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Effects of educational intervention based on childbirth scenarios on fear of childbirth in primiparous women

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Abstract:

BACKGROUND: Fear of childbirth (FOC) is one of the common reasons for choosing cesarean delivery without medical indications. The present study aimed to assess the effect of childbirth scenario-based educational intervention on FOC in primiparous women.

MATERIALS AND METHODS: This study was conducted on 72 primiparous women attending comprehensive health care centers in Qazvin, Iran, in 2021. Participants were randomly placed in the control group ($n = 38$) and the intervention group ($n = 34$). The participants in the intervention group read the booklet of childbirth scenarios once a week for eight weeks. Data were collected using the demographic-fertility questionnaire and the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) before the intervention, eight weeks after the intervention, and the first week after delivery. Data analysis was carried out using independent t -test, Chi-square, Fisher's exact, repeated measures analysis of variance (ANOVA), and analysis of covariance (ANCOVA).

RESULTS: By controlling the FOC scores before the intervention, the mean total FOC scores eight weeks after the intervention and in the first week after delivery in the intervention group were significantly 34 units (95% CI: 27.3–40.7) and 22.9 units (95% CI: 14.6–31.1) lower than the control group respectively ($P < 0.001$).

CONCLUSION: Based on the results, childbirth scenario-based intervention can effectively reduce FOC among primiparous women. Healthcare providers, especially midwives, can benefit from applying childbirth scenario-based intervention in prenatal care to reduce the FOC of pregnant women.

Keywords:

Counseling, fear of childbirth, pregnancy, prenatal care

Introduction

Fear of childbirth (FOC) is an important mental, social, and physiological phenomenon among women.^[1,2] This fear is a natural reaction and indicates protection and safety during childbirth; however, severe FOC can lead to physical and emotional disability.^[3] The FOC prevalence is around 20–25%,^[4] and the global prevalence of severe FOC is estimated at 16%.^[5] This amount is reported to be 10% in Western countries^[6] and about 5–20% in Iranian pregnant women.^[7] According to

various statistics, the etiology of FOC is multifactorial.^[8]

FOC can be due to the mother's fear of pain, loneliness, loss of control, harm to the baby, gynecology and childbirth-related harm, inability to give birth vaginally, insufficient support from care providers, and loss of life of the mother or baby.^[9,10] This fear may lead to adverse perinatal and psychological consequences such as difficult and prolonged childbirth, emotional imbalance, anxiety, aggression, fatigue, sleep deprivation during pregnancy, impaired mother-baby

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relationships, risk of postpartum depression, and posttraumatic stress disorder (PTSD) following childbirth. FOC is often the reason why mothers request an unnecessary cesarean delivery without medical indications.^[11-13] So far, various solutions have been offered to reduce FOC, including pharmaceutical interventions such as epidural anesthesia and nonpharmacological interventions such as face-to-face and online cognitive behavior therapy (CBT), counseling on FOC, childbirth preparation classes, and relaxation techniques.^[14-17] Prenatal education is an important way to reduce the FOC.^[18] Therefore, one of the new and useful strategies for choosing the best delivery method is childbirth scenario-based interventions.^[19]

Childbirth scenarios or stories are narratives that describe women's childbirth experiences in their own words. These stories show different aspects of mothers' experiences, such as pregnancy, preparation for childbirth, labor, and delivery. For some women, childbirth can be a positive and negative experience for others.^[20,21] Usually, these scenarios focus on the first contraction to the delivery.^[22] Expressing childbirth experiences while empowering women makes them aware of all aspects of childbirth. Therefore, childbirth scenarios can be an educational strategy.^[23]

Many studies have been conducted with conflicting results on the effect of educational strategies on FOC.^[24-27] For example, in the study of Khojasteh *et al.*^[28], cognitive behavioral training was able to reduce the FOC in pregnant adolescents. On the other hand, in Nair *et al.*^[24] study, movie training could not reduce this fear. Several studies have emphasized the importance of reviewing scenarios in the education and learning process.^[19,29-32] The results of Rasoli *et al.*^[19] study also indicated the positive effect of reviewing childbirth scenarios on reducing the cesarean delivery rate. Despite extensive searching by the research team, few studies were found using birth scenarios in education and learning for health professionals^[29,31,32] and just one study used birth scenarios for patients.^[19] Therefore, the present study aimed to determine the effect of childbirth scenario-based intervention on the FOC among primiparous women.

Material and Methods

Study Design and Setting

This was a quasi-experimental study using an educational intervention carried out in Qazvin, Iran, in 2021.

Study participants and sampling

Pregnant women attending comprehensive health care centers of Qazvin, Iran, in 2021 were assessed for eligibility using a multistage sampling method (stratified, clustered, and convenience). Inclusion criteria included

being primiparous, having a gestational age between 28–32 weeks, having singleton pregnancy, having literacy, having Iranian citizenship, having consent to participate in the study, having no history of underlying and chronic diseases, no indications for cesarean section, and having no education in medical fields.

To determine the sample size, type I error = 0.05 and type II error = 0.2, power = 0.8 were taken into account. The effect size value ($d = 0.7$) was also selected according to the study of Çankaya and Şimşek^[27] and the researcher's expectation of the practical difference. Taking into account the FOC score and the formula, the sample size was estimated at 33 people in each group. Considering the 20% possible dropout, the final sample size in each group was determined to be 42 people, with total samples ($n = 84$).

Finally, 84 eligible pregnant mothers were included in the study. Out of a total of 84 people, 42 people were placed in the intervention group and 42 people in the control group based on the odd and even number of visit days for consecutive weeks. The control group was not informed about the intervention performed on the intervention group. Finally, data from 34 people in the intervention group and 38 people in the control group were analyzed [Figure 1].

Ethical Considerations

This study was approved by the Research Council and the Ethics Committee of Guilan University of Medical Sciences, Rasht, Iran, (IR.GUMS.REC.1400.171). Explaining the aims of the study, obtaining informed consent from research participants, assuring of the confidentiality of the data, respecting the principle of secrecy, and registering the data without the name, were observed.

Procedure

At baseline, written consent, Version A of the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ), and demographic-fertility questionnaire were completed by all participants. Then, eight positive vaginal childbirth scenarios and three negative cesarean delivery scenarios were given to the intervention group as a booklet. This group received this booklet in addition to the routine prenatal care. It should be noted that considering the general culture, the tendency of pregnant mothers to cesarean delivery, and the rate of cesarean delivery being higher than the international standard in Iran, we sought to make natural childbirth more pleasant in this study. Therefore only positive scenarios related to natural childbirth and negative scenarios related to cesarean section were used in the selection of childbirth scenarios to avoid any advertising and inducing a negative view against vaginal childbirth.

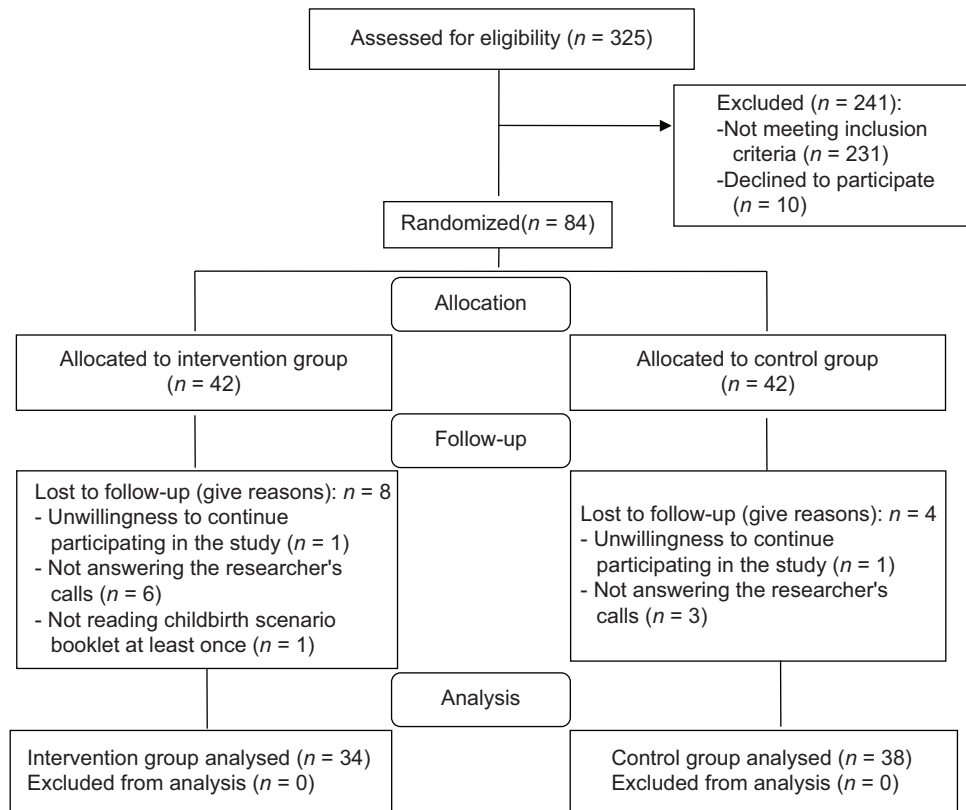


Figure 1: Consort diagram

Childbirth scenarios were collected through qualitative research team interviews with women with a history of vaginal childbirth and cesarean delivery. Women’s experiences were transcribed on paper, and related literature [19], as well as the guidelines for childbirth care for a positive childbirth experience of the World Health Organization (WHO), were used by the researchers.[30] Anonymity was considered by removing names, locations, images, and other content that could identify people. Before the study, eight academic medical experts in reproductive health, midwifery, and nursing confirmed the content validity of prepared childbirth scenarios.

One week after presenting the booklet to the intervention group, they were contacted, and their questions about the conduct of the study were answered. It should be noted that the control group did not receive any interventions. The researcher reminded the intervention group weekly to use the booklet once a week for eight weeks. At the end of each text message, mothers were asked about the conduct of the study using a Yes-No question format. To answer possible questions and respond to any problems, the researcher’s cellphone number was provided to the mothers. After 8 weeks, the A version of W-DEQ was again given to and completed by both groups in the presence of the researcher during their first visit to comprehensive health care centers. It should be noted

that the time of the visit was planned by the researcher and coordinated with the participants. The B version of W-DEQ was completed by both groups during the first week after delivery, which is when the participants were referred to comprehensive health care centers in order to receive postpartum care.[9]

Data Collection Tool and Technique

The data collection instrument included a demographic-fertility questionnaire and W-DEQ. This questionnaire was first designed by Wijma *et al.*[33] in Sweden. This questionnaire consists of two versions. Version A measures the FOC during pregnancy, and version B measures the mothers’ experience after childbirth. The validity of these questionnaires was confirmed in Iran by Mortazavi[9] (2017), and their reliability was also confirmed using internal consistency ($\alpha = 0.914$ and 0.919 for versions A and B, respectively). Both versions of this instrument consist of 33 items that are scored based on a 6-point rating scale. The scores of each item range from 0 to 5. The score of 33 items was added together to calculate the total score. Items 2, 3, 6, 7, 8, 11, 12, 15, 19, 20, 24, 25, 27, and 31 are scored in reverse in these instruments so that in these questions, a lower score indicates a negative perception and feeling and vice versa. The possible score range is also 0 and 165. A higher score indicates greater FOC. The cutoff score is 85, meaning that scores of 85 and above indicate clinical fear. In this study, the validated

version of this questionnaire in Iran was used, which contains six factors: lack of self-efficacy, lack of positive anticipation, loneliness, fear, concerns about losing control, and concerns for the child.

Data collection was carried out in three stages, that is, before the intervention, eight weeks after the childbirth scenario-based educational intervention, and after childbirth.

Data analysis

To compare the intervention and control groups in terms of individual, social, and fertility variables, the independent *t*-test was used for quantitative variables, and the Chi-square test (or Fisher's exact) was used for qualitative variables. The mean FOC score and the scores of its domains were compared before the intervention using the independent *t*-test. The FOC's mean total score and its domains' scores at different periods were compared using repeated measures analysis of variance (ANOVA). The mean total FOC score and its domains' scores were compared after the intervention and the first week after delivery using analysis of covariance (ANCOVA). Besides, Cohen's *d* effect size for independent *t*-test and partial eta squared (η^2p) for repeated measures ANOVA and ANCOVA were reported. η^2p values equal to 0.01–0.06, 0.06–0.14, and >0.14 indicate small, medium, and large effect sizes, respectively. For Cohen's *d*, values of 0.2–0.5, 0.5–0.8, and >0.8 indicate small, medium, and large effect sizes, respectively.^[34] Data were analyzed using SPSS ver. 16. GraphPad Prism ver. 8.0.1 software was also used to draw graphs (the trend of FOC scores). *P* value <0.05 was also considered as the significance level in all tests.

Results

The mean age and gestational age of pregnant women were 28.38 ± 4.86 years and 30.03 ± 1.84 weeks, respectively. Of the 72 women studied, 87.5 and 77.8% had a university education. The husbands of most pregnant women (68.1%) had a university education, and 68.1% were self-employed. A total of 56.9% of participants had relatively sufficient income. There is no statistically significant difference between the intervention and control groups regarding all individual, social, and fertility variables [Table 1].

The independent *t*-test showed that the mean total score of FOC before the intervention was 72.3 ± 23.8 and 63.3 ± 22.3 in the control and intervention groups, respectively, which showed no statistically significant difference between the studied groups in this regard [Table 2].

The results of repeated measures ANOVA showed a statistically significant difference in the total mean

score of FOC in the intervention group at different periods ($P < 0.001$).

The results show that the total mean score of FOC eight weeks after the intervention was significantly lower than the same score in the preintervention phase ($P < 0.001$). The same score in the first week after delivery was significantly lower than that of the preintervention phase ($P = 0.021$). However, the total mean score of FOC was not statistically significantly different eight weeks after the intervention and the first week after delivery [Figure 2].

Moreover, the total mean score of FOC was statistically significant in the control group at the different period ($P < 0.001$); that is, the same score eight weeks after the intervention was significantly higher than that of the preintervention phase ($P < 0.001$), but the total mean score of FOC showed no statistically significant difference before the intervention and the first week after delivery, as well as between eight weeks after the intervention and the first week after delivery [Figure 2].

There was a statistically significant difference between the mean scores of the lack of self-efficacy, loneliness, fear, and concerns about losing control of the intervention group at different periods ($P = 0.018, P < 0.001, P = 0.002, P < 0.001$). However, no statistically significant difference was observed in the score of lack of positive anticipation and concerns for the child. Similarly, there was a statistically significant difference between the mean score of lack of self-efficacy, lack of positive anticipation, loneliness, fear, and concerns about losing control in the control group at different times ($P = 0.042, P = 0.005, P < 0.001, P = 0.014, P = 0.001$). Still, no statistically significant difference was observed in the score of concerns for the child [Figure 3].

ANCOVA was used to investigate the effect of the intervention on FOC. The results show that the mean

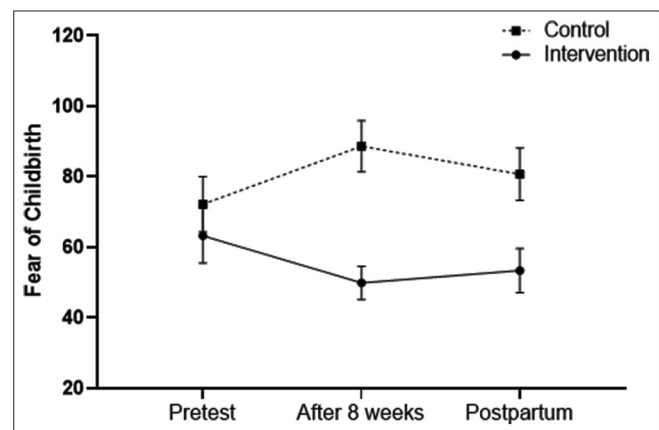


Figure 2: The total mean score of FOC in the intervention and control groups at different periods. FOC = fear of childbirth. Values are shown as "mean with 95% confidence interval"

Table 1: Frequency distribution of individual, social, and fertility characteristics of pregnant women in both groups

Variables	Categories	Total (n=72) Mean (SD*)	Group Mean (SD*)		Test <i>t</i> or χ^2	<i>P</i> -value
			Control (n=38)	Intervention (n=34)		
Age (years)		28.38 (4.86)	27.61 (4.40)	29.24 (5.27)	1.43	0.157 [†]
Gestational age (weeks)		30.03 (1.84)	30.34 (1.85)	29.68 (1.79)	1.55	0.126 [†]
		Frequency (Percentage)	Frequency (Percentage)	Frequency (Percentage)		
Type of pregnancy	Wanted	66 (91.7)	34 (89.5)	32 (94.1)	-	0.677 [§]
	Unwanted	6 (8.3)	4 (10.5)	2 (5.9)		
Job	Housewife	63 (87.5)	32 (84.2)	31 (91.2)	-	0.485 [§]
	Employed	9 (12.5)	6 (15.8)	3 (8.3)		
Education	Nonuniversity	16 (22.2)	7 (18.4)	9 (26.5)	0.67	0.412 [‡]
	University	56 (77.8)	31 (81.6)	25 (73.5)		
Husband's job	Self-employment	49 (68.1)	24 (63.2)	25 (73.5)	0.89	0.346 [‡]
	Employee	23 (31.9)	14 (36.8)	9 (26.5)		
Husband's education	Nonuniversity	23 (31.9)	12 (31.6)	11 (32.4)	0.01	0.944 [‡]
	University	49 (68.1)	26 (68.4)	23 (67.6)		
Economic situation	Relatively sufficient	41 (56.9)	22 (57.9)	19 (55.9)	0.03	0.863 [‡]
	Sufficient	31 (43.1)	16 (42.1)	15 (44.1)		

[†]Independent *t*-test, [‡]Chi-square test, [§]Fisher's exact test. SD=Standard deviation

Table 2: Comparing the mean score of FOC and its factors between two groups at different times

Variables	Group mean (SD)		The difference of the adjusted means ^a (CI 95%)	ANCOVA Results		
	Control	Intervention		<i>F</i> _(1,69)	<i>P</i>	η^2
Total mean score of FOC						
Preintervention	72.3 (23.8)	63.3 (22.3)	-	-	-	-
Eight weeks after the intervention	88.7 (22.0)	49.9 (13.5)	34.0 (27.3,40.7)	102.5	<0.001	0.598
First week after delivery	80.7 (22.6)	53.4 (17.8)	22.9 (14.6,31.1)	30.6	<0.001	0.307
The score of the lack of self-efficacy factor						
Preintervention	21.9 (9.7)	15.9 (8.7)	-	-	-	-
Eight weeks after the intervention	25.4 (8.2)	12.2 (6.3)	9.8 (7.2,12.4)	57.8	<0.001	0.456
First week after delivery	25.1 (8.8)	15.5 (7.6)	7.5 (3.6,11.3)	15.2	<0.001	0.181
The score of the Lack of positive anticipation factor						
Preintervention	3.6 (2.3)	3.4 (3.5)	-	-	-	-
Eight weeks after the intervention	5.3 (2.7)	2.2 (2.1)	3.1 (2.0,4.2)	32.9	<0.001	0.323
First week after delivery	5.6 (3.3)	3.2 (3.3)	2.4 (0.8,4.0)	9.50	0.003	0.121
The score of the Loneliness factor						
Preintervention	14.0 (8.7)	13.9 (8.1)	-	-	-	-
Eight weeks after the Intervention	20.5 (7.6)	10.0 (4.9)	10.4 (8.1,12.7)	81.7	<0.001	0.542
First week after delivery	16.7 (8.9)	8.3 (5.4)	8.3 (5.7,11.0)	39.4	<0.001	0.364
The score of the Fear factor						
Preintervention	15.9 (5.0)	13.4 (5.2)	-	-	-	-
Eight weeks after the intervention	18.1 (4.5)	10.7 (3.4)	6.2 (4.6,7.7)	61.0	<0.001	0.469
First week after delivery	16.7 (4.6)	11.7 (4.3)	3.9 (2.1,5.8)	17.8	<0.001	0.205
The score of the Concerns about losing control factor						
Preintervention	6.2 (3.3)	6.1 (2.7)	-	-	-	-
Eight weeks after the intervention	8.3 (2.9)	4.1 (1.9)	4.1 (3.1,5.1)	66.4	<0.001	0.490
First week after delivery	6.2 (3.5)	3.9 (2.3)	2.2 (0.8,3.6)	9.4	0.003	0.120
The score of the Concerns for the child factor						
Preintervention	8.3 (2.8)	8.6 (2.2)	-	-	-	-
Eight weeks after the intervention	8.4 (1.9)	9.4 (1.2)	-0.9 (-1.5,-0.3)	8.1	0.006	0.105
First week after delivery	7.9 (2.6)	9.1 (2.1)	-1.1 (-2.2,-0.1)	4.3	0.043	0.058

SD=Standard deviation, CI=Confidence Interval; ANCOVA=Analysis of Covariance. ^aAdjusted for preintervention fear of childbirth scores

total FOC scores eight weeks after the intervention in the intervention group were significant after controlling the FOC scores before the intervention, 34 units (95% CI: 27.3–40.7) lower than the control group ($F_{(1,69)} = 102.5, P < 0.001, \eta_p^2 = 0.598$). Also, the mean total FOC

scores in the first week after delivery in the intervention group were significantly 22.9 units (95% CI: 14.6–31.1) lower than the control group after controlling the FOC scores before the intervention ($F_{(1,69)} = 30.6, P < 0.001, \eta_p^2 = 0.307$) [Table 2].

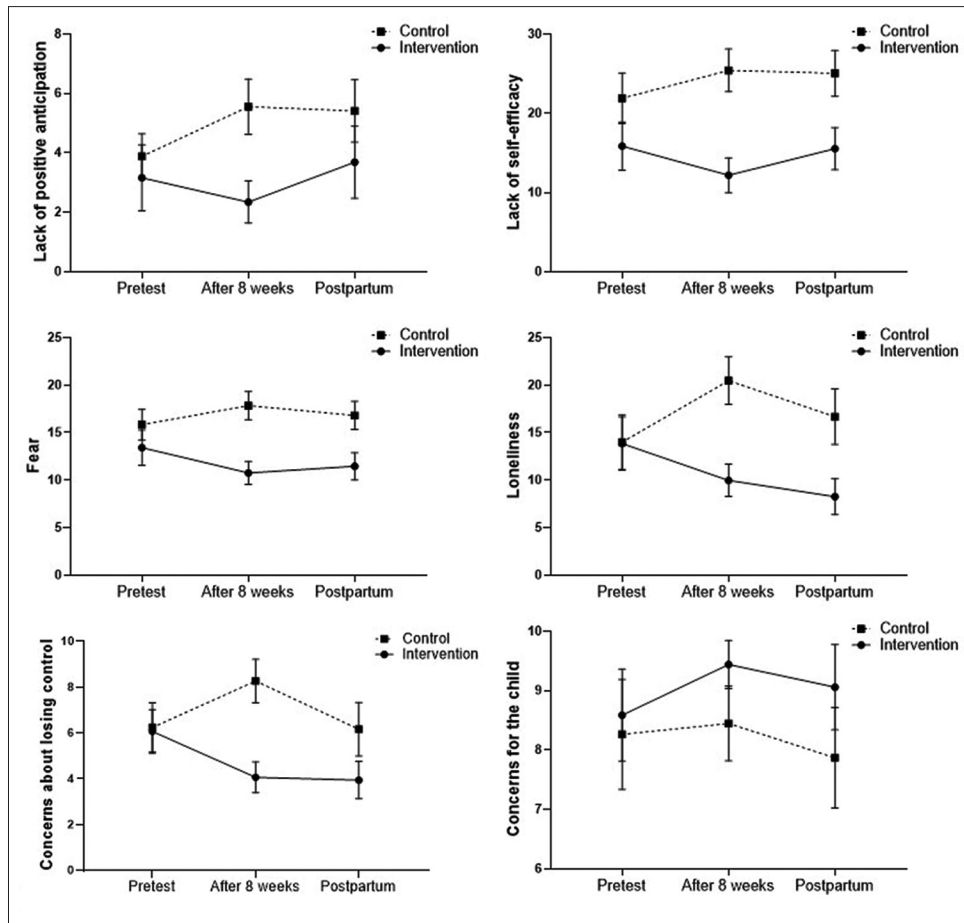


Figure 3: Scores of different factors of the FOC questionnaire in two groups at different periods. FOC = fear of childbirth, Values are shown as “mean with 95% confidence interval”

In the present study, the mean total FOC scores in the factors of lack of self-efficacy ($P < 0.001$), lack of positive anticipation ($P < 0.001$), loneliness ($P < 0.001$), fear ($P < 0.001$) and concerns about losing control ($P < 0.001$) in the intervention group were significantly lower than the control group eight weeks after the intervention by controlling the FOC scores before the intervention. Also, similar results were observed in the first week after delivery. Unlike other factors, the scores of concerns for the child in the intervention group were significantly higher than the control group eight weeks after the intervention ($P = 0.006$). Also, the same scores in the intervention group were significantly higher than the control group in the first week after delivery ($P = 0.043$). In other words, the current intervention has reduced five factors of FOC (lack of self-efficacy, lack of positive anticipation, loneliness, fear, and concerns about losing control) and increased the score of the concerns for the child [Table 2].

Discussion

The results show that the total mean score of FOC eight weeks after the intervention and in the first week after

delivery was significantly lower than the same score in the preintervention phase. This result is consistent with the findings of studies by Mola Mahmudzadeh *et al.*^[35] that showed educational intervention based on role-playing significantly reduces the total score of FOC after the intervention and after childbirth compared to the scores before the intervention. Also, in the study of Khojasteh *et al.*^[28] in 2022, cognitive behavioral training was able to decrease the FOC score in the intervention group by the intragroup comparison.

On the other hand, based on Mehrabadi *et al.* study, which was conducted with the aim of investigating the effect of the intervention based on national childbirth preparation classes on the FOC in pregnant women, The trend of changes in the overall FOC score in the intervention group increased from pretest to posttest and after delivery.^[25] According to the above results, may be the reason for the difference in the results of the studies is related to the type of educational intervention and its content.

Results showed that the mean total FOC scores in the intervention group eight weeks after the intervention and

the first week after childbirth were significantly lower than the control group after controlling the preintervention FOC scores. In other words, childbirth scenario-based educational intervention effectively reduces primiparous women's FOC score, consistent with the findings of studies by Demirci and Simsek that showed prenatal education reduces FOC.^[26] Cankaya and Simsek also found that pregnant women who attended prenatal classes experienced lower FOC.^[27] Firouzan *et al.*^[36] in Zanjan City found midwives can reduce FOC scores through psychoeducational counseling-based intervention. Also, the findings of studies by Andaroon *et al.*^[37] in Mashhad showed that individual counseling program reduces FOC in primiparous women. Rasoli *et al.* showed that childbirth scenarios were a powerful and effective educational method in encouraging primiparous women to have a vaginal delivery. The decreased willingness towards the cesarean section in Rasoli *et al.* study seems to be attributed to the belief in childbirth scenarios. Heroic roles depicted in positive vaginal childbirth scenarios make this type of childbirth achievable and realistic for pregnant mothers. In Rasoli *et al.*^[19] study, the infrastructure of stories helped to induce the truth in women's minds and improve childbirth-related decisions. Although the type of interventions in the present study and the above studies are different, according to the findings, it seems that the role of education in the FOC is undeniable. Therefore, the present study's results are consistent with those of the above studies.

However, the results are inconsistent with the results of some studies. For example, a 16-minute movie was used in Nair *et al.* study to educate pregnant women in the intervention group. The results showed that such training could not reduce FOC.^[24] According to Mehrabadi *et al.*^[25] study, an educational intervention based on national childbirth preparation classes increases FOC. Ryding *et al.*^[38] also reported a relatively more fearful experience of childbirth and postpartum stress symptoms in women who received counseling from trained midwives. This discrepancy in the results of the studies may be attributed to the educational methods and contents used in different studies. Also, new educational approaches and other face-to-face educational methods can be used as assistive methods.

Moreover, these methods can be suitable alternatives to face-to-face prenatal education, especially in critical periods such as epidemics, because they are easily available and carry fewer health risks. Such discrepancy can also be due to the cultural and social differences in the different study populations. In addition, the etiology of FOC is multifactorial.

The results also showed that the current educational intervention had reduced five factors of FOC (lack of

self-efficacy, lack of positive anticipation, loneliness, and concerns about losing control) and increased the child's concerns score. Pregnant women usually have an increased fear of harm to the baby when they are nearing the end of their pregnancy and delivery, which may be attributed to an increase in maternal-fetal attachment in late pregnancy or even after delivery. Vural *et al.* found that the educational intervention led to a decrease in the score of the lack of positive anticipation, loneliness, and concerns about losing control; from this point of view, the result of the present study is somewhat consistent with the study by Vural *et al.*^[39]

Strengths, Limitations, and Recommendations

Given that birth scenarios are often used in qualitative studies, One of the strengths of the present study is the use of childbirth scenario-based educational intervention in a quasi-experimental study. The present study had some limitations. All pregnant women lived in urban areas, so the research subjects may not have the necessary socioeconomic diversity. Also, only primiparous women were included in the research, and multiparous women with previous vaginal delivery experiences were not studied. Moreover, the traumatic impact of negative childbirth scenarios regarding the cesarean section on the personal experiences of women who underwent cesarean delivery during the study process has not been investigated. It is suggested to pay attention to these issues in future studies.

Conclusion

The present study's findings showed that the childbirth scenario-based educational intervention effectively reduces the FOC of primiparous women. Accordingly, midwives, obstetricians, and healthcare providers are recommended to use childbirth scenarios as a component of antenatal education to reduce the FOC in pregnant women, especially primiparous women.

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Conflicts of interest

There are no conflicts of interest.

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