

# Men's education on planning and encouraging breastfeeding improves the mothers' performance and exclusive breastfeeding: a randomized controlled trial

**Farideh Panahi**

Shahid Beheshti University of Medical Sciences School of Nursing and Midwifery

**masoumeh simbar** (✉ [msimbar@gmail.com](mailto:msimbar@gmail.com))

Shahid Beheshti University of Medical Sciences School of Nursing and Midwifery

<https://orcid.org/0000-0003-2843-3150>

**farzaneh rashidi fakari**

North Khorasan University of Medical Sciences

**Razieh Lotfi**

Alborz University of Medical Sciences

**Mitra Rahimizadeh**

Alborz University of Medical Sciences

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## Research

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# Abstract

**Background:** men's participation is crucial for promoting of breastfeeding. There are a few studies on the effectiveness of father's education on the nursery performance. Therefore, this study aims to assess the mothers' performance following father's education on breastfeeding.

**Method:** This randomized clinical trial was performed on 76 fathers in two groups of control (38 men) and intervention (38 men) in a selected health center in Iran. They were spouses of primiparous women; fathers of a healthy, single neonates. Two groups of intervention and control were selected using randomized sampling method. The tools for data collection were: a "Demographic and Maternal-Infant Information Questionnaire", and a "Fathers' support for Breastfeeding Assessment Tool", a "Checklist to Assess Mothers' Breastfeeding Performance" and an "Exclusive Breastfeeding Questionnaire". The intervention was: fathers' education about "breastfeeding" and "the ways of support including encouragement and planning for breastfeeding". The education was performed in the intervention group in two sessions with one-week interval. Fathers in the control group did not receive the education. Mothers' breastfeeding performance, father's support for breastfeeding and exclusive breastfeeding was compared before and after intervention, and between groups after four months' intervention. Data was analyzed using SPSS 26.

**Results:** Between groups comparison showed, before intervention, the mean scores for breastfeeding performance was not significantly different between two groups ( $P=0.7$ ). However, after the intervention, it was higher in the interventional group comparing to the control group (T test;  $p<0.001$ ). Intra-groups comparison demonstrated, after intervention, the improvement was not seen after 4 months in the control group ( $p=0.6$ ), while there was a significant improvement in the intervention group comparing to before intervention (Paired test;  $p<0.001$ ).

**Conclusion:** The results showed that father's education improves breastfeeding performance of nursery mothers. Since, breastfeeding is an important factor for maternal-infant health, providing fathers' participation education to promote breastfeeding programs leads to long and effective exclusive breastfeeding.

**Trial Registration:** IRCT201508248801N10. Registered 31 August 2016.

## Background

Breast milk provides all nutrients and necessary energy during first months of life and Breastfeeding is the best choice to guarantee neonate's growth and development (1). Exclusive breastfeeding is recommended to begin from the first hour after birth and continued to six months (2). Breast milk guarantees sensual and cognitive development of the neonate and protect neonate against infectious and chronic disease (3). Breastfeeding prevents the rate of diabetes and weight loss. Exclusive breastfeeding also decrease the diarrhea and pneumonia and helps to rapid rehabilitation after infection (4).

Highest rates of breastfeeding are reported in Sub-Saharan Africa and south Asia as well as some parts of Latin America. In majority of developing countries, the prevalence of breastfeeding is about 20 percent. This rate is lower 1 percent in UK and about 27 percent in USA, 35 percent in Norway and 16 percent in Sweden. Besides, despite of the importance of breastfeeding in low- and middle-income countries, only 37 percent of neonates of under 6 months have exclusive breastfeeding (4, 5). In developing countries, duration of breastfeeding is shorter than in developed countries. The rate of exclusive breastfeeding in Iran is 53 percent (6). In a review article mean of duration of exclusive breastfeeding was 4.1 months and the prevalence were 4 and 5 until 6 months and 65 and 54 percent respectively (7). World goals for exclusive breastfeeding should reach to 60 percent until 2030 (8)

Therefore, despite of the importance of breastfeeding, its prevalence is not optimistic. Although breastfeeding is partly an instinctive behavior but it is also accounted as an acquisitive behavior that its quality and continuity can be improved by education and support (9, 10). Mothers, especially those with the first time experience of breastfeeding may have no adequate knowledge and self-efficacy for breastfeeding (11). Therefore, health providers can improve the maternal breastfeeding performance by a comprehensive education (12, 13). Several factors such as maternal age, occupation and number of children; including fathers' participation are shown to be related with breastfeeding behavior of mothers (14–16).

Father's participation in different reproductive stages including prenatal, parturition, postpartum and neonatal care were studied. One of the most important roles of fathers is their support of breastfeeding mothers (17, 18). Fathers' participations demonstrated to be related with success and continuity of breastfeeding (19, 20). But it is documented that fathers have no adequate information about the importance of breastfeeding and how to support their nursing wife (21). It seems fathers' education about the importance of breastfeeding and the effects of breast milk on growth and development of neonate as well as on maternal physical and mental health can improve their participation and support (22, 23).

There are a few studies about the effects of fathers' education on the breastfeeding performance. This study aimed to compare breastfeeding performance of mothers after a fathers' education program about breastfeeding.

## Method

### Design of the study

This was a randomized clinical trial study on 38 fathers attended to a health center in Karaj-Iran.

**The participants:** Seventy-six fathers were participated in the studies that were randomly selected for the intervention (38 fathers) or control (38 fathers) groups. They were recruited from attendees to the health centers for receiving postpartum care services, and had 3 to 5 days old neonates. The inclusion criteria were: men with primiparous wife, lack of known medical and mental diseases, speaking in Persian with a

healthy single neonate without any prohibition for breastfeeding. The exclusion criteria were: hospitalization of neonate, dying of infant or a family member during the study, or couple's separation during the study, taking medicine which prevents breastfeeding, feeding neonate with other milks except maternal milk, using pacifier and unwanted pregnancy.

## Sampling

Sample size was calculated 76 subjects (38 subjects for each control and intervention group) considering 95% confidence interval and power 80 percent.

$$n = \frac{(z_{1-\alpha/2} + z_{1-\beta})^2 * [p_1(1-p_1) + p_2(1-p_2)]}{(p_1-p_2)^2}$$

Randomized sampling was performed to select the health centers and also for devoting the subjects of the study to control or intervention groups using excel randomization option.

**Tools of the study:** Tools for data collection were: "Demographic and Maternal-Infant Information Questionnaire", and a "Fathers' support for Breastfeeding Assessment Tool", a "Checklist to Assess Mothers' Breastfeeding Performance" and an "Exclusive Breastfeeding Questionnaire". The intervention was: fathers' education about "breastfeeding" and "the ways of support including encouragement and planning for breastfeeding".

## Maternal-Infant Information Questionnaire

It has 14 questions about demographic and maternal and infants' information. Validity of the questionnaire was assessed and confirmed by 10 midwifery and reproductive health experts.

## Fathers' support for Breastfeeding Assessment Tool

The questionnaire has 12 items to assess fathers' encouragement and planning for nursing mothers' nutrition and rest and their involvement in household issues and the infant care. The items were assessed by a 5 level likert scale from never to always that scored 1 to five. The total scores were calculated and converted to percent. Validity of the questionnaire was assessed by 10 reproductive health experts. The validity was confirmed by S-CVI = 0.76 and S-CVR = 0.79 respectively. Reliability of the questionnaire was assessed by using test retest stability assessment method. Fifteen men with two-week interval filled the questionnaire and Pearson 0.86 confirmed the reliability of the questionnaire.

## Checklist to Assess Mothers' Breastfeeding Performance

This checklist has 26 items to assess breastfeeding performance and status, and with "yes" or "no" responses. The total score was calculated and converted to percent. Validity of the questionnaire was assessed by 10 reproductive health experts. The validity was confirmed by S-CVI = 0.78 and S-CVR = 0.83 respectively. Reliability of the checklist was confirmed by using intra-rater stability assessment method.

Breastfeeding performance of 15 mothers was rated by two researchers and ICC = 0.72 confirmed the stability of the checklist. Internal consistency assessment showed Cronbach's  $\alpha$  = 0.78 of the tool.

### **Exclusive Breastfeeding Questionnaire**

It had 3 questions about inclusive or inclusive breast feeding.

### **Procedure of the study**

Before intervention, both groups completed the demographic and maternal- infant information questionnaire and the fathers' involvement in planning and encouragement for breastfeeding questionnaire (FIPEB-6). Then fathers (with the mothers) in the intervention group were educated about breastfeeding. they were educated using face to face method, in two sessions, with 40 minutes' duration and one-week interval. In the control group only mothers were educated with the same instruction.

Fathers in the intervention group were educated about breast milk composition, the importance and the benefits of exclusive breastfeeding for maternal and neonatal health, the correct positions for breastfeeding, their critical role in promoting and continuing of breastfeeding. They were also advised about the ways of their participation; such as mothers' encouragement, or planning for a regular exclusive breastfeeding, or serving mothers in household tasks to free adequate time for nursing mothers' rest. They were explained about for mother and infant.

Four months later, all fathers in both groups completed the questionnaires to assess breastfeeding status and also the checklists to assess breastfeeding performance were completed.

This study was approved by the ethics committee of Shahid Beheshti University of Medical sciences. The participants had the option to exclude any time they want. Besides, all participants were explained about the confidentiality of the information. An informed written consent was given by all participants.

Data were analyzed by using SPSS 22, as well as statistical tests such as t test, Chi<sup>2</sup>, ANOVA and repeated measure ANOVA.

## **Results**

All 76 fathers in the intervention and control groups completed the study and there was no drop of samples in the study (Fig. 1).

Demographic and maternal and neonate information of participants in two groups are compared in the Table 1. The results showed two groups were not significantly different regarding the demographic and any other possible confounding variables ( $p < 0.05$ ).

Table 1

Comparison of demographic and maternal-infant health characteristics of n two groups of the study

Groups Variables	Control(n = 38)		Intervention(n = 38)		Test (P Value)	
	Mean	SD	Mean	SD		
Age of father(Years)	29.36	8.01	29.31	5.92	<b>0.49</b>	
Age of Mother(Years)	22.26	6.63	21.73	6.65	<b>0.06</b>	
Weight of Neonate (gr)	3644	12.4	3684	5.4	<b>0.6 **</b>	
High of Neonate(Cm)	49.76	2.40	48.92	3.74	<b>0.2 **</b>	
Apgar of 1 minutes	8.73	3.34	8.84	3.36	<b>0.08 ***</b>	
Apgar after 5 minutes	9.92	0.59	9.97	0.23	<b>0.1 ***</b>	
	<b>No</b>	<b>%</b>	<b>No</b>	<b>%</b>	<b>Test</b>	
Fathers' education	Primary School	12	31.61	12	31.61	<b>0.6 ***</b>
	High school	8	21.05	13	34.22	
	Academic	18	47.34	13	34.22	
Mothers' education	Primary School	2	5.26	3	7.85	<b>0.97 ***</b>
	High school	17	44.71	16	42.1	
	Academic	19	50.05	19	50.05	
Fathers' occupation	Unemployed	1	2.63	2	5.26	<b>0.13</b>
	Farmer, Worker	5	13.1	6	15.76	
	Clerk	11	29.01	10	26.37	
	Shopper	21	55.26	20	52.61	
Maternal Occupation	House wife	36	94.8	38	100	<b>0.06*</b>
	employed	2	5.3	0	0	
House hold monthly income	adequate	7	18.42	9	23.68	<b>0.1*</b>
	Not adequate	31	81.58	29	76.32	
Initiation of breastfeeding after birth	Immediate	14	36.88	16	42.1	<b>0.3*</b>
	During the first hour	9	23.68	9	23.68	
	After one hour	15	39.47	13	34.21	

Groups Variables		Control(n = 38)		Intervention(n = 38)		Test (P Value)
		Mean	SD	Mean	SD	
Neonate sex	female	22	57.9	21	55.26	0.2*
	Male	16	42.1	17	44.71	
Tests: *Chi2; **Independent T test; ***Mann-Whitney u test						

The comparison of father's support of breastfeeding in two groups of the study before and after intervention demonstrated a significant higher support after intervention in the educational intervention group ( $P < 0.001$ ). Also, intragroup comparison showed a significant decrease of fathers' support after four months ( $P < 0.001$ ), while a significant increase of fathers' support of fathers occurred after four months ( $P < 0.001$ ) (Table2).

Table 2

The comparison of father's support of breastfeeding in two groups of the study before and after intervention

Groups Time	Control(n = 38)		Intervention(n = 38)		Independent T test Between groups
	Mean	SD	Mean	SD	
Before intervention	76.45	17.75	70.65	17.61	$P = 0.1$
Four months after intervention	60.87	9.99	92.8	7.02	$P < 0.001$
Paired test (Intra-group)	$P < 0.001$		$P < 0.001$		

Between groups comparison showed, before intervention, the mean scores for breastfeeding performance was not significantly different between two groups ( $P = 0.7$ ). However, after the intervention, it was higher in the interventional group comparing to the control group (T test;  $p < 0.001$ ). Intra-groups comparison demonstrated, after intervention, the improvement was not seen after 4 months in the control group ( $p = 0.6$ ), while there was a significant improvement in the intervention group comparing to before intervention (Paired test;  $p < 0.001$ ) (Table 3).

Table 3

The comparison of maternal breastfeeding performance and status before and after intervention in two groups of the study

Groups The items	Before				After			
	Control (n = 38)		Intervention (n = 38)		Control (n = 38)		Intervention (n = 38)	
	n	%	n	%	n	%	n	%
The mother is quite calm and comfortable	15	39.5	18	47.4	5	13.2	38	100
The infant's face is in front of the mother's breast	22	57.9	19	50	12	31.6	38	100
The infant's head and body are in one direction	16	42.1	19	50	12	31.6	37	97.4
The infant's chin is attached to the mother's breast	20	52.6	17	44.7	16	42.1	38	100
The infant's hips are in the mother's arms	18	47.4	16	42.1	10	26.3	38	100
the infant sucks when she/he is hungry	18	47.4	22	57.9	24	63.2	38	100
The infant is properly sucking	21	55.3	23	60.5	22	57.9	38	100
There are signs of flowing milk	22	57.9	26	68.4	27	71.1	38	100
The mother embraces the infant with confidence	17	44.7	18	47.4	12	31.6	38	100
There is a face-to-face in maternal-infant relationship	16	42.1	19	50	14	36.8	38	100
The mother touches the infant while breastfeeding	16	42.1	17	44.7	12	31.6	36	94.7
Breasts are soft after breastfeeding	22	57.9	23	60.5	27	71.1	32	84.2
Nipples have adequate elasticity	22	57.9	20	52.6	19	50	38	100
The skin of the nipple is healthy.	18	47.4	23	60.5	32	84.2	38	100
Breasts look full when breastfeeding.	21	55.3	24	63.2	23	60.5	38	100
The infant takes both breasts without difficulty.	16	42.1	17	44.7	21	55.3	38	100
The infant is attentive when breastfeeding.	22	57.9	24	63.2	21	55.3	38	100

Groups The items	Before				After			
	Control (n = 38)		Intervention (n = 38)		Control (n = 38)		Intervention (n = 38)	
	n	%	n	%	n	%	n	%
The infant's mouth is completely open.	19	50	21	55.3	25	65.8	38	100
The infant's lower lip is turned outwards	22	57.9	22	57.9	30	78.9	38	100
The tongue surrounds the breast	23	60.5	23	60.5	23	60.5	38	100
Cheeks are Hollow and protruding	19	50	18	47.4	22	57.9	38	100
Most of the areola is seen above the infant's mouth.	20	52.6	20	52.6	23	60.5	38	100
Sucking is slow and deep.	26	68.4	24	63.2	24	63.2	38	100
The sound of swallowing can be heard.	20	52.6	19	50	27	71.1	38	100
The infant releases the breasts by him/herself	21	55.3	22	57.9	18	47.4	38	100
The infant appears to be full after breastfeeding	21	55.3	21	55.3	18	47.4	38	100
Mean ± SD (Score 0-100)	54.15 ± 38.01		51.92 ± 33.42		52.53 ± 19.33		99.1 ± 1.66	
Paired test (Intra-Group Comparison)	Intra-Control group P = 0.7; T = 0.4				Intra-intervention group P < 0.0001; t=-8.7			
Independent T test (Between Groups Comparison)	Before (between control and intervention) P = 0.7; T = 0.27				After(between control and intervention) P < 0.0001; T=-14.8			

Finding also showed higher frequency of exclusive breastfeeding after 4 months in intervention group comparing to control group after intervention ( $p < 0.001$ ) (Table 4).

Table 4

The comparison of inclusive- and exclusive-breastfeeding of two groups of studies before and after intervention

Groups Variables	Before				After			
	Control(n = 38)		Intervention(n = 38)		Control(n = 38)		Intervention(n = 38)	
	n	%	n	%	n	%	n	%
Breast Milk	10	26.3	17	44.7	8	21.1	32	84.2
Powdered milk or livestock	3	7.9	1	2.6	3	7.9	5	13.2
Breast milk with other milks	25	65.8	20	52.6	27	71.1	1	2.6
Chi <sup>2</sup> test	P = 0.2				P < 0.001			

## Discussion

This study showed the effectiveness of the fathers' education on breastfeeding continuity and performance. There are many studies showing the effectiveness of educational interventions on promoting breastfeeding. However, there are a few studies have examined the effects of fathers' education on breastfeeding in Iran. Fathers' support of breastfeeding are found to increase duration of breastfeeding (24).

This study shows that the fathers education improves fathers practice in mothers' encouragement and planning for a successful breastfeeding. Studies should majority of fathers willing to participate in reproductive health and perinatal care including prenatal care, labor and postpartum care as well as in promoting breast feeding, however, many of them do not know the ways of their involvement. Especially, they would like to help mothers for the breastfeeding task (25).

In the present study, fathers learned the ways for their involvement in the breastfeeding. They learnt to help through encouragement of mothers for breastfeeding and planning for an appropriate maternal nutrition. The education was concentrated on men's involvement in the household affairs and looking after other children for decreasing daily tasks of nursing mothers, and so free mothers' time for rest and so preparing them for night feeding of the infant. In this study fathers learnt the ways to encourage and plan to achieve a regular and continuous exclusive breastfeeding. There are many intervention studies to promote men's involvement for improving exclusive breastfeeding (26) A review study documented several other ways to engage men for promoting breastfeeding and showed high-intensity strategies engaged men directly during home or health visits by forming men's groups and by working with male community leaders or members to promote exclusive breastfeeding. Low-intensity strategies included large community meetings that included men, and radio messages, and other behavior change materials

directed towards men (27). Also a study concluded that the most effective breastfeeding support is delivered using a sensitive, coordinated teamwork approach that is responsive to the mother's needs (26).

The results demonstrated that fathers' education improves mothers' breastfeeding performance. It is documented that social support especially the husband support increases self-efficacy in performing health behavior including breastfeeding practice of mothers (14). Also men's education about the involvement in breastfeeding promotion was shown to increase mothers' satisfaction and performance (28). Previous studies demonstrated that the education improves fathers' knowledge and makes a positive attitude towards breast milk (29). Then fathers learnt how to plan and encourage their nursing wife to improve their performance in breastfeeding (30).

Besides this study showed longer continuity in exclusive breastfeeding after the education of fathers. This is inconsistent with results of other studies in Brazil and Turkey that showed father's education increase duration of exclusive breast feeding (29, 31). There are many problems and barriers for continuity of exclusive breastfeeding such as misbeliefs about "inadequacy of milk for infant", "deforming breast shape", "difficulty for breastfeeding in social settings", "difficulty in breastfeeding for employed mothers" (12). The present study attempted to correct these misbeliefs and also the ways to overcome the difficulties in breastfeeding. Also, education about the importance and benefits of breast milk for maternal and infant's health and helps couples for making appropriate decisions (32).

Finding of the present study showed couples' (Men and women) education about breastfeeding can significantly improve exclusive breastfeeding. This effect can be attributed to the importance of fathers' supportive role in primary stages of postnatal period (18, 20). It should be also noted that, male involvement is not only helps to promote maternal-neonatal health but also is a main stage for paternal adaptation (33) and also helps to improve men's health (25). So, maternal-infant health services should be integrated with paternal services and gender based health needs for any society (34).

This study like other experimental studies had a difficulty to prevent drop of subjects during follow up period. The researchers overcame this limitation using continues contact with the participants.

## **Conclusion**

The study documented the effectiveness of fathers' education about the importance and benefits of breast-milk and breastfeeding as well as the ways of planning and encouraging breastfeeding on improvement of mothers' performance and continuity of exclusive breastfeeding.

This intervention could be also effective on maternal- infant physical and mental health as well as on paternal adaptation with paternal roles and also improves their health. So fathers' education to promote male involvement on breastfeeding promotion intervention is strongly recommended to integrate in maternal health services.

## **Abbreviations**

Not applicable

## **Declarations**

### **Ethics approval and consent to participate**

We obtained written informed consent form all study participants. The Shahid Beheshti University of Medical Sciences Research Ethics Committee (SBMU2.REC.1394.162) have approved this study. Participants will be assured that their privacy will be protected using deidentified data for analysis

### **Consent for publication**

Not applicable

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

The study data available by contacting the correspond author of this paper.

### **Competing interests**

The authors declare that they have no competing interests

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### **Authors' contributions**

**FP:** project administration, writing-review and editing, supervision

**MS:** project administration, writing-review and editing, supervision

**FRF:** contributed to the initial draft of the study protocol.

**ML:** Project development, Data Collection, Manuscript writing.

**M R:** Project development, Data Collection, Manuscript writing.

All authors have read and approved the final manuscript.

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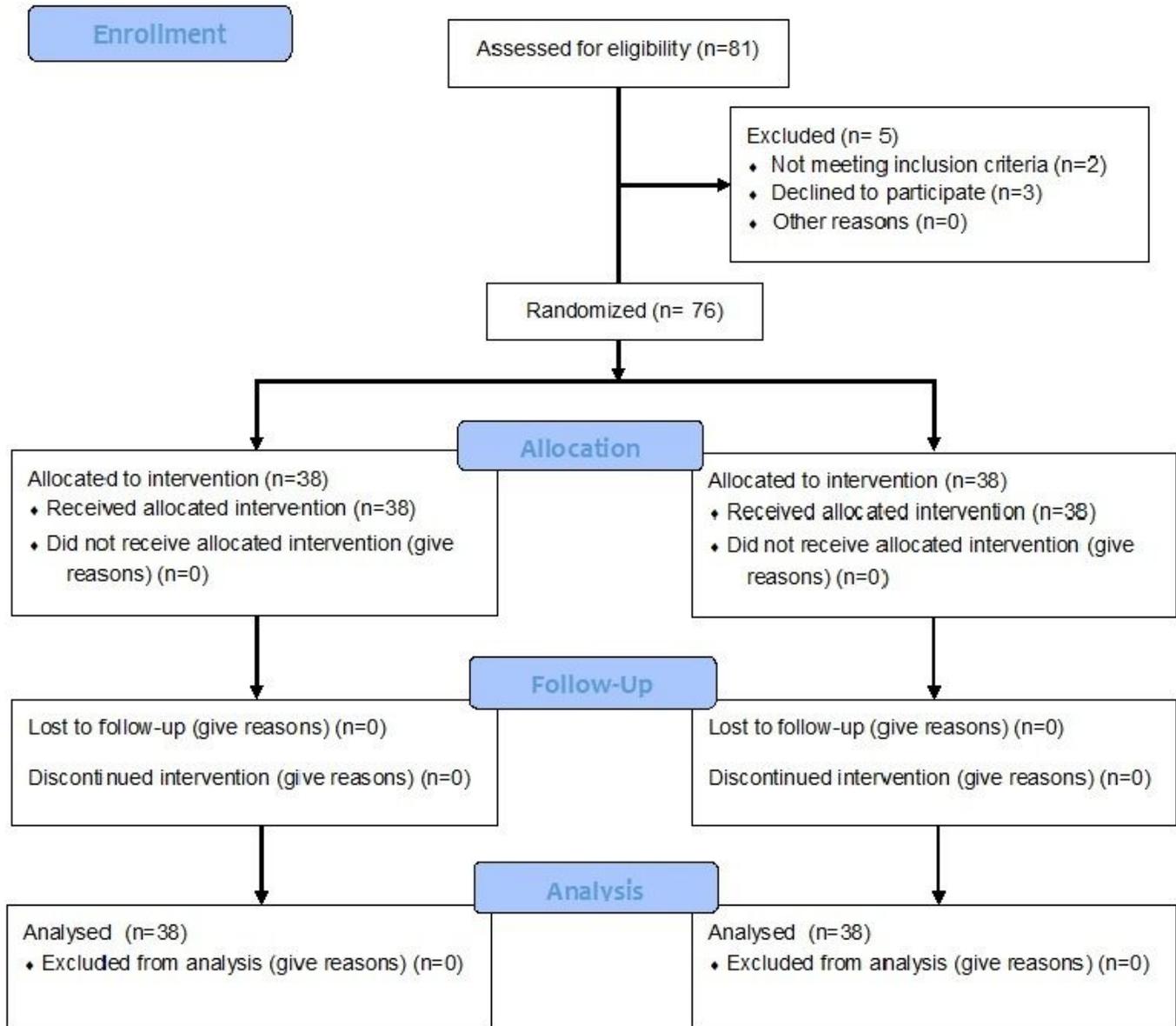
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## Figures



**Figure 1 : The Consort Flow Chart**

**Figure 1**

Flow Chart