

Evidence Based Care Journal

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The online version of this article can be found at
http://ebcj.mums.ac.ir/article_10069.html

Evidence Based Care Journal 2018 07:63 originally published
online January 2018

DOI: 10.22038/ebcj.2018.27906.1663

Online ISSN: 2008-370X

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Effect of Preparation for Maternal Role Program on Self-esteem of Women Undergoing In-vitro Fertilization

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Received: 27/10/2017
Accepted: 01/01/2018

Evidence Based Care Journal, 7 (4): 63-72

Abstract

Background: Primiparous mothers are likely to lose their sense of value in the absence of maternal skills, and mothers with a history of infertility may suffer from more anxiety and decreased self-esteem than their normal peers do.

Aim: The aim of this study was to determine the effect of a maternal role preparation program on self-esteem of pregnant mothers undergoing in-vitro fertilization (IVF).

Method: This randomized clinical trial was performed at Royan Institute in 2016. Sixty mothers undergoing IVF were assigned to intervention and control groups. The research instrument was a version of Maternal Self-Report Inventory. Before implementing the preparation program, the questionnaires were completed by both groups; then, the given preparation program was held in four sessions for mothers in the intervention group. Immediately after the completion of the program and one month later, both groups took the test again. To analyze the data, t-test, Chi-squared test, and repeated measures analysis of variance (ANOVA) were run in SPSS, version 21.

Results: The mean ages of the intervention and control groups were 32.8 ± 4.3 and 31.4 ± 3.9 years, respectively. Repeated measures ANOVA showed no significant intergroup difference in the mean score of maternal self-esteem before the intervention; however, a significant difference was observed one month post-intervention between the intervention and control groups ($P < 0.001$).

Implications for Practice: The maternal preparation program could enhance maternal self-esteem. Thus, implementing such programs along with providing other infertility care services could contribute to preparation for assuming maternal role.

Keywords: Infertility, In-vitro fertilization, Maternal self-esteem, Preparation program

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Introduction

Assuming maternal role is considered the most remarkable evolutionary event and a challenging and stressful process for a woman (1), which requires acquisition of knowledge and skills, as well as motivation (2). Moreover, psychological and physical changes during pregnancy and problems associated with motherhood can affect mothers' sense of adequacy to face fundamental challenges, hence diminished self-esteem (3).

Of the most important aspects of women's life are motherhood, fertility, and childbearing (4). In contrast to fertility, there is another aspect called infertility, which is defined as failure in childbearing after one year of regular sexual activity without using contraceptive methods (5). Infertility can similarly cause psychological consequences such as anxiety, depression, and sense of guilt in couples. In the meantime, women have lower levels of psychological adjustment (6) because maternal role is considered as a woman's most significant role in many societies and lots of infertility tests and treatments have been presented to resolve this problem, which can increase their anxiety and lower their self-esteem (7).

The prevalence rate of primary infertility in Iran was reported to be 20.2% (8), which is higher than the global average (9). It is also accompanied by the stigma of infertility, failure in reproduction, experience of treatment failure, low self-esteem, marital discord, repeated referrals to medical centers, use of multiple medications and experiencing their complications, frequent tests, and high costs of treatment (10). The onset of infertility treatment is often a difficult decision for couples because it is accompanied by anxiety caused by inability to conceive naturally (6). Such treatments are associated with physical, mental, and financial challenges, such as loss of self-confidence, and consequently, low self-esteem (11).

Given the success of infertility treatment and effectiveness of in-vitro fertilization (IVF), numerous couples make use of this infertility treatment procedure (6), whose success rate is estimated about 25-30% (12). High expectations concerning treatment outcomes can also bring about emotional problems, anxiety, decreased life satisfaction, and lower self-esteem (6). Moreover, stressful treatment through IVF can reduce self-esteem in mothers (13).

Maternal self-esteem refers to a mother's evaluation of her perceptions of pregnancy and childbirth, readiness to accept maternal role, and the ability to accept and care for a baby (14) that can affect mother-infant attachment and acquisition of maternal skills. Moreover, low prenatal self-esteem can have a negative impact on mental and physical health of mothers, neonatal health, and mother-infant attachment (15), and in turn, elevate the likelihood of preterm labor, maternal-fetal harm, reduced functioning, and sense of inadequacy in mothers (16).

Mother's self-esteem in performing her duties is also taken into account as an effective factor in neonatal outcome. As such, higher self-esteem in mothers can facilitate fulfillment of maternal role and feeding of the infant and influence neonatal growth and development, mother-infant attachment, moods, and psychological development of neonates (17). Thus, success in adapting to role change depends on emotional state, level of self-confidence, as well as self-esteem in mothers (15).

In this respect, nurses can play an important role in assisting mothers with their transition to maternal role. Accepting maternal role starts during pregnancy and includes the four stages of commitment, attachment, and readiness (pregnancy); awareness, increased attachment to the baby, learning how to take care of an infant, and physical rehabilitation (2-6 weeks postpartum), transition to a new normal state (two weeks to four months postpartum); and acquisition of maternal identity (about four months) (18). Thus, nurses can teach the required skills and provide knowledge to mothers to prepare and lead them toward a positive pregnancy experience and increased capacity and self-esteem (19).

Given the importance of the first experience of motherhood, numerous studies have been carried out on primiparous mothers (18). These studies examined the relationship between self-esteem in primiparous women and fear of delivery and anxiety (20), compared self-esteem in fertile and infertile women (21), and investigated the link between self-esteem and treatment outcomes in infertile women (22).

According to the review of the related literature, the focus of the existing studies has been on role change and self-esteem in mothers conceived naturally and their comparison with those using assisted reproductive techniques and the related interventions. Considering the review of the relevant studies, there have been no studies conducted domestically or overseas on the effect of maternal role preparation programs on the self-esteem of mothers using IVF. With regards to the challenges first-time mothers encounter, especially those using assisted reproductive techniques, the present clinical trial was performed on pregnant women using assisted reproductive technology of IVF to determine the effect of a preparation program on self-esteem of mothers using IVF.

Methods

This randomized clinical trial was carried out on women undergoing IVF during June–August 2016 at Royan Institute in Tehran, Iran. The subjects were chosen through convenience sampling method. After obtaining the list of mothers using IVF as an assisted reproductive technique from the officials at Royan Institute, the participants were assigned to intervention and control groups using blocked randomization method to create a balance in the number of samples placed in each group. In this sampling method, the block size was selected at random to prevent the disclosure of the last assignment in each block. According to the results of the study by Karamoozian et al. (2013) (23), with a confidence level of 99%, and a test power of 95%, the standard sample size for each group was calculated at 30 considering 20% attrition.

The inclusion criteria were mothers treated with IVF after at least two years of primary infertility, no history of mental illnesses, and a gestational age of 12 to 20 weeks. The exclusion criteria consisted experiencing preterm labor during the study and attending prenatal classes and programs. Eighty-nine patients met our criteria, of whom 45 and 44 people were assigned to the intervention and control groups, respectively. Then, mothers in the intervention group were contacted via telephone call and the content, benefits, and timing of the preparation program were explained to them. Out of the 45 mothers in this group, two of them were traveling during the course, four were working at the time of classes, three women needed complete bed rest according to physician advice, and six mothers could not cooperate due to long-distance commuting to Royan Institute. Therefore, 30 of the mothers in the intervention group were entered into the study. It should be noted that one of the mothers in this group could not participate in one of the sessions of the preparation program; thus, the educational content of the session was explained to her in-person and she was not excluded.

After contacting 44 mothers in the control group, 12 of them refused to attend the research project for various reasons including distance from Royan Institute, physician advice for complete bed rest, and employment. Two others also withdrew from the research project during the second and third stages of questionnaire completion. Eventually, 30 of them remained in the study. None of the mothers in either group experienced premature labor during the study.

The data collection instruments in this study included a demographic characteristics form and Maternal Self-report Inventory (short version).

Validity of the demographic characteristics form, which is a researcher-designed form, was verified by 10 nursing professors. This form included items on age, level of education, household income status, employment status, history of abortion, and presence of pregnancy complications that were completed by mothers.

Maternal Self-report Inventory (short version) was developed by Shea and Tronick (1988) and encompasses 26 items in five subscales of care (6 statements), ability to accept maternal role (8 statements), accepting a baby (3 statements), expected relationship with the infant (3 statements), and prenatal emotions during pregnancy, delivery, and holding the baby for the first time (4 statements) (24). Moreover, 12 items examined maternal self-esteem before delivery and 12 other items measured maternal self-esteem postpartum. In this study, the given scale was used before delivery focusing on two dimensions of ability to accept maternal role and expected interaction with the neonate during pregnancy. Other dimensions of this instrument examined postpartum maternal self-esteem, which were beyond the scope of this study.

The items of the Maternal Self-report Inventory were scored based on a 5-point Likert-type scale (totally false=1 to totally true=5). The minimum and maximum scores of the questionnaire were 12 and 60, respectively, with higher scores indicating higher levels of self-esteem. The questionnaire had high internal and external validity (24). After obtaining permission from the designer of the questionnaire, it was translated by two specialists in English; in doing so, the first translator was aware of the purpose of the questionnaire, while the second translator was blinded to its objectives. The initial translated versions were re-evaluated by another translator skilled in both Persian and English languages, and they were back translated to English. To determine the validity of the final questionnaire, content and face validity were used. After obtaining the insights of 10 nursing, midwifery, and psychiatry professors, content validity was reported appropriate for the entire questionnaire. In their views, this instrument was a standard tool for measuring maternal self-esteem. In the study by Farrow and Blissett (2007) (14), the Cronbach's alpha reliability of this instrument was calculated at 0.846. Furthermore, Cronbach's alpha coefficient in the ability to accept maternal role subscale was 0.88 and it was equal to 0.66 in the subscale of expected

interaction with the newborn during pregnancy. In this study, internal consistency of the questionnaire was assessed by distributing it among 30 mothers ($\alpha=0.73$).

To invite the mothers in the control group we contacted them through telephone calls, and in order to increase their cooperation, the date of filling in the questionnaires was matched with their referral days to Royan Institute for screening and examinations. To prevent any transmission of information between the two groups, the time of presence at the institute in the control group was different from that of the preparation program; thus, the individuals in each group did not know about the existence of the other group. It should be noted that the control group only received the routine care provided at Royan Institute. The intervention group were also invited and informed of the time and place of preparation program sessions by telephone calls. In order to make it possible for all of the mothers of this group to participate in the preparation program, the sessions were held three days a week so that mothers could attend the preparation program sessions on the days they could come to Royan Institute.

On the first session of the preparation program, to perform a needs analysis, the prenatal needs assessment form designed by the researcher was given to the mothers. All the mothers were interested in learning the educational content of the given program. Additionally, the mothers of this group were asked about participation in other educational programs during pregnancy and it was revealed that none of them had taken such classes.

Prior to implementing the preparation program, the data collection instruments were submitted to both groups. For the intervention group, the preparation program was held at Royan Institute in a face-to-face manner for four 2-hour sessions over four weeks in groups of a maximum of 7-8 individuals. The content was presented by the researcher using PowerPoint presentations, lectures, as well as questions and answers. To prevent mothers from getting tired of sitting, a 15-minute break was allotted to reception.

The theoretical framework of this study was based on the concepts of IVF and maternal self-esteem. The content of the sessions (Table 1) was also prepared after a full review of the related sources and articles accompanied by consultation with professors of nursing, midwifery, and psychiatry. Based on the related literature, training the required skills and offering information about prenatal care, fetal attachment, and neonatal care could lead to the acceptance of maternal role and assuage anxiety (25, 26). In addition to face-to-face teaching, the content of the sessions was given to the intervention group in the form of educational pamphlets. Each training session was accompanied by practice, assignments, and an overview of the content of the previous sessions with the cooperation of mothers. Four weeks after completing the first questionnaire, both groups completed the questionnaire again.

Table 1. Content of maternal preparation program sessions

1	Teaching the objectives and content of the preparation program, explaining the process of motherhood via IVF; prenatal care including nutrition, sleep and rest, exercise and physical activity; personal hygiene during pregnancy (proper clothing along with hair, nail, and tooth hygiene), posture correction (correct way of sitting, standing, sleeping, getting up, and picking up objects), consumption of supplements and medications during pregnancy through IVF, pregnancy complications and how to control them, anxiety among parents undergoing IVF as an assisted reproductive technique and its management, as well as practices such as effective breathing pattern and mental imagery
2	Presenting issues on fetal development and necessary care at every stage, fetal attachment and its benefits, maternal-fetal attachment in pregnancies resulting from IVF, teaching fetal attachment-enhancing behaviors, advantages and disadvantages of using IVF as an assisted reproductive technique, and explaining the causes of anxiety in mothers using IVF and its control through progressive muscle relaxation (Jacobson) At the end of the session, relaxation and fetal attachment-enhancing behaviors were practiced; then, the mothers were asked to write down the frequency of relaxation and fetal attachment-enhancing behaviors to increase their attention and recall them.
3	Teaching spousal relationships during pregnancy, sexual relationships during pregnancy, preparation for childbirth (collecting items needed for mother and baby, identification of labor pain, and signs of delivery), baby care (care of the umbilical cord, excretion, bathing, vaccination, baby clothes, ambient temperature, and crying), breastfeeding, growth and development in children, characteristics of infants conceived via IVF, features of parents of IVF babies, causes of anxiety in mothers during infancy, mother-infant attachment and its benefits, maternal attachment to IVF babies, and attachment-enhancing behaviors with the neonate
4	Presenting issues about postpartum care (puerperal care) including care of stitches, bathing, using appropriate clothing, feeding, bowel movements (prevention of constipation and urinary tract infections), regulated sleep and rest time, exercise and physical activity, relationship with partners, postpartum sexual intercourse, and measures taken for frozen embryos to have another child

Prior to the initiation of the study, we obtained informed consent and assured the participants of the confidentiality of the data. In order to observe research ethics, the educational content was provided to the control group in the form of educational pamphlets after completing the final questionnaire. Then, the data were entered into the SPSS, version 21, and analyzed by performing independent t-test, Chi-squared test, and repeated measures analysis of variance (ANOVA) according to the objectives of the study. P-value less than 0.05 was considered statistically significant.

Results

The mean ages of the intervention and control groups were 32.8 ± 4.3 and 31.4 ± 3.9 years, respectively. There was no significant difference between the groups in terms of household income status, level of education, employment status, history of abortion, and presence of pregnancy complications. In this respect, the income status among 17 (56.6%) individuals in the intervention group and 17 (50%) women in the control group was good. The majority of the mothers in the intervention (15 individuals; 50%) and control (18 mothers; 60%) groups had bachelor's degree. Moreover, 17 (56.7%) mothers in the intervention group and 22 (73.3%) women in the control group were housewives. Most people in the intervention (25 individuals; 83.3%) and control (27 individuals; 90%) groups had no history of abortion. It should be noted that the most common pregnancy complication in the intervention (14 people; 46.6%) and control (12 people; 40%) groups was nausea and vomiting (Table 2).

To evaluate the level of maternal self-esteem and the ability to accept maternal role, due to normal distribution of data, the ANOVA test was used, and it was revealed that the mean scores of self-esteem were different in the study groups ($P < 0.001$). Also, the mean scores of maternal self-esteem among the intervention group immediately and one month after the intervention were significantly different from those obtained before the intervention ($P < 0.001$); whereas, such a difference was not observed in the control group ($P = 0.31$). The results of repeated measures ANOVA also revealed that the interaction effect between time and group was significant ($P = 0.007$) suggesting that the difference in the mean scores of maternal self-esteem between the two groups had increased over time and maternal self-esteem was affected by time.

Table 2. Demographic characteristics of mothers in the intervention and control groups

Variable	Intervention group	Control group	P-value
Age			
Mean±standard deviation	32.8±4.3	31.4±3.9	*0.76
Household income status (frequency & percentage)			
Low	2 (6.6)	1 (3.3)	
Moderate	11 (36.6)	14 (46.7)	**0.83
High	17 (56.6)	15 (50)	
Level of education (frequency and percentage)			
Junior high school and high school	10 (33.3)	9 (30)	
Bachelor's degree	15 (50)	18 (60)	**1
Master's degree and higher	5 (16.6)	3 (10)	
Employment status (frequency and percentage)			
Housewife	17 (56.7)	22 (73.3)	**0.14
Employed	13 (43.3)	7 (26.7)	
History of abortion (frequency and percentage)			
Yes	5 (16.6)	3 (10)	**0.50
No	25 (83.3)	27 (90)	
Pregnancy complications (frequency and percentage)			
Nausea and vomiting	14 (46.6)	12 (40)	
Heartburn	6 (20)	4 (13.3)	**0.85
Sleep disorders	2 (6.6)	8 (26.6)	
Nutritional disorders	8 (26.6)	6 (20)	

*independent t-test **Chi-squared test

The ability to accept maternal role and expected interactions with the neonate during pregnancy were two dimensions of maternal self-esteem gauged before delivery. In addition, the mean scores of ability to accept maternal role in the intervention group immediately and one month after the preparation program were significantly different compared with that in pre-intervention stage ($P < 0.001$), while this was not significant in the control group ($P = 0.93$). Moreover, the mean scores of maternal role in the two study groups were significantly different ($P < 0.001$); this value was higher in the intervention group after their participation in the preparation program. Besides, the interaction effect of time and group was significant ($P = 0.003$), such that the score of maternal role acceptance increased over time.

The mean scores of self-esteem dimensions during pregnancy including ability to accept maternal role and expected interactions with the fetus during pregnancy are presented in Table 3. Regarding the relationship between the expected relationship with the neonate during pregnancy, due to the lack of normal data conditions in the groups, the Mann-Whitney test was used immediately and immediately after the intervention to compare the two groups. Also, Friedman test was used to compare the score of the expected relationship with the baby in three times. For compare of times in two by two groups, Wilcoxon's test with Bonferroni's correction was used. The results of this test showed that in the intervention group, there was a significant difference between the score of the expected relationship with the baby before and immediately after the intervention ($P < 0.001$), as well as before the intervention and one month after that ($P = 0.003$). However, there is no significant difference between the score of the expected relationship with the infant immediately after the intervention and one month after that ($P = 0.6$). Also in the control group, there is a significant difference before and immediately after the intervention ($P = 0.004$), before intervention and one month after that ($P < 0.001$). This difference was not observed immediately after the intervention and one month later ($P = 0.28$) (Table 4).

Discussion

The findings of this study showed that maternal self-esteem scores in the intervention group significantly increased after the preparation program relative to those in the control group. The given program also provided the possibility for pregnant mothers to meet other women, focus on their personal needs, reduce their anxiety, and consequently, increase their self-esteem (27).

Following the preparation program, the intervention group showed higher levels of maternal self-esteem. According to Fabian et al. (2005) (25), lack of experience in primiparous mothers,

Table 3. Mean and standard deviation scores of maternal self-esteem and its dimensions

Factor	Groups	Before the intervention	Immediately post-intervention	One month post-intervention	P-value*
Maternal self-esteem	Intervention	35.8±5.8	42.4±3.9	42.5±4	<0.001
	Control	34.4±4.9	36.5±4.3	38.2±3.8	0.31
	Inter-group P-value*		0.001		Interaction effect 0.007
Ability to accept maternal role	Intervention	23.6±4.4	39±2.9	29.1±2.5	<0.001
	Control	22.7±64.2	24.2±4.4	25.7±3.1	0.93
	Inter-group P-value*		0.001		Interaction effect 0.003

*repeated measures ANOVA

Table 4: Mean and standard deviation score of expected relationship with the baby during pregnancy

Factor	Groups	Before the intervention	Immediately post-intervention	One month post-intervention	Intra-group P-value**
Expected relationship with baby	Intervention	12.2±1.9	13.4±1.4	13.4±1.9	<0.001
	Control	11.6±4.2	12.3±1.3	12.5±1.1	<0.001
Inter-group P-value*		0.42	0.008	0.06	

*Mann-Whitney ** Friedman test

stressing over maternal duties, and limited knowledge undermine self-esteem, which was consistent with the results of the present study, that is, insufficient education and lower awareness of mothers in the control group than those in the intervention group resulted in no significant difference in self-esteem mean scores obtained at different stages of the study. Maternal self-esteem is referred to mothers' assessment of their own feelings about pregnancy and childbirth, readiness to accept maternal role, ability to accept the baby and expected interactions, and capability to take care for the neonate (14). In this respect, we examined two dimensions of maternal self-esteem during pregnancy including acceptance of maternal role and expected interactions with the fetus, which are further discussed.

Assuming maternal role in many societies is considered as the most important role of women and it is known as a source of satisfaction for them (7). In a study by Stevenson et al. (2016) (28), concern among mothers using IVF about their ability to take on maternal roles was the most common factor contributing to low self-esteem. According to the study by Ngai et al. (2012) (29), training skills and offering information to women conceived naturally increased their self-esteem, and thereby, improved acceptance of maternal role, which was consistent with the findings of the present study. We found that the ability to accept maternal role in the intervention group was significantly different from that in the control group after holding the maternal preparation program, which was in line with the results of the study by Kordi et al. (26). They suggested that women receiving more information during pregnancy perceived themselves as powerful mothers who could accept maternal role.

However, a number of studies showed that attending training classes during pregnancy had no effects on acceptance of maternal roles (25, 26, 30). The discrepancy between this finding and our results could be attributed to differences in educational contents, as well as training time and methods. Moreover, the study by Mercer (2006) (18) underscored a number of factors, such as cultural differences, focus of training on neonatal care and interactions, as well as inattention to psychological needs of mothers, contributing to failure of educational programs to boost women's ability to accept maternal roles. Thus, the educational content used in the present study was developed with an emphasis on psychological needs of pregnant women using IVF.

In this study, the mean scores of ability to accept maternal role immediately and one month after the intervention were different in both groups, that is, the scores obtained by the intervention group were higher than those of the control group, indicating the effectiveness of the preparation program in promoting the ability to accept maternal roles. Accordingly, it was concluded that the given program could be used as a guide in assisted reproductive centers. Moreover, the results of the study by Alhausen (2008) (31) showed that mothers receiving training related to fetal attachment during pregnancy had higher ability to accept maternal role that was in agreement with the present findings.

The difference between the mean scores of acceptance of maternal role in both groups over time could reflect the impact of time on the ability to accept the maternal role. This result was in line with the findings of the Mercer study (2004) (32), where assuming maternal role was considered as a learnable social-cognitive process that could start during pregnancy and develop over time.

Expected interaction with the baby was another factor affecting maternal self-esteem. Accordingly, mothers who did not care about their relationship with the baby suffered from low self-esteem. It should be noted that mothers communicating with the fetus during pregnancy could feel more satisfied about their maternal role, assume themselves capable of accepting maternal role, and have a better relationship with their newborns (24). This finding was consistent with the present results, in this study, in the intervention group, there was a significant difference between the score of the expected relationship with the baby before and immediately after the intervention, before and one month after the intervention. In addition, the results of the study by Soon et al. (2006) (33) demonstrated that lack of knowledge about childcare and the necessary maternal skills was among the concerns that could lead to reduced self-esteem. Attending prenatal preparation classes can increase mothers' attention to the fetus and improve their mental imagery of their newborns through emphasis on fetal attachment, talking to the fetus, touching the abdomen, and paying attention to fetal movements (34). Interaction with the fetus and positive mental imagery could similarly promote mother and infant health and improve the expected relationship with the baby (35), which is consistent with the results of the present study. In this study, trainings associated with fetal attachment were used to raise the attention of mothers towards the fetus and improve expected interactions with

the baby because mothers having a sense of attachment to their fetus during pregnancy could establish an enjoyable mother-infant relationship (36). It should be borne in mind that mothers with low self-esteem have insufficient ability to take care of their infants and get through the negative experience of becoming a mother (13) because mothers' self-esteem in terms of fulfilling their duties is key to maternal and fetal outcomes (17).

The mean scores of expected interactions with the fetus in the intervention group immediately after the intervention and one month later were high, and they were significantly different from those of the control group. This issue was due to the emphasis of educational contents on interaction with the fetus, mental imagery, and generally teaching maternal-fetal attachment behaviors in the intervention group. These findings were consistent with the results of the investigation by Ji et al. (2010) (37) showing that trained individuals could practice useful health behaviors. Thus, teaching mothers during pregnancy was correlated with increased self-confidence and positive impact on accepting maternal role and expected interactions with the fetus (37). Also, there was a significant difference between the score of the expected relationship with the baby before and immediately after intervention, before and one month after the intervention in the control group; Which was in line with the results of the Brandon study (2009) (38). According to his results, with the passage of time in pregnancy, awareness of the fetus increases and communication with him/her and the concept of the expected relationship with the baby increases. Therefore, in the control group, over time, mothers have more to do with the fetus and have imagined the relationship with him/her, which makes the relationship expected with the fetus a month after the completion of the initial questionnaire.

One of the limitations of the present study was disregarding the mothers' characteristics and moods while filling out the questionnaires, which could have affected the results.

Implications for Practice

The findings of this study showed that the preparation program for assuming maternal role could have a positive impact on self-esteem of mothers undergoing IVF. Therefore, infertility clinics are required to pay attention to prenatal care, maternal self-esteem, and facilitation of motherhood in addition to the treatment of infertility through implementing such programs. Using these studies, nurses working in such centers can provide a positive experience and enhance maternal self-esteem during pregnancy through training skills and raising awareness of mothers. Furthermore, the effect of implementing maternal preparation programs in women using other assisted reproductive techniques needs to be investigated and compared with other studies or other educational methods in future investigations.

Acknowledgments

This study was derived from a Master's thesis as a joint research project between Shahid Beheshti University of Medical Sciences and Royan Institute with the clinical trial code IRCT2017061734592N1. Obtaining permission from the Ethics Committees of Shahid Beheshti School of Nursing and Midwifery and Royan Institute with the code of IR.SBMU.PHNM.1395.534, explaining the research objectives, obtaining informed consent from the participants, explaining the voluntary nature of participation in the study, giving the participants the right to withdraw from the study at any time, as well as maintaining the confidentiality of the data at all the stages were among the main ethical codes observed in this study. We wish to thank the authorities of Shahid Beheshti School of Nursing and Midwifery and Royan Institute and mothers participating in the present study.

Conflicts of Interest

None declared.

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