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Effect of couples' online training on maternal-fetal attachment in pregnant women

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Abstract:

BACKGROUND: Due to the importance of maternal fetal attachment (MFA) in women mental health improvement and considering the fathers' role in MFA promoting, this study conducted to investigate the effect of couple education on maternal fetal attachment.

MATERIALS AND METHOD: This randomized controlled trial was conducted on 100 pregnant women and their husbands referred to six health centers in Sari from May to June 2021. The sampling method was stratified random sampling. Data collection tools included demographic information form and the Cranley MFA Scale with 24 questions. The intervention group took part in four session's weekly training about spouse support, attachment behaviors, and gender preference of parents, while the control group received only the routine antenatal care. Both groups completed Cranley's questionnaire before and 4 weeks after the intervention. Data were analyzed using Chi-square test, Fisher's exact test, paired and independent t-test by SPSS 21.

RESULTS: MFA mean scores, pre-training and post-training in intervention group were 3.27 (0.54) and 3.75 (0.42), respectively; in the control group, were, 3.24 (0.49) and 3.21 (0.48). There was a significant difference between the two groups' MFA mean scores after intervention ($P < 0.001$).

CONCLUSION: The findings of this study revealed that couple training regarding spouse support, attachment behaviors, and gender preference during pregnancy can promotes MFA even online training.

Keywords:

Education, fetus, mother, pregnancy

Introduction

Maternal fetal attachment (MFA) defined "as the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child"^[1] and is manifested in behaviors that represent the care and obligation of the fetus.^[2] Quality of attachment directly affects maternal and fetal health. Women reporting higher MFA during pregnancy had more secure attachment styles, and their children had more optimal early childhood development than those women reporting lower MFA and less secure

attachment styles.^[3] Therefore, considering the psychological issues such as motherfetus attachment during pregnancy is a good predictor for these issues after childbirth.^[4]

The mean level of attachment was 3.55 in a study of Jamshidimanesh (Tehran, Iran),^[5] 3.4 in the study of Mohamadirizi (Mashhad, Iran),^[4] 2.54 in a study of Toosi *et al.* (Shiraz, Iran),^[6] 4.1 in Golmakani and *et al.*' study (Esfahan, Iran),^[7] 3.51 in a study of Alhusen *et al.* (Baltimore, Maryland),^[3] and 3.07 in a study of Bloom.^[8]

Women who enjoy the support of loved ones during pregnancy, especially their husbands,

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feel more able to withstand the pressures and hardships of pregnancy and childbirth.^[9] In addition, there is growing recognition of father's role in creating and strengthening attachment and the need for early identification and intervention and more knowledge about the role of maternal-fetal attachment.^[10-12] Couple-focused prenatal training is more successful if it combines components related to the participation of parents and couple relations such as communication and mutual support. Although there has been a recent focus on father involvement in the study of parenting experiences, research on fathers and their involvement during pregnancy is limited.^[13] Therefore, attending prenatal care provides good opportunities for fathers to play a more positive role in the health of their spouse and child.^[9,14]

A review of studies shows that various interventions have been designed and implemented to enhance attachment including providing child care knowledge to couples^[15] and offering information and training on stress management,^[16] fetal movement counting,^[10] relaxation,^[11] and counseling.^[12] The summarization of the methods used in the conducted researches shows that each of the researches paid partial attention to the attachment promotion factors and none of them addressed this issue by using trainings based on couples. The role of spouse participation in the process of promoting attachment is understudied. It is understandable that most pregnancy research focuses on women, but fathers also need to know how to effectively participate in prenatal care and MFA promotion.^[17]

Few studies focus on the role of the father. It should be noted that the researcher did not find any interventional study based on changing gender attitudes and its effect on the relationship between mother and fetus. In Iran, studies on the role of the father in promoting attachment have been less than in other places. Also in our society, the role of men in the pregnancy process is less. Our emphasis is to investigate the effect of the presence of the husband and his role in prenatal education in order to promote attachment. Due to the lack of studies on couple intervention in promoting maternal attachment and considering the great significance of maternal-fetal attachment in the physical and mental health of pregnant women, the researcher decided couples training in the areas of spouse support, attachment behaviors and gender preference of parents. Therefore, this study aimed to determine the effect of couple online training on maternal fetal attachment.

Materials and Method

Study design and setting

This randomized controlled trial was conducted in Mazandaran University of Medical Sciences in Sari,

northern Iran, from May to June 2021, on 100 pregnant women who were visiting Sari health centers and on their husbands.

Study participants and sampling

Considering a first-type error of 5% and the power of 85%, the sample size in each group was equal to 49 and considering the 10% attrition 55 individuals were assigned to each group.

$$n = \frac{\left(z_{(1-\alpha/2)} + z_{(1-\beta)} \right)^2 \left(\sigma_1^2 + \sigma_2^2 \right)}{\left(\mu_1 - \mu_2 \right)^2}$$

$$= \frac{\left(1.96 + 1.04 \right)^2 \left(10.8^2 + 10.3^2 \right)}{\left(95 - 88.6 \right)^2} = 49$$

(μ_1 =The mean of the control group, μ_2 =The mean of the intervention group, σ_1 = Standard deviation of the control group, σ_2 = Standard deviation of the intervention

group, α =The significance level, $1-\beta$ =power)

The sampling method was stratified random sampling. Allocation of mothers to the intervention and control groups was performed using the allocation sequence produced based on the block method. The intervention group participated training program with their spouses but the control group didn't received any training program.

Because participants entered the study from different centers over time, the method of concealing the allocation sequence was centralized. Thus, the allocation sequence was given to someone outside the research team. When each person entered the study in each center, the person was contacted and asked about the assignment of the person to the suitable group. The person with the sequence determined the group of participants using a central list based on the individual code (the individual code was determined by the order in which they entered the study).

The inclusion criteria were women age between 18 and 40 years, at least primary education, gestational age between 18 and 20 weeks,. In addition, the fathers' inclusion criteria were having literacy for reading and writing, being able to take part in the training classes. The exclusion criteria, on the other hand, comprised of having a history of mental illness, substance abuse, use of psychiatric drugs, having marital problems and conflicts, history of abortion, history of infertility and stillbirth, unwillingness to continue the study, failure to complete the relevant questionnaires in the research stages, and lack of active participation in the organized classes.

All participants completed a demographic information form and the MFA questionnaire and four week after intervention this questionnaire were completed again. In the intervention group, six participants were excluded from the study during the intervention, and in the control group, four participants were excluded from the study due to not completing the questionnaire after the intervention. Finally, the analysis was performed on data from 49 people in the intervention group and 51 people in the control group [Figure 1].

Data collection tools and technique

Demographic information form was used to obtain personal and pregnancy information and the Cranley's maternal-fetal attachment questionnaire was used to assess the average attachment.

The Cranley's Maternal-Fetal Attachment Questionnaire was developed by Mecca Cranley.^[11] in 1981 and has 24 questions rated from one to five (i.e., definitely yes 5, yes 4, not sure 3, no 2, definitely no 1). Only in the case of item 22, the scoring is reversed (i.e., definitely yes 1, yes 2, not sure 3, no 4, definitely no 5). The average score is obtained by dividing the total score by the number of items. The total scores ranged from 24 to 120, the average attachment score is in the range of 1 to 5 points and Higher total or mean scores indicate higher levels of maternal-fetal attachment.^[18] Content validity was used to establish the validity of the Demographic information form and its reliability was confirmed by retesting ($r = 0.9$). MFA questionnaire was first translated into Persian by Abasi *et al.*^[19] and its validity was approved through content validity. Maternal fetal attachment scale is a standard questionnaire that has

been widely used in Iran and measures the MFA Score in pregnant women. To evaluate the reliability of this scale, it was completed by 10 pregnant mothers and confirmed with Cronbach's alpha of 80%.

In this study, the presence of couple in prenatal training program was considered as an intervention. Content of training developed through an extensive review of the existing literature and using valid sources and global guidelines.^[20-23] Then, the validity of the educational content was confirmed by a group of experts, including a psychiatrist, a psychologist, and a reproductive health specialist. Contents of the sessions was given in Table 1.

Due to the prevalence of COVID-19 and the prohibition of gatherings, especially for pregnant mothers, the cyberspace was used to send the questionnaires and educate the couples. WhatsApp is chosen because of its popularity and ease of use and participants' preference to learn.

The intervention group was divided into five groups of 11 couples. Training materials were provided to people through WhatsApp and in the form of voice. For this purpose, the intervention group received four 30-minute training voices through WhatsApp during 4 weeks, and it was recommended to perform a series of behaviors related to the content of each session to provide their feedback in the next meeting with the coordination of the group members, one hour per week was dedicated to discussing the training materials. The participants' questions were also answered via text messages or phone calls. Textual behavioral recommendations were placed in the WhatsApp group for further emphasis. From the second session onwards, the mothers were asked about their spouses' behaviors, and the feedbacks were reviewed.

The intervention was performed by a PhD student in reproductive health accompanied by a psychologist.

Descriptive statistics including frequency, mean, and standard deviation tables were used to express the characteristics of the research units. Independent t-test was used to evaluate the homogeneity of the two groups in terms of quantitative variables and Chi-square and Fisher's exact test were for qualitative variables. The normality of the outcome was examined. Independent t-test was used to compare the two groups before and after the intervention. In all tests, a 95% confidence interval, and a significance level of $\alpha = 0.05$ were considered. SPSS version 21 was used to analyze the data. The data analyst was unaware of the division of individuals into two groups.

Ethical considerations

The study protocol was approved by the Iranian Registry of Clinical Trials with the code IRCT20210329050788N1.

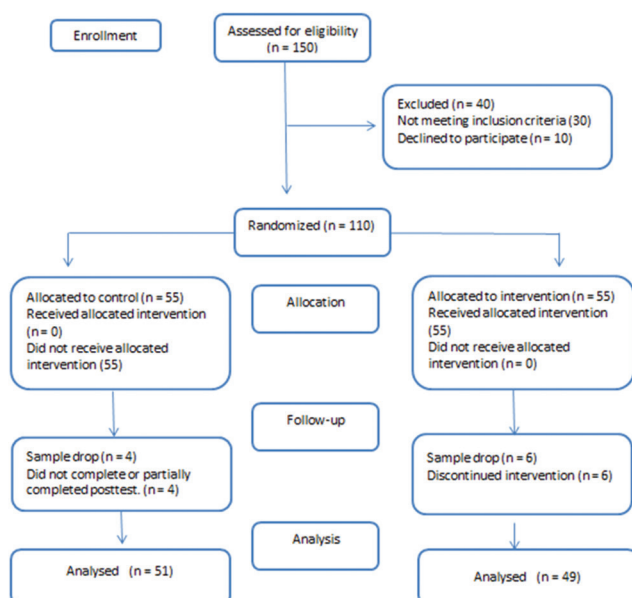


Figure 1: Flow chart of recruiting participants

Table 1: A summary of the educational program sessions' content

Educational session	Educational content								
First session (90 Min)	Teaching about playing the fathering role How to support a pregnant spouse and advise you on practicing these behaviors: talk more with your spouse, help with the cooking and housework, carry heavy purchases, pay attention to your spouse's physical problems, accompany your spouse during a doctor's visit and while having an ultrasound, attention to the spouse nutrition, having daily walks together, going on small trips, accompanying the wife in buying baby supplies, accompanying the wife during hospitalization, and if possible, being present with the wife during delivery								
Second session (90 Min)	Fetal attachment and attachment behaviors								
Third session (90 Min)	Educating the spouse about ways to increase attachment and recommend practicing these behaviors Ways of the father's communication with the fetus: calling the fetus by the name chosen by the parents, talking to the fetus, caressing the wife's belly by the husband, expressing interest in the fetus Parents' gender preferences and its causes Factors affecting sexual preferences A) Historical and socio-cultural dimensions B) Demographic and psychological dimensions (age, education, religious beliefs, beliefs, attitudes, etc.) C) Assignment: Advantages and disadvantages of having gender preference								
	<table border="1"> <thead> <tr> <th>Advantages</th> <th>Disadvantages</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>2</td> </tr> <tr> <td>3</td> <td>3</td> </tr> </tbody> </table>	Advantages	Disadvantages	1	1	2	2	3	3
Advantages	Disadvantages								
1	1								
2	2								
3	3								
Fourth session (90 Min)	Explaining gender preferences and its psychological and social consequences to inform couples Analysis of the answers given about the disadvantages and advantages of gender preference A) Social consequences B) Demographic consequences C) Psychological consequences								

This study was also approved by the Ethics Committee of Shahrood University of Medical Sciences with the code of ethics IR.SHMU.REC.1398.019. The participants were informed of the objectives of the study, confidentiality of the data, and the right to withdraw from the study at any time during the study, and a written consent was obtained from them.

Results

There was no significant difference between the two groups in personal and pregnancy characteristics at the baseline [Table 2]. The mean age of mothers in the intervention group was 27.84 ± 5.07 years, and in the control group it was 27.65 ± 5.157 years. Mothers in the two groups were not significantly different in terms of age ($p = 0.814$). Also, there was no significant difference between the two groups in terms of fathers' age ($p = 0.438$).

Regarding the changes in maternal-fetal attachment, considering that the assumption of normality was significant for the data at the error level of 0.05, independent and paired *t*-tests were used for inter and intragroup comparisons.

The results exhibited no significant difference between the control and intervention groups at the pretest stage such that the mean of the intervention group was 3.27 and the mean of the control group was 3.24. After the

intervention, a significant increase was observed in the experimental group, but in the control group no significant difference was observed compared to the pre-intervention stage. Also, after the intervention, there was a difference between the two groups in terms of attachment level [$P < 0.001$; Table 3].

Discussion

This study was aimed at determining the effect of couple education on maternal-fetal attachment.

The results showed that the maternal-fetal attachment in the intervention group increased significantly compared to the control group.

Similar to the present study, the study of Akbarzadeh *et al.* indicated that teaching attachment behaviors to fathers increased maternal-fetal attachment.^[17] In their study, only the effect of attachment behaviors by the spouse was measured, while in the present study with a cognitive-behavioral approach, couples were trained and in addition to attachment behaviors, also considered the supportive aspects of the spouse and the couple's gender attitude. Contrary to their study, our training has been online. The joint results of the two studies show that training fathers and involving them in the process of pregnancy and attachment is effective and increases the mother's attachment to the fetus.

Table 2: Examining the homogeneity of the two groups in terms of demographic characteristics

Variable	Item	Intervention <i>n</i> =49		Control <i>n</i> =51		Significance level
		Frequency	Percentage	Frequency	Percentage	
Mother's education	Below Diploma	7	14.3	6	11.8	0.991
	Diploma	22	44.9	22	43.1	
	Associate's degree	4	8.2	5	9.8	
	Bachelor's degree	11	22.4	12	23.5	
	Master's degree and above	5	10.2	6	11.8	
Spouse education	Below Diploma	14	28.6	7	13.7	0.173
	Diploma	17	34.7	16	31.4	
	Associate's degree	3	6.1	10	19.6	
	Bachelor's degree	10	20.4	12	35.5	
	Master's degree and above	5	10.2	51	11.8	
Employment status	Employed	10	20.4	10	19.6	0.920
	Housewife	39	79.6	41	80.4	
Average family income	Insufficient	21	42.9	20	39.2	0.924
	Sufficient	23	46.9	25	49.0	
	More than sufficient	5	10.2	6	11.8	
Duration of marriage in years	Under 5	26	53.1	22	43.1	0.321
	Over 5	23	46.9	29	56.9	
Pregnancy	Wanted	39	79.6	41	80.4	0.920
	Unwanted	10	20.4	10	19.6	
Predicted sex	Boy	25	51.0	26	51.0	0.997
	Girl	24	49.0	25	49.0	
The predicted sex agrees with your desire	Yes	39	77.6	40	78.4	0.915
	No	11	22.4	11	21.6	
The predicted sex agrees with the desire of the spouse	Yes	38	77.6	39	76.5	0.895
	No	11	22.4	12	23.5	
Satisfaction with married life	High	30	61.2	31	60.8	0.988
	Somewhat	10	20.4	11	21.6	
	Low	9	18.4	9	17.6	

Table 3: Comparison of the mean MFA score, before and after intervention in two groups

Statistical index	Intervention <i>n</i> =49 <i>M</i> ± <i>SD</i>	Control <i>n</i> =51 <i>M</i> ± <i>SD</i>	Independent <i>t</i> -test
Before intervention	3.27±0.54	3.24±0.49	<i>t</i> =0.28; <i>P</i> =0.78
After intervention	3.75±0.42	3.21±0.48	<i>t</i> =5.921; <i>P</i> <0.001
Paired <i>t</i> -test	<i>t</i> =9; <i>P</i> <0.001	<i>t</i> =1.59; <i>P</i> =0.118	
Difference before and after	0.47±0.37	-0.02±0.12	<i>T</i> =9.18; <i>P</i> <0.001

The results of the study by Minseon Koh (2021) showed that a couple-centered antenatal education program seems to be effective for couples adjusting to parenthood. Similar to our study, after the program, both the pregnant women and their husbands showed significant improvements in attachment to the fetus. Their program had two main content areas: adaptation of the couple relationship and becoming parents for couples. The content on couple-relationship adaptation included emotional intimacy, support, respect, empathy, gratitude, and emotional exchange between couples from pregnancy to the postpartum period.^[24] Common aspects of training in their study and ours were performing attachment behaviors as well as support and empathy during pregnancy.

The joint results of the two studies emphasize the importance of the presence of the spouse in the pregnancy

process. In confirming the result of this part of the study, Cheng study also showed that the partner support may be an important and potentially modifiable target for the interventions to improve pregnancy outcomes.^[25]

In a study, Mullany *et al.*^[26] examined the impact of prenatal education in the three groups of mothers alone, mothers and their spouses, and controls. Compared to the control group women, women educated with husbands increased their knowledge scores by an average of 0.61 points (95% CI = 0.32–0.89, *P* < 0.001), while women educated alone increased their scores by only 0.34 points (95% CI = 0.04–0.65, *P* < 0.05). That is, the mother learns more information when she is educated along with her husband which can be a confirmation of the results of our study.

In the study of Azough *et al.*,^[27] the cognitive-behavioral education program increased maternal-fetal attachment

in mothers with a history of stillbirth. The content of their training program included the psychological dimensions of pregnancy, normal physiology of pregnancy, and coping strategies of pregnancy after stillbirth.

Our intervention approach was similar to that of Azough *et al.* But our training content was different from the training content of their study. We trained the couples, and our goal was more to involve the spouse in the pregnancy. Another difference was that the mothers had a history of stillbirth in their study.

Also, the results of the Abiodun study, entitled "The Role of the Male Sexual Partner in Pregnancy," showed that the majority (80.8%) of participants tended to have their sexual partners educated before birth. Priority topics for discussion by participants in that study comprised of the impact of pregnancy on women and the need for sexual partner's support during pregnancy.^[28] Aguiar emphasizes in a systematic review the importance of supporting the partner during pregnancy and accompanying her in prenatal care. Given such positive effects, he argues, developing men's support programs may be an effective strategy for improving women's knowledge and using skilled care during childbirth and the postpartum period.^[29]

Both studies justify the results of our study; we also considered the importance of spouse support in our intervention and taught the supportive aspects of the mother which was effective in promoting attachment.

Another aspect addressed in the educational content of the present study was the gender preference of the parents. No intervention was found in the field of education on gender preference in pregnancy. However, the results of various studies have shown that the sex of the fetus is one of parents' concerns during pregnancy. In the Wu study of both mothers and fathers, those who did not know the sex of the fetus were more attached to their fetus at 37 weeks of age than those who knew the sex of their fetus.^[30] The results of these studies, in agreement with our results, show that interventions in the form of training and behavioral advice with the presence of couples can increase maternal motivation and facilitate health behaviors on the part of the mother which boosts maternal-fetal attachment.

Limitation and suggestion

One of the strengths of this study is the participation of spouses in the pregnancy process with his wife which is one of the goals of reproductive health and can increase men's sense of responsibility towards their pregnant wives and fetuses. It should be noted that because men are engaged in work and the possibility of attending pregnancy classes is less, they welcomed the formation

of training classes in a virtual way. One of the limitations of this study was that it was not possible to blind the participants. Another limitation was that face-to-face training was not possible due to the COVID-19 pandemic.

Conclusion

The findings of this study revealed that the presence of the spouse in prenatal educational classes and his support during pregnancy promotes the mother's attachment to the fetus. To seriously emphasize the need for male partners to participate in reproductive health issues, it is necessary to review the reproductive health policies. Men should play a more active role in the design and implementation of maternal health services. Therefore, it is crucial to add this content to the routine pregnancy training courses and to develop special sessions for fathers to promote the health of the mother and the fetus.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Authors contribution

All authors: Contribution and met the four criteria for authorship recommended by the international committee of medical journal editors. All authors: Reviewing and approval.

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Conflicts of interest

There are no conflicts of interest.

References

1. Cranley MS. Development of a tool for the measurement of maternal attachment during pregnancy. *Nurs Res* 1981;30:281-4.
2. Salisbury A, Law K, LaGasse L, Lester B. Maternal-fetal attachment. *Jama*. 2003;289(13):1701.
3. Alhusen JL, Hayat MJ, Gross D. A longitudinal study of maternal attachment and infant developmental outcomes. *Arch Womens Ment Health* 2013;16:521-9.

4. Mohamadirizi S, Kordi M. The relationship between multi-dimensional self-compassion and fetal-maternal attachment in prenatal period in referred women to Mashhad Health Center. *J Educ Health Promot* 2016;5:21. doi: 10.4103/2277-9531.184550.
5. Jamshidimanesh M, Astaraki L, Moghadam ZB, Taghizadeh Z, Haghani H. Maternal-fetal attachment and its associated factors. *Hayat* 2012;18:33-45.
6. Toosi M, Akbarzadeh M, Ghaemi Z. The effect of relaxation on mother's anxiety and maternal-fetal attachment in primiparous IVF mothers. *J Natl Med Assoc* 2017;109:164-71.
7. Golmakani N, Gholami M, Shaghghi F, Safinejad H, Kamali Z, Mohebbi-Dehnavi Z. Relationship between fear of childbirth and the sense of cohesion with the attachment of pregnant mothers to the fetus. *J Educ Health Promot* 2020;9:261. doi: 10.4103/jehp.jehp_46_20.
8. Bloom KC. Perceived relationship with the father of the baby and maternal attachment in adolescents. *J Obstet Gynecol Neonatal Nurs* 1998;27:420-30.
9. Mortazavi F, Mirzaii K. Concerns and expectations towards husband's involvement in prenatal and intrapartum cares: A qualitative study. *Payesh*, 2012; 11(1): 51-63
10. Salehi K, Salehi Z, Shaali M. The effect of education of fetal movement counting on maternal-fetal attachment in the pregnant women: A randomized controlled clinical trial. *Int J Pediatr* 2017;5:4699-706.
11. Toosi M, Akbarzadeh M, Sharif F, Zare N. The reduction of anxiety and improved maternal attachment to fetuses and neonates by relaxation training in primigravida women. *Womens Health Bull* 2014;1:1-6.
12. Jangjoo S, Lotfi R, Assareh M, Kabir K. Effect of counselling on maternal-fetal attachment in unwanted pregnancy: A randomised controlled trial. *J Reprod Infant Psychol* 2021;39:225-35.
13. Eddy BP, Fife ST. Active husband involvement during pregnancy: A grounded theory. *Fam Relat* 2021;70:1222-37.
14. Finnbogadóttir H, Svalenius EC, Persson EK. Expectant first-time fathers' experiences of pregnancy. *Midwifery* 2003;19:96-105.
15. Bryan AA. Enhancing parent-child interaction with a prenatal couple intervention. *MCN Am J Matern Child Nurs* 2000;25:139-45.
16. Schachman K, Lee RK, Lederma RP. Baby boot camp: Facilitating maternal role adaptation in military wives. *Nurs Res* 2004;53:107-15.
17. Akbarzade M, Setodeh S, Sharif F, Zare N. The effect of fathers' training regarding attachment skills on maternal-fetal attachments among primigravida women: A randomized controlled trial. *Int J Community Based Nurs Midwifery* 2014;2:259-67.
18. Lindgren K. Relationships among maternal-fetal attachment, prenatal depression, and health practices in pregnancy. *Res Nursing Health* 2001;24:203-17.
19. Abasi E, Tafazzoli M, Esmaily H, Hasanabadi H. The effect of maternal-fetal attachment education on maternal mental health. *Turk J Med Sci* 2013;43:815-20.
20. Brotherson S, Garden-Robinson J. *Bright Beginnings# 3 Steps Toward a Healthy Pregnancy for You and Your Baby*. 2007. file:///C:/Users/SE7EN/Downloads/fs610.pdf.
21. Miranda V, Dahlberg J, Andersson G. Parents' preferences for sex of children in Sweden: Attitudes and outcomes. *Popul Res Policy Rev* 2018;37:443-59.
22. World Health Organization. Preventing gender-biased sex selection: An interagency statement-OHCHR, UNFPA, UNICEF, UN Women and WHO. World Health Organization; 2011. Available from: <https://apps.who.int/iris/handle/10665/44577>.
23. Kiasalar M, Madadi Taimah Z. *Self-Care Week by Week of Pregnancy, Family Self-Care Guide* (4). 2nd ed. Tehran: Parsai Salamat; 2016.
24. Koh M, Kim J, Yoo H, Kim SA, Ahn S. Development and application of a couple-centered antenatal education program in Korea. *Korean J Women Health Nurs* 2021;27:141-52.
25. Cheng ER, Rifas-Shiman SL, Perkins ME, Rich-Edwards JW, Gillman MW, Wright R, et al. The influence of antenatal partner support on pregnancy outcomes. *J Womens Health* 2016;25:672-9.
26. Mullany BC, Lakhey B, Shrestha D, Hindin MJ, Becker S. Impact of husbands' participation in antenatal health education services on maternal health knowledge. *JNMA J Nepal Med Assoc* 2009;48:28-34.
27. Azogh M, Shakiba M, Navidian A. The effect of cognitive behavioral training on maternal-fetal attachment in subsequent pregnancy following still birth. *Hayat* 2018;24: 71-83
28. Adeniran AS, Aboyeji AP, Fawole AA, Balogun OR, Adesina KT, Adeniran PI. Male Partner's role during pregnancy, labour and delivery: Expectations of pregnant women in Nigeria. *Int J Health Sci* 2015;9:305-13.
29. Aguiar C, Jennings L. Impact of male partner antenatal accompaniment on perinatal health outcomes in developing countries: A systematic literature review. *Matern Child Health J* 2015;19:2012-9.
30. Wu JHL, Eichmann MA. Fetal sex identification and prenatal bonding. *Psychol Rep* 1988;63:199-202.