groups showed that these changes were statistically significant ($P < 0.001$).

Conclusion: This study tried to introduce a protocol to protect mothers of gastrointestinal anomalies, which could be used in the Neonatal Intensive Care Unit. The findings of this study also highlighted the importance of supporting one of the fundamental principles of family-centered care. Based on the outcomes of this research, emotional, informational, self-esteem, and caring support could reduce the mother's anxiety.

Introduction

Most parents would like to have a baby, assuming they will have a healthy one, but in 3% of cases, there is a life-threatening anomaly (1). According to the World Health Organization, approximately 3 million infants are born annually with congenital disabilities (2). The systematic review by the Vatanxah (2017) shows the prevalence of anomalies in different cities of Iran, which varies from 0.4 percent in Babol to 5.5 percent in Zanjan (3). This prevalence in Tabriz (Iran) was 113 out of 10,000 births (4).

After the birth of the infant with congenital disabilities, parents often experience sadness, stress, anxiety, depression, anger, and frustration due to the loss of a healthy infant (5-6). The results of the study's Fonseca et al. (2012) show that parents of newborns with congenital anomalies experience a high level of anxiety and depression (7). Another study in Brazil demonstrated that most mothers with abnormal newborn, had a moderate level of anxiety; however, the anxiety levels were higher in mothers who had a diagnosis of postpartum anomalies (8).

Parents' anxiety and emotional stress are very overwhelming (9), and mothers experience more anxiety than fathers (7, 2,10). When the infant is hospitalized, due to incomplete information of parents about the

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child's illness, caring for the child during hospitalization anxiety is exacerbated (11, 12). Infants with gastrointestinal malformations often need surgery. Thus, the parent experiences a crisis (13).

After surgery, due to the connection of the ventilator (the additional equipment and drainage tool) to the infant, changes in the baby's appearance is intolerable for parents (14).

A Study by Nicol Harper et al. (2007) indicates that mothers with high anxiety had less interaction with their infant. The inability of the mother to adapt and cope with anomalies leads to a lower emotional relationship between mother and infant (15).

The birth of an infant with anomalies is intolerable for parents in the first months. Therefore it requires comprehensive personal and family support via health caregivers. Providing formal and informal support to the infant and his family is one of the main components of family-centered care (16, 17). Various research has shown that supporting parents, providing information, and education help them to control the situation better, feel more powerful, and achieve a realistic view of the appearance and condition of the infant, which results in providing appropriate care to infants (14, 18). According to Miles model (1999) parent's support has four dimensions: (a) supportive communication and provision of information; (b) parental self-esteem support; (c) emotional support; and (d) caring support involving the quality of care provided to the child (19).

A review of the studies indicates that few studies have been conducted on the effect of support on mothers' anxiety of anomaly infants, and there is not enough knowledge in this field; also such interventions may have a different effect on Iranian mothers due to their cultural differences and their attitude towards the infant's anomalies. Thus, this study aimed to determine the effect of the supportive program on the anxiety of mothers with gastrointestinal infant's anomalies.

Methods

Study design & Setting

This randomized controlled clinical trial study was conducted from November 2015 to June 2016 at the Children's Medical Education Center of Tabriz (Iran).

Sample size

Sample size extracted from the results of a pilot study on 10 mothers with infant anomalies with a significant level of one-sided $\alpha = 0.05$, power of 0.8 and considering $m_1=44.3$, $SD_1=4.2$, and $m_2=47.4$, $SD_2=4.2$, based on the total score of the state anxiety, the sample size was calculated to equal to 24 mothers. The final sample size was 25 mothers for each group, with a 5% probable loss of follow-up.

Data Collection

The participants of this study were 50 mothers of infants with gastrointestinal anomalies who were enrolled according to the following criteria: mothers with infants hospitalized with gastrointestinal anomalies who were candidates for surgery, such as (Imperforate Anus, Esophageal Atresia, Diaphragmatic Hernia, Omphalocele, Gastroschisis, Hirschsprung, Intestinal Atresia and Hypertrophic Pyloric Stenosis), and their infants were at level III in NICU (in level III high-risk neonates and neonates requiring surgery are admitted). The addicted or alcoholic mothers, who were taking antidepressants, having previous infants' anomalies, or with stressful events during the past 6 months were excluded from the study.

On the first day of neonatal admission, the mothers who had eligibility criteria were enrolled in the study after obtaining informed consent. The allocation sequence was determined by block randomization with block sizes of 4, 6, and an allocation

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ratio of 1:1 using a computer-generated randomization schedule, stratified by parity (two strata: first, and second). To conceal the allocation sequence, opaque and sealed envelopes with consecutive numbers were used. Each random number generated in a closed envelope was provided to the research staff in the division to place the participants in the intervention or control group according to the designed sequence. The allocation sequence and packages were prepared by a person not involved in the recruitment, data collection, and analysis.

In this study, the co-researcher who was responsible for collecting the data was blind to the aims of the study.

Intervention

In order to achieve the intended study, the intervention was performed one day after surgery through four sessions of 45 minutes duration, the first and second sessions of emotional support performed by a psychologist in a private room close to NICU, and a pediatric nurse performed the third and fourth sessions about informational, self-esteem and caring support at infant bedside individually and face-to-face. The control group received routine care. This caring program was included in practical care of each infant, which was trained by the infant's nurse for all mothers in each shift. The booklet was also given to the control group, after completing data collection.

A) Emotional Support

During the first session, the psychologist assessed mothers' perspectives on the problem of her newborn; then psychologists supported mothers for 30 minutes. Emotional support was included: a) asking about perceived support systems by mother (husband, and their both family and friends), b) teaching strategies of reducing anxiety appropriate to the emotional conditions of the mother including strategies of stress

reduction and relaxation training in practice, deep breathing (6-10 deep & slow breathing per minute longed for 10 minutes), taking warm shower (daily), and helping enhancing maternal coping with infant anomaly (help to see their infant and emphasizing the well-formed aspect of the infants body, opportunity for the mothers to express their initial emotional responses to help the mother to touch the infant, put the infant in the arms of the mother and familiarize mother with other mothers who have abnormal infants). At last, mothers were encouraged to express their fears and worries regarding infant anomalies in the next 15 minutes.

In the second session, during the first 10 minutes, they were questioned about how much of the material was effective during the first session to reduce their anxiety. Then, the importance of mother-infant attachment was discussed, due to the specific condition of these infants, then the attachment behaviors (gentle touching, cuddling and talking with an infant) were trained purposing to reduce maternal anxiety. The intervention was controlled at the end of the day by the researcher by the questioning of mothers. All mothers in the intervention group reported that they made the psychologist's recommendation.

B) Information, self-esteem and caring support

The second phase of the support program was conducted by the pediatric nurse including the mother's support in providing effective care of infants. The program was completed in two 45-minute sessions on the 3rd and 4th day after admission. During the first meeting, a few questions were asked about the mother's information on anomalies and care of the infant to determine the amount of maternal information about anomalies before providing information.

A booklet about anomalies was provided to the mother that adequately described infant anomaly in plain language by using educational images. This booklet also

contained the relevant information, and how to maintain a continuous, effective relationship with a newborn, explanation about the importance of proper nutrition and encouraging the use of adequate fluids (to increase breast milk secretion) and infant's primary care. Primary Care items were the benefits of breast milk, and how to feed, changing the diaper, bathing and how to hug and massage and so. Mothers were also trained in the physical care of the infant according to the abnormality such as the care of the colostomy, etc. The nurse tried to stay near and available to the mother and help her to participate in the care of the infant to increase the mother's self-confidence.

In the second session, all the educational content of the booklet was taught practically and in a face-to-face form. During training sessions, the most emphasis was strengthening the positive and healthy aspects of the infant, and mothers were constantly encouraged to ask their questions, too. The anxiety level of mothers in both groups was measured using the State-Trait Anxiety Inventory (STAI) on the first day of study. The S-Anxiety scale (STAI Form Y-1) consists of twenty statements that examiners choose each item statement that best describes the intensity of their feelings: (1) not at all; (2) somewhat; (3) moderately so; (4) very much so. The T-Anxiety scale (STAI Form Y-2) consists of twenty statements that examinees choose the frequency of their feelings of anxiety on the following four-point scale: (1) almost never; (2) sometimes; (3) often; (4) almost always.

The scoring for the anxiety-absent items are reversed, i.e., responses marked 1, 2, 3, or 4 are scored 4, 3, 2, or 1. The anxiety-absent items for which the scoring are reversed on the S-Anxiety and T-Anxiety scales are:

S-Anxiety: 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20.

T-Anxiety: 21, 23, 26, 27, 30, 33, 34, 36, 39.

The scores for the S-Anxiety and T-Anxiety scales can be obtained by simply adding the scores for the twenty items that make up each scale, taking into account the

fact that the scores are reversed for the above items. Scores for both the S-Anxiety and the T-Anxiety scales can vary from a minimum of 20 to a maximum of 80 (20, 21). At the end of the last training session, STAI was given again to the intervention and control groups.

Ethical considerations

This study was conducted after registration at the Clinical Trials Center (IRCT20149264617N10) and approved by the Ethics Committee (IR.TBZMED.REC, code: 7621). All study participants gave written informed consent and were assured of the confidentiality of their responses and advised that they could withdraw from the study at any time.

Statistical analysis

The data were analyzed using SPSS 24 software. Independent t-test, Chi-square and Fisher's exact test were used to compare demographic variables of both groups. Paired sample t-test and independent t-test were used to compare within and between-group changes. Since The independent t-test showed a significant difference in the pre-test scores of anxiety between two groups, ANCOVA was used for adjusting the pre-test score in comparing the state and trait anxiety scores between intervention and control groups. P-value of less than 0.05 was considered as statistically significant.

Results

Fifty mothers with infants of gastrointestinal anomalies were studied. The demographic characteristics of mothers and infants were presented in Table 1.

The results showed that both groups of mothers had a high level of anxiety in the pre-test. In both intervention and control groups, the mean of state and trait anxiety scores were decreased at post-test results. In the post-test, the Mothers' anxiety level in

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the intervention group was significantly lower than the control group. ANCOVA test to compare the mean difference of state and

trait anxiety in both groups showed that these changes were statistically significant ($P < 0.001$) (Table 2).

Table 1. Comparison of mothers and infants demographic variables in two groups of intervention and control

Variable	Intervention group (n=25)	Control group (n=25)	P-value
Age^(Year) (Mean±SD)	33.1±4.7	33.2±3.6	0.58*
Level of education N (%):			
Illiterate	4(16)	0(0)	0.2**
High school	6(24)	8(32)	
Diploma	11(44)	12(48)	
College	4(16)	5(20)	
Job N (%):			
Employed	9(36)	6(24)	0.35***
Housewife	16(24)	19(76)	
Age^(Day) (Mean±SD)	5.24±2.3	4.92±2.2	0.5*
Weight^(gr)	2432.4±404.2	2378±393.7	0.6*
Type of anomaly:			
Esophageal atresia	6	6	0.06**
Imperforate anus	7	7	
Diaphragmatic hernia	4	5	
Omphalocele	3	2	
Hirschsprung	2	3	
Gastroschisis	2	1	
Hypertrophic pyloric	1	1	

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

Table 2. Comparison of state and trait anxiety scores in study groups

Variable	Intervention group (n=25) Mean±SD	Control group (n=25) Mean±SD	Mean difference (95% confidence interval)	Between groups P-value	ANCOVA
State anxiety					
Pre-test	52±6	45±6	-7.3 (-11.2 to -3.4)	<0.001*	<0.001**
Post-test	36±6	42±6	-10.8 (-13.9 to -7.8)	0.002*	
Within group (Pvalue)	<0.001***	<0.001***			
Trait anxiety					
Pre-test	49±8	48±7	-1.4 (-6.1 to 3.3)	0.552*	<0.001**
Post-test	37±9	45±45	-9.3 (-13.4 to -5.2)	0.001*	
Within group (Pvalue)	<0.001***	<0.001***			

*Independent T-test **ANCOVA with adjusting the pre-intervention score *** Paired sample t-test

Discussion

The results of this study showed that mothers of gastrointestinal anomalies suffered from a high level of anxiety in the first day of anomaly diagnosis. Anxiety is one of the emotional distresses in mothers of infants with anomalies, which can delay the relationship between mothers and their newborns (8, 22-24). Therefore, health care professionals should assess the emotional state of mothers following the birth of congenital anomalies and provide parents the required information in this regard (25).

In this study, maternal support was conducted as one of the basic principles of family-centered care and based on the Miles model to reduce maternal anxiety. The results also showed that maternal support could reduce maternal anxiety. The results of this study are consistent with the findings of other studies. Studies by Arshadi (2017) & Craig (2015) showed that family-centered care implementation reduced the anxiety of mothers of preterm infants in the intervention group (26, 27). Baker et al.

(2009) studied the effect of support strategies on anxiety and emotional stress in the family of infants with cleft lip and cleft palate, showing that receiving social support was associated with less emotional distress and more compatibility (28).

In this study, emotional, informational, self-esteem and caring support were presented in the form of teaching strategies of reducing anxiety and mother-infant attachment, helping enhancing maternal coping with infant anomaly, providing information about the anomaly, and quality care. In this study, informational support was anxiety reduction techniques and interaction between mother-infant as well as explaining the baby's anomalies to the mother. In a study, providing information to parents of a child with congenital heart disease has reduced the anxiety (29). Another study showed that the information provided to parents about the nutritional status of the child's pain after the surgery reduced the anxiety of the parents (30). Furthermore, the informational support significantly reduced the anxiety of mothers at risk of preterm labor (31,32). Only one study in Iran showed that the stress level was increased in mothers of infants with gastrointestinal anomalies following receiving information. Researchers declared that communication support without adequate emotional support could significantly increase maternal stress (11).

Moreover, in this study, training of interaction between mother-infant reduced maternal anxiety, and previous studies showed that training interactive behaviors considered as an effective factor to reduce mothers' anxiety so (15, 31).

In this study, infant care training was done in order to empower mothers. The result showed that providing additional information and emotional support, along with maternal participation in care, reduces anxiety. This finding is consistent with the results of the study by Uhm & et al. (2019) (33). Jafari Minaei et al. (2012), also suggested that the implementation of the supportive program and parents

'empowerment reduced the anxiety of mothers (34). However, in the Shin study (2018), the empowerment program did not reduce anxiety in mothers of premature infants admitted to the NICU (35). Inconsistency of the result of these studies might be related due to the type of samples and intervention.

This study was conducted only in one Children's Medical Education Center of Tabriz, so it could not be generalized to other centers. Thus the implementation and evaluation of the supporting program might be repeated in other centers. In this study, due to lack of presence of fathers in the hospital, supportive interventions were performed only on mothers. Further studies should involve the other family members, including fathers and other neonatal anomalies.

Conclusion

The results demonstrated that mothers of infants with anomalies had high anxiety, and the emotional, informational, and caring support was highly effective in reducing mothers' anxiety. Providing mothers' supportive programs during the infant's hospitalization care could improve the emotional state and quality of care provided to the child by mother.

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Conflict of Interest

The authors declare no conflict of interest.

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