

# Effect of Behavioral Therapy Counseling on Infantile Colic in Infants of Anxious Mothers: A Randomized Controlled Clinical Trial

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## Research Article

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# Abstract

**Background:** Given the possible effect of maternal anxiety on the severity of colic pain in infants, this study aimed to investigate the effects of behavioral therapy counseling on infantile colic (primary outcome), maternal anxiety, and mother-infant attachment (secondary outcomes) in anxious mothers with colicky infants.

**Method:** In this randomized controlled clinical trial, the researcher enrolled 46 anxious mothers of 2–6-weeks-old exclusively breastfed colicky infants with Postpartum Specific Anxiety Scale (PSAS) scores  $\geq 112$  admitted to the pediatric clinics of Al-Zahra, Taleghani and Children Hospitals of Tabriz, Iran. The participants were randomly assigned to the intervention ( $n = 23$ ) and control ( $n = 23$ ) groups using randomized block design. Mothers in the intervention group attended 8 systematic desensitization counseling sessions (2-3 sessions per week). Those in the control group received routine care. The researcher completed the Postpartum Specific Anxiety Scale (PSAS), Mother-Infant Attachment Questionnaire (MIAQ), and Infant Colic Scale (ICS) by interviewing the participants before and two weeks after the intervention.

**Results:** There was no significant difference between the two groups in terms of socio-demographic characteristics ( $P < 0.05$ ). After the intervention, the mean postpartum anxiety score of women in the intervention group was significantly lower than that of those in the control group (MD = 22.5, 95% CI = 2.3 to 42.7;  $p = 0.029$ ). The mean infant colic score of the infants of mothers in the intervention group was insignificantly lower than that of those in the control group (MD = -2.9, 95% CI = -8.3 to 2.4;  $p = 0.271$ ). In addition, no significant difference was observed between the two groups in terms of their mean mother-infant attachment scores (MD = -0.04, 95% CI = -3.1 to 0.3;  $p = 0.976$ ).

**Conclusion:** Behavioral therapy counseling effectively reduced postpartum anxiety in women with colicky infants; however, this reduction did not lead to a significant decrease in the infants' colic pain. Therefore, health care providers are recommended to use this counseling method in combination with other effective counseling approaches to promote mental health of these mothers.

**Trial Registration:** IRCT Registration Number: IRCT20111219008459N14, registered on October 08, 2020. <https://irct.ir/user/trial/45949/view>

## Introduction

Colic is often the first challenge that parents and infants face. This problem greatly affects their lives (1,2). According to Wessel, infantile colic is defined as uncontrollable crying in infants less than three months old that lasts at least three hours a day, three days a week, and three weeks a month (3, 4). Other common symptoms include experiencing abdominal contractions, drawing legs up towards the abdomen, having difficulty passing stools, arching back, and kicking(1,5). Talachian *et al.* carried out a prospective descriptive-observational study on 321 infants at Shahid Akbarabadi Hospital in Tehran, Iran. Based on their findings, 65 infants (20.2%) met the above mentioned Wessel's criteria (6). Globally, approximately

one in five infants under three months of age develops colic (1), and only 5% of infants with colic are diagnosed with gastrointestinal disease (2).

Two hypotheses have been suggested about the cause of colic including “abnormal gastrointestinal movements and pain signals coming from sensitive intestinal pathways” and “insufficient amounts of lactobacilli and increased levels of coliform bacteria that increase intestinal gas formation(7)”. Moreover, issues such as migraine(8–10), maternal smoking(10), older maternal age(1), birth of the first child(6), high maternal BMI(11,12), maternal vitamin B12 deficiency(11), cow’s milk protein allergy(13), maternal use of antibiotics(6,14), maternal use of iron during pregnancy(12), and poor breastfeeding self-efficacy(15) can be associated with the incidence of colic. In addition, behavioral problems such as anxiety, family tensions, and inadequate parent-infant interactions have been noticed in the etiology of colic (7, 12).

Intestinal microbes can affect diet, motility, and the duration of passage of food through the intestines (16, 17). Even the brain may affect intestinal microbes through the hypothalamic-pituitary axis and the autonomic nervous system (16, 18). Studies suggest that intestinal microbes interact with the central nervous system (CNS) probably through neural, endocrine, and immune pathways, and consequently affect brain function and behavior, and play role in the regulation of anxiety, mood, cognition, and pain (19). The high correlation between psychiatric symptoms and gastrointestinal disorders (*e.g.* irritable bowel syndrome and inflammatory bowel disorder) highlights the importance of this axis in the pathophysiology of colic (20).

High maternal anxiety is associated with increased levels of cortisol in breast milk, which reaches its highest concentration 2–12 weeks after delivery (21). On the other hand, increased cortisol level in breast milk is associated with the severity of crying and anxious behaviors in infants (22). According to Maartje *et al.*, increased stress and cortisol levels in the middle of the day are associated with several changes in gut microbes (23).

Studies indicate that mothers of colicky infants are more disturbed, preoccupied, exhausted, and inflexible than those with non-colicky infants (24). They also have difficulty performing their daily activities, and get high depression, fatigue, frustration, anger, anxiety, and overprotection scores than other mothers(25). Roberts *et al.* observed that mothers of colicky infants have higher depressive symptom scores than others. They argued that these mothers still had higher depressive symptom scores even when crying rates decreased dramatically 5–6 weeks and 5 months postpartum(26,27). Although postpartum psychiatric problems are very common, previous studies have mainly addressed depression and depressive symptoms, and only few researchers have examined postpartum maternal anxiety(28,29). The findings of a study conducted on 408 mothers in Australia indicated that 16% of participants had postpartum anxiety disorder and only 4% had postpartum depression; therefore, the postpartum period can accelerate the development of anxiety symptoms (31). Major signs of maternal anxiety include worry, boredom, confusion, and sleep disorder (32). High maternal anxiety is often associated with decreased self-efficacy (33), poor parent-infant interaction (34), and infantile colic (7).

No definitive treatment has so far been provided for infantile colic; however, for each infant one or a combination of available methods may effectively relieve colic symptoms (35). Behavioral therapy, counseling support, and parental reassurance are currently considered the most effective therapeutic methods (36). Today, behavioral counseling specialists believe that a client, who is both the creator and the product of the environment, can guess which behaviors are desirable. Then, he/she can make attempts to convert these conjectures and attitudes into actual behaviors (37).

Given the prevalence of maternal anxiety in the postpartum period(38), the possible relationship between infantile colic and maternal anxiety(12,39,40), negative effects of colic on psychological outcomes and functioning of parents(41), effectiveness of counseling in reducing maternal anxiety(42,43), and lack of a comprehensive study on the effect of postpartum counseling provided to anxious mothers on infantile colic, this study investigated the effect of behavioral therapy counseling on infantile colic in infants of anxious mothers.

## Methods

### Study design and participants

This double blind randomized clinical trial investigated the effect of behavioral therapy counseling on colic in infants of 46 anxious mothers of 2–6-weeks-old colicky infants admitted to the pediatric clinics of Al-Zahra, Taleghani and Children hospitals of Tabriz, Iran. The inclusion criteria were mothers of 2–6-weeks-old colicky infants with high PSAS scores ( $\geq 112$ ) and at least middle school certificates, healthy term exclusively breastfed infants weighed at least 2500 grams, gained normal weight, and were diagnosed with infantile colic based on Wessel's criteria and a pediatrician's diagnosis. The exclusion criteria included giving birth to twins, using any chemical or herbal medicines (*e.g.* anti-flatulence) to treat infantile colic, suffering from congenital autoimmune diseases or nutritional problems (the infant), having a history of mental illnesses requiring medication (*e.g.* postpartum depression) in previous deliveries (based on the participant's statements), having extremely high levels of anxiety, abusing drugs during pregnancy and in the postpartum period (based on the participant's statements), receiving similar training in the past, attending formal/organized training courses to reduce anxiety in the past, being unsure about their ability to attend all counseling sessions, experiencing traumatic life events (*e.g.* death of loved ones, divorce, *etc.*) in the past 2 months, and using antibiotics.

The **Sample size** was determined in G-power based on the study of Aktas *et al.*(15) It was calculated as 19 by considering the mean infant colic score ( $m_1 = 72.44$ ), a default 15% decrease in the post-intervention colic score ( $m_2 = 61.574$ ),  $\alpha = 0.05$ , and Power = 95%. The final sample size was then determined as 23 for each group by assuming a loss to follow-up of 20%.

## Sampling And Randomization

The researcher initiated the sampling process after obtaining the approval of Ethics Committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1398.1083) and registering the study at Iranian Registry of Clinical Trials (IRCT20111219008459N14). Then, she visited the pediatric clinics of Al-Zahra, Taleghani and Children Hospitals of Tabriz and used convenience sampling to select mothers of infants diagnosed with infantile colic (based on Wessel's criteria and a pediatrician's diagnosis). After providing explanations about the research objectives and methods, mothers who were willing to participate in the study completed PSAS and those with PSAS scores  $\geq 112$  who also met other inclusion criteria were enrolled after signing informed consent forms. The researcher completed the socio-demographic questionnaire, Infant Colic Scale (ICS), and Mother-Infant Attachment Questionnaire (MIAQ) by interviewing the participants.

By considering a 1:1 allocation ratio and using randomized block design (4 and 6-individual blocks), the participants were randomly assigned to the intervention (counseling) and control groups. The type of each intervention was written on papers and placed in numbered opaque envelopes in order to conceal the allocation sequence. The participants were then provided with sealed and numbered envelopes based on their enrollment time.

## Intervention

After completing the initial questionnaires (including the socio-demographic questionnaire, PSAS, ICS, and MIAQ), the participants received training about the nature and causes of colic and learned about existing methods used to reduce the severity of colic pain such as massaging, proper breastfeeding, hugging, burping, keeping calm during infant crying, *etc.* As prescribed by a pediatrician, colic drops were used equally for infants of mothers in both groups to control colic pain. Women in the intervention group attended 8 systematic desensitization counseling sessions (2–3 sessions per week) for 4 consecutive weeks in a cozy environment as described below.

Session 1: Teaching proper abdominal breathing; Session 2 and Session 3: Teaching and practicing progressive muscle relaxation technique with proper breathing; Session 4: Listing stressful stimuli of mothers, sequencing and generalizing their mediators, and selecting the main stimulus by mothers; Session 5: Starting the desensitization process from the stimulus with the lowest anxiety score; Sessions 6 to 8: Continuing the desensitization process based on maternal anxiety hierarchy.

Two weeks after the end of the counseling sessions, the researcher again completed the PSAS, ICS, and MIAQ by interviewing the participants. The control group received routine care and 6 weeks after completing the initial questionnaires, the post-test questionnaires were completed for them too.

## Data Collection Tools

The data were collected using the socio-demographic questionnaire, PSAS, ICS, and MIAQ. The socio-demographic questionnaire included questions about parents' age, educational qualifications, and job, family income level, place of residence, and life satisfaction. The content validity of this researcher-made questionnaire was confirmed by 10 faculty members of Tabriz University of Medical Sciences.

*Infant Colic Scale (ICS)*: This 22-item questionnaire was developed by Ellett *et al* (44) to assess infantile colic. It includes subscales of cow's milk/soy protein allergy, immaturity of the gastrointestinal system and CNS, parent-infant interaction, and infant temperament. The items are scored on a six-point Likert scale including strongly agree (score 6), almost agree (score 5), slightly agree (score 4), strongly disagree (score 1), almost disagree (score 2), and slightly disagree (score 3) (Total score range: 22–132). Higher scores indicate greater pain due to increased gas formation. Ellett *et al.* (44) (2002) confirmed the validity and reliability of this tool. In the present study, a Cronbach's alpha value of 0.73 was obtained for all items. The psychometric properties of the scale have been confirmed for the Iranian population in a study which is currently under review.

### **Postpartum Specific Anxiety Scale (PSAS)**

This 51-item questionnaire measures maternal anxiety using subscales of maternal competence and attachment anxiety, infant safety and welfare anxiety, infant care anxiety, and psychosocial adjustment to motherhood. The items are scored on a four-point Likert scale including highly relevant (score 3), very relevant (score 2), somewhat relevant (score 1), and not relevant (score 0). Streiner *et al.* (45)(2015) calculated the content validity ratio (CVR) of the items to provide a quantitative expression of content validity. The mean CVR for all the items was 0.76 indicating desirable content validity of the whole scale. In addition, the test-retest reliability of 0.88 ( $p < 0.001$ ) revealed excellent stability of PSAS. Hassanzadeh *et al.* (46) standardized this tool in Iran in 2021.

### **Mother-Infant Attachment Questionnaire (MIAQ)**

This 19-item scale assessed the attachment of mothers to infants in the 0–36 months-old age group. It is completed by the mother or any person who spends the most time with the infant. This questionnaire consists of the following three subscales

- A. Attachment quality (items 3, 4, 5, 6, 7, 10, 14, 18, and 19)
- B. Absence of hostility (items 1, 2, 15, 16, and 17)
- C. Satisfaction with interaction (items 8, 9, 11, 12, and 13)

The summation of scores given to the three subscales determines the total attachment score. The total score ranges from 19 to 95, and higher scores indicate strong mother-infant attachment (47). In Iran, Hassanpour *et al.* obtained a Cronbach's alpha of 0.73 for this scale (48).

In this study, the reliability of the questionnaires was assessed using internal consistency (Cronbach's alpha) and test-retest reliability. The test-retest reliability was assessed by calculating intra-class

correlation coefficients (ICC) for 20 mothers who completed the questionnaires twice at a two-week interval. The calculated ICC and Cronbach's alpha values for ICS, PSAS, and MIAQ included "0.94, 0.91, and 0.93" and "0.70, 0.93, and 0.85", respectively.

## Statistical analysis

The data were analyzed in SPSS 21. The Kolmogorov-Smirnov (K-S) test results indicated the normality of the quantitative data distribution. The chi-square, Fisher's exact, and independent t tests were used to examine the homogeneity of the groups in terms of socio-demographic characteristics. The independent t-test and ANCOVA (with controlled baseline values) were used to compare the mean infant colic, postpartum anxiety, and mother-infant attachment scores of the two groups before and two weeks after the intervention, respectively.

## Results

This study was conducted between December 2020 and May 2021. The researcher assessed a total of 157 mothers of colicky infants visiting the aforementioned pediatric clinics, of whom 111 individuals were excluded due to low maternal anxiety scores ( $n = 99$ ), unwillingness to participate in the study or uncertainty about attending all counseling sessions ( $n = 9$ ), and the use of other medicines to treat infantile colic ( $n = 3$ ). In summary, among 157 mothers of colicky infants who completed the PSAS, 58 women had high anxiety scores, and 46 mothers were enrolled as the sample. In addition, 5 individuals withdrew from the intervention group due to the death of their relatives ( $n = 2$ ) and unwillingness to cooperate ( $n = 3$ ). Therefore, the final sample consisted of 41 women (Figure 1).

As shown in Table 1, there was no significant difference between the intervention and control groups in terms of socio-demographic characteristics ( $P < 0.05$ ).

Before the intervention, the independent t-test results showed no significant difference between the mean (SD) infant colic score of infants of mothers in the intervention group (83.1 (13.4)) and that of those in the control group (82.7 (14.8)) ( $P = 0.918$ ). In addition, after the intervention, the results of ANCOVA with controlled baseline values showed no significant difference between the mean (SD) infant colic score of infants of mothers in the intervention group (75.8 (8.9)) and that of those in the control group (79.2 (14.7)) (MD = -2.9, 95% CI = -8.3 to 2.4;  $P = 0.271$ ) (Table 2).

Before the intervention, the number of participants in both the intervention and control group was 23; however, 5 individuals withdrew from the intervention group during the study.

Before the intervention, the independent t-test results showed no significant difference between the mean (SD) maternal anxiety score of women in the intervention group (119.5 (7.3)) and that of those in the control group (120.6 (10.2)) ( $P = 0.694$ ). However, based on the results of ANCOVA with controlled baseline values, after the intervention, the mean (SD) postpartum anxiety score of women in the

intervention group (81.8 (41.5)) was significantly lower than that of those in the control group (107.7 (27.3)) (MD = -22.5, 95% CI = -42.7 to -2.3; P = 0.029) (Table 3).

Before the intervention, the independent t-test results showed no significant difference between the mean (SD) mother-infant attachment score of the participants in the intervention group (77.2 (3.6)) and that of those in the control group (77.8 (7.7)) (P = 0.763). In addition, after the intervention, the results of ANCOVA with controlled baseline values showed no significant difference between the mean (SD) mother-infant attachment score of members of the intervention group (79.5 (5.7)) and that of those of the control group (79.9 (6.3)) (MD = -0.04, 95% CI = -3.1 to 0.3; P = 0.976) (Table 4).

## Discussion

Despite the introduction of several treatment approaches for infantile colic, no definitive treatment has so far been provided for this problem. In addition, relevant studies have yielded different and inconclusive results. Meanwhile, some scholars have recommended the use of parent counseling to inform parents about the nature of colic. Moreover, given the possible relationship between infantile colic and maternal anxiety, maternal counseling may reduce mothers' anxiety and their infants' colic pain.

Two weeks after the intervention, the mean postpartum anxiety score of mothers in the intervention group was significantly lower than that of those in the control group (P = 0.029). Based on the results of ANCOVA with controlled baseline values, the mean infant colic score of the infants of mothers in the intervention group was insignificantly lower than that of those in the control group (P = 0.271). In addition, no significant difference was observed between the two groups in terms of their mean mother-infant attachment scores (P = 0.976).

In this study, counseling sessions provided to the participants reduced their postpartum anxiety. Accordingly, Keefe *et al.* (43) employed counseling techniques based on the REST (reassurance, empathy, support, and time-out) approach to reduce anxiety in anxious mothers. Loghunan *et al.* (49) reduced anxiety levels in mothers by providing CBT-based online counseling sessions. In addition, Mokaberian *et al.* (50) reduced anxiety levels in women using progressive muscle relaxation with mental imagery technique (a component of behavioral therapy). Therefore, various counseling approaches can be adopted as cost-effective and non-pharmacological methods to improve emotional stability and enhance mental structure of mothers (49, 50).

Counseling sessions decreased the severity of infantile colic (40); however, this decrease was not statistically significant. Unlike this finding, Mousavi *et al.* (51) observed that relaxation exercises performed by mothers significantly decrease their infants' colic pain scores which are determined based on daytime infant crying. Gordon *et al.* (52) and Salvatore *et al.* (53) found that maternal counseling with reassurance and awareness techniques as well as nutritional recommendations effectively reduce the duration of infant crying and help mothers prevent functional gastrointestinal disorders in infants. These inconsistencies can be attributed to the use of different infant colic measurement tools and different time periods of interventions (during pregnancy vs postpartum period). A combination of these counseling

interventions used to reassure parents and inform them about the nature of colic and existing management methods such as nutritional recommendations, proper breastfeeding, various massages, and pain reduction methods, which was provided to mothers in both groups at the beginning of the present study, seems to help mothers reduce their infants' colic pain to some extent. However, counseling alone did not have a significant effect on all infants.

In this study, a high level of mother-infant attachment was observed in the two groups both before and after the intervention. This is considered normal given the importance of family and children in Iranian culture. This result is also in line with the findings of Hassanpour *et al.* in a study carried out in Iran (48). Dubber *et al.* (54) observed moderate maternal anxiety and high mother-infant attachment levels in mothers who completed the anxiety and attachment questionnaires. They found no direct relationship between these two factors; instead they argued that high level of mother-infant attachment may help mothers better control their postpartum anxiety (55). Mokaberian *et al.* (50) concluded that progressive muscle relaxation with mental imagery technique can be used during pregnancy, as a cost-effective and non-pharmacological method, to improve maternal mental health and enhance mother-fetal attachment. The inconsistency between the result of Mokaberian *et al.* and the present study may be due to different time periods of interventions (during pregnancy vs postpartum period). Moreover, Mokaberian *et al.* examined mother-fetal attachment, while the present study assessed mother-infant attachment.

Although there is no unique treatment for all colicky infants, the present study suggested that counseling can be used along with other treatments to control infantile colic. Maternal counseling can be used as a non-pharmacological and cost-effective method to raise awareness among mothers about the nature of colic and existing management methods. A review of counseling sessions indicates that part of the worries of Iranian mothers arises from their poor knowledge about infant care. Therefore, mothers need a professional companion who can answer their questions and provide them with suitable solutions to various infant problems during pregnancy and the first few months after birth.

### **Strengths and limitations**

To prevent selection bias, the researcher adhered to all principles of clinical trial such as allocation concealment and random allocation. In addition, the researcher completed the questionnaires by interviewing the participants to reduce the possibility of incomplete or incorrect responses. Using the participants' native language during counseling sessions to better communicate with them was among other strengths of this study. Moreover, although previous studies had raised the possible effect of maternal anxiety on infant colic, this was the first study to investigate these variables.

In the present study, all responses given by participants were assumed to be correct and the researcher was unable to ensure the accuracy of the participants' responses. In addition, the participants were all literate, and this can negatively affect the generalizability of the results to illiterate women.

## **Conclusion**

Behavioral therapy counseling effectively reduced postpartum maternal anxiety; however, the intervention led to an insignificant decrease in the intervention group infants' colic pain. In addition, no significant difference was observed between the groups in terms of their mean mother-infant attachment scores. Moreover, a high level of mother-infant attachment was observed in the two groups, which is considered normal given the importance of family and children in Iranian culture. Considering the critical importance of the postpartum period, new responsibilities and worries of mothers, especially mothers of colicky infants, and the significance of postpartum physical and psychological supports, health care providers can use this counseling method along with other routine care to improve mental health and quality of life of mothers.

## **Abbreviations**

ICS: Infant Colic Scale; PSAS: Postpartum Specific Anxiety Scale; MIAQ: Mother-Infant Attachment Questionnaire; MD: Mean Difference; BMI: Body Mass Index; ICC: Intra Class Correlation.

## **Declarations**

This study was conducted in accordance with the Helsinki Declaration and relevant guidelines. All participants were informed about the study and written informed consent was obtained from them. The Ethics Committee of Tabriz University of Medical Sciences confirmed the study (ethical code: IR.TBZMED.REC.1398.1083).

### **Consent for publication**

Not applicable.

### **Availability of data and materials**

The datasets generated and/or analyzed during the current study are not publicly available due to limitations of ethical approval involving the patient data and anonymity but are available from the corresponding author on reasonable request.

### **Competing interests**

The authors declare that they have no competing interests.

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### **Authors' contributions**

RM, SHM and MMGH implemented the study and was responsible for data collection and wrote the first draft of the manuscript. SHH, MM and MMG contributed in the study design and data analysis, assisted in the preparation of the final version of the manuscript. All the authors read and approved the final version of the manuscript.

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## Tables

**Table 1:** Socio-demographic characteristics of infants and their parents.

P-value	Intervention group N=18	Control group N = 23	
0/604 <sup>†</sup>	28.1(3.1)	27.4(5.0)	<i>Age, mother(year)</i>
0/269 <sup>†</sup>	32.9(3.7)	31.5(4.8)	<i>age, Father (year)</i>
0/088 <sup>†</sup>	4.1(1.5)	3.4(1.3)	<i>Infant age at inclusion(week)</i>
0.552 <sup>††</sup>	11(47.8)	9(39.1)	<i>Gender, infant</i>
	12(52.2)	14(60.9)	Female
			Male
0.542 <sup>§</sup>			<i>Number of children</i>
			1
	13(56.5)	16(69.6)	2 or more
	10(43.5)	7(30.40)	
0.575 <sup>§</sup>			<i>gravida</i>
	10(43.5)	13(56.5)	1
	13(56.5)	10(43.5)	2 or more
0.243 <sup>§</sup>			<i>Number of abortions</i>
			0
	20(87.0)	17(73.9)	1 or more
	3(13.0)	6(26.1)	
0.230 <sup>‡</sup>			<i>Educational level, mother</i>
	1(4.3)	6(26.1)	High school
	10(43.5)	6(26.1)	Graduated from high school
	12(52.2)	11(48.7)	college
0.608 <sup>§</sup>			<i>Job, mother</i>
	22(95.8)	20(87.0)	housewife
	1(4.3)	3(13.0)	employed
0.075 <sup>‡</sup>			<i>Educational level, father</i>
	0(0.0)	2(8.7)	High school

6(26.1)	9(39.1)	Graduated from high school
17(73.9)	12(52.2)	college
0.380 <sup>§</sup>		<i>Job/father</i>
5(27.1)	5(21.7)	employee
1(4.3)	4(17.4)	Manual worker
17(74.0)	14(60.9)	freelance
0.057 <sup>‡</sup>		<i>Family income</i>
4(17.4)	1(4.3)	enough
2(8.7)	7(30.4)	insufficient
17(73.9)	5(65.2)	Fairly enough
0.254 <sup>§</sup>		<i>Habitat</i>
9(39.1)	3(13.0)	Private house
7(30.4)	11(47.8)	Rental house
0(0.0)	1(4.3)	Mother's parents home
7(30.4)	8(34.7)	Father's parents home
0.807 <sup>‡</sup>		<i>Life satisfaction</i>
6(26.1)	6(26.1)	satisfied
15(65.2)	14(60.9)	Fairly Satisfied
2(8.7)	3(13.0)	dissatisfied

<sup>†</sup> independent T-test; <sup>††</sup> chi-square test ; <sup>‡</sup> trend chi-square test; <sup>§</sup> fisher's exact test;

\* mean(standard deviation)

**Table 2: Comparison of mean infant colic scores before and 2 weeks after intervention between counseling and control groups**

P-value	Mean Difference (95% CI)	Counseling group Mean(SD)	Control group Mean(SD)	Variable
Infant colic score range: 22 to 132				
0.918	4.0(8.8 to -9.7)	83.1(13.4)	82.7(14.8)	Before intervention
0.271	-2.9(-8.3 to 24)	75.8(8.9)	79.2(14.7)	Two weeks After intervention
<p>For comparison of groups before intervention Independent t-test and after intervention, ANCOVA test with controlled baseline values was used;</p> <p>Before intervention, the number of samples in the counseling and control groups was 23, and after the intervention in the counseling and control groups was 18 and 23 respectively.</p> <p><i>CI</i>: Confidence Interval; <i>SD</i>: Standard Deviation</p>				

**Table 3: Comparison of mean Postpartum Anxiety scores before and 2 weeks after intervention between counseling and control groups**

P-value	Mean difference (95% CI)	Counseling group Mean(SD)	Control group Mean(SD)	Variable
Postpartum Anxiety score range: 0 to 153				
0.694	-1.0(-6.3 to 4.2)	119.5(7.3)	120.6(10.2)	Before intervention
0.029	22.5(2.3 to 42.7)	81.8(41.5)	105.7(27.3)	Two weeks After intervention
<p>For comparison of groups before intervention Independent t-test and after intervention, ANCOVA test with controlled baseline values was used;</p> <p>Before intervention, the number of samples in the counseling and control groups was 23, and after the intervention in the counseling and control groups was 18 and 23 respectively.</p> <p><i>CI</i>: Confidence Interval; <i>SD</i>: Standard Deviation</p>				

**Table 4: Comparison of mean Maternal Postnatal Attachment scores before and 2 weeks after intervention between counseling and control groups**

P-value	Mean Difference (95% CI)	Counseling group Mean(SD)	Control group Mean(SD)	
Postnatal Attachment score range: 19 to 95				
0.763	-0.5(-4.1 to 3.0)	77.2(3.6)	77.8(7.7)	Before intervention
0.976	-0.04(-3.1 to 3.0)	79.5(5.7)	79.9(6.3)	Two weeks After intervention
<p>For comparison of groups before intervention Independent t-test and after intervention, ANCOVA test with controlled baseline values was used;</p> <p>Before intervention, the number of samples in the counseling and control groups was 23, and after the intervention in the counseling and control groups was 18 and 23 respectively.</p> <p><i>CI</i>: Confidence Interval; <i>SD</i>: Standard Deviation</p>				

## Figures

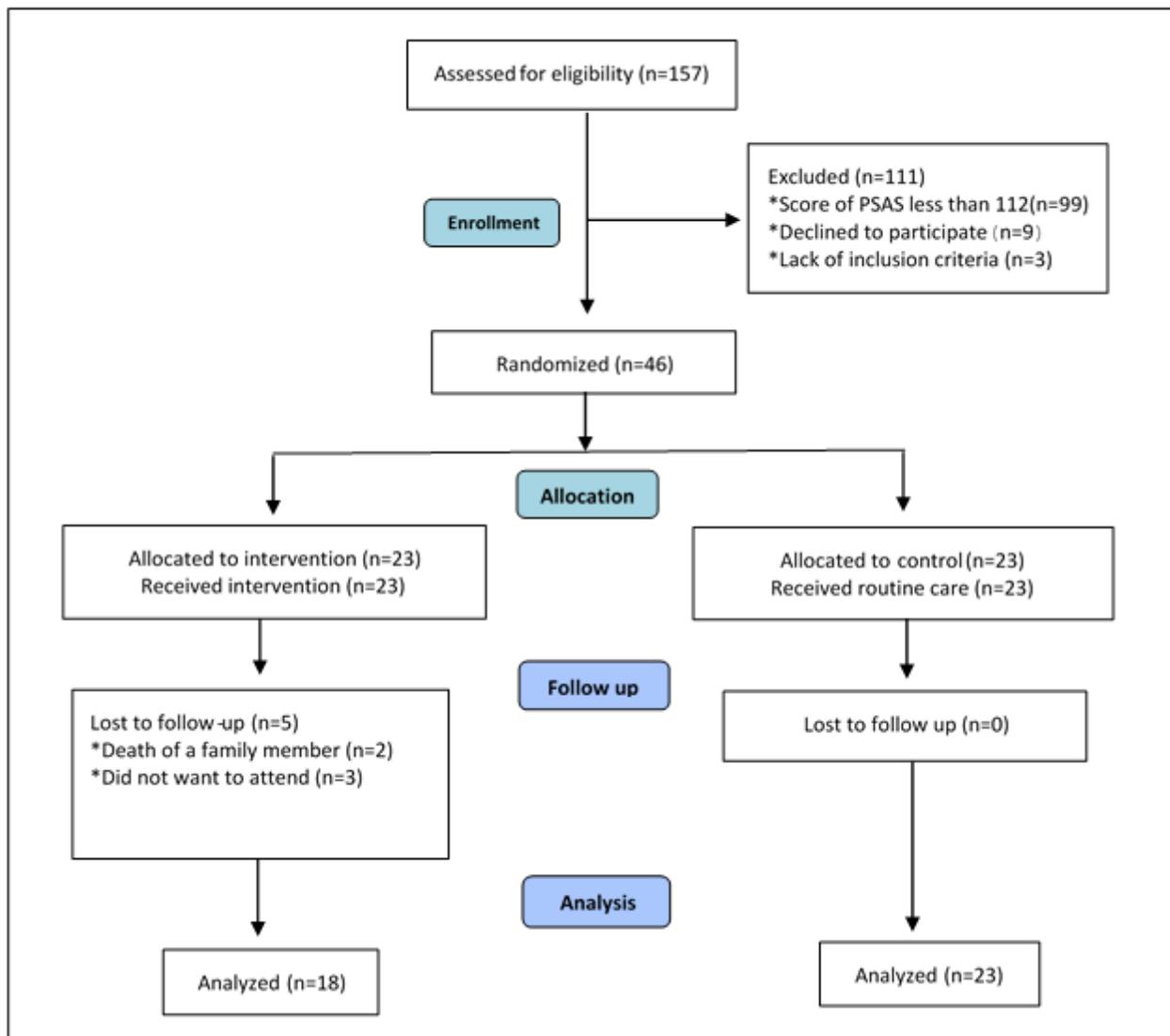


Figure 1

Flow Diagram