

The Effect of Paternal-Fetal Attachment Training on Marital Satisfaction during Pregnancy

Ashraf Nosrati (MSc)¹, Kobra Mirzakhani (MSc)^{2*}, Nahid Golmakani (MSc)³, Seyyed Mohsen Asghari Nekah (PhD)⁴, Habibollah Esmaeili (PhD)⁵

¹ MSc in Consultation on Midwifery, Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

² PhD Student in Reproductive Health, Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

³ Assistant Professor, Evidence-Based Care Research Centre, Mashhad University of Medical Sciences, Mashhad, Iran

⁴ Assistant Professor, Department of Educational Sciences, School of Educational Sciences and Psychology, Ferdowsi University of Mashhad, Mashhad, Iran

⁵ Associate Professor, Department of Biostatistics and Epidemiology, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran

ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: Marital satisfaction during pregnancy is one of the factors affecting marital affectional bond. This study was performed to evaluate the effect of paternal-fetal attachment training on marital satisfaction during pregnancy.</p>
<p><i>Article History:</i> Received: 29-Sep-2016 Accepted: 05-Mar-2016</p>	<p>Methods: This clinical trial was conducted on 60 couples referring to two health centers of Mashhad, Iran, in 2015. The couples were randomly divided into intervention and control groups (n=30 couples in each group). The fathers in the intervention group participated in three 120-minute sessions of paternal-fetal attachment training and the mothers in both groups (intervention and control) received the routine prenatal care. Both groups were evaluated using Marital Satisfaction questionnaire of Nathan H Azarin before and three weeks after the intervention. To analyze the data, descriptive statistics, t-test, Chi-square test, Wilcoxon, Mann-Whitney U test, and analysis of covariance were performed using SPSS, version 22.</p>
<p><i>Key words:</i> Marital satisfaction Paternal-fetal attachment Pregnancy Training</p>	<p>Results: The mean score of marital satisfaction in men was significantly higher in the intervention group than the control group (P=0.003). The mean score of women's marital satisfaction in the intervention group increased after training from 62.63±2.58 to 66.50±2.43. However, there was no significant difference between two groups in terms of women's mean score of marital satisfaction (P=0.083).</p> <p>Conclusion: Paternal-fetal attachment training promoted marital satisfaction in men during pregnancy, so it is suggested to hold training programs for couples during pregnancy to enhance their marital satisfaction.</p>

► Please cite this paper as:

Nosrati A, Mirzakhani K, Golmakani N, Asghari Nekah SM, Esmaeili H. The Effect of Paternal-Fetal Attachment Training on Marital Satisfaction during Pregnancy. Journal of Midwifery and Reproductive Health. 2018; 6(1): 1132-1140. DOI: 10.22038/JMRH.2017.9230

Introduction

Marital satisfaction is a condition in which couples feel happy from being with each other (1). Marital satisfaction is a key factor in sustainability and maintenance of marital bond (2). During the recent decades, feelings of security, serenity, and intimacy among couples have become blurred and the prevalence of marital dissatisfaction has grown. Couples' dissatisfaction in marital life is usually due to

shortage of appropriate communication skills (3). Marital satisfaction can vary in different life stages, but it is of remarkable significance during pregnancy as it is undoubtedly one of the most important events of every woman's life (4).

During pregnancy, some alterations may occur in self-image, beliefs and values, priorities, behavioral patterns, social networks, and problem-solving skills. In addition, physical

* Corresponding author: Kobra Mirzakhani, PhD Student in Reproductive Health, Department of Midwifery, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran. Tel: 05138591511; Email: mirzaxhanik@mums.ac.ir

problems, depression, isolation, anxiety, fear, emotional instability, duality of feelings, and sexual dysfunction that occur following pregnancy are the factors undermining marital satisfaction in this period (5). According to the results of studies by Mangeli (2007) and Boyce (2007), marital satisfaction of couples diminished during pregnancy (6, 7). Salehi and Mehralian reported that the prevalence of domestic violence, including physical, psychological, physical, and sexual, during pregnancy was as high as 67% (8).

Disruption of marital relationship and lack of attachment to the family environment can increase anxiety, avoidance of pregnancy, and subsequently, deteriorating pregnant woman's mental health (9). Spouse violence is one of the factors that can give rise to reduced marital quality and attachment, preterm delivery, and postpartum depression (10, 11). Pregnancy is a good time to establish a harmonious relationship between couples. Therefore, efforts to involve men in women's health affairs can affect the quality of marital relationship (12).

Fatherhood is one of the most enjoyable experiences and a milestone in marital relationship. An expectant father experiences fundamental changes in his life and is gradually becoming prepared to accept paternal role (13). One of the effective factors in accepting paternal identity is the attachment behavior of the father to the fetus during his wife's pregnancy (14). As of yet, most attachment studies have examined child-parent attachment, but in recent years, a number of studies have been undertaken evaluating parent-child attachment (15). Paternal-fetal attachment is a subjective feeling of love and affection to the unborn child that is considered as the basis of paternal identity (10).

According to Cranley, fetal attachment involves actions that indicate interaction with the unborn child. Cranley explored parent-fetal attachment behaviors from different dimensions and divided them into five subgroups, including interacting with fetus, distinguishing between oneself and fetus, attributing specific characteristics to fetus, self-sacrifice, and accepting parental role. He claimed that behaviors such as talking to the fetus and touching the abdomen to feel the movements of the fetus are part of the attachment behaviors (16).

Fathers with their presence in prenatal care, in addition to influencing the health of mother and child, become prepared to adapt to their new role as a parent (17). According to the results obtained by Condon et al. (2004), impaired quality of paternal-fetal attachment, in addition to the direct impact on maternal-fetal attachment (18), is accompanied by high risk of behavioral and emotional problems in the children at the age of 3.5 years (19). Likewise, Weaver et al. (1983) illustrated a significant relationship between paternal-fetal attachment and marital satisfaction (20), while the results of Mercer et al. (1988) refuted this relationship (21). The results of Deave et al. (2008) also demonstrated that couples have limited information as to the natural changes during pregnancy, the special care of this period, the mechanism of transition to parental role, and alterations in marital relationship (22).

Fathers need to acquire information and education to support their wives and become prepared for assuming paternal role (23). Various studies highlighted that training programs for fathers increased their participation in prenatal care and had a positive effect on the health of mother and child (24, 25). Training programs for fathers in Turkey improved their knowledge, attitudes, and behaviors toward family planning, child health, nutritional support, and healthy relationship with the spouse (26). In a study by Tafazoli et al., training of newborn care to fathers during pregnancy increased their participation in newborn care (27).

Prenatal care is the best opportunity to teach paternal-fetal attachment behaviors. With regard to the role of midwives in reproductive health and counseling, education, encouragement, and problem solving, they can be effective in various areas including mental support of both parents, prenatal care, father involvement, and acceptance of parental role (28).

Despite the studies on the factors affecting marital satisfaction, there is a scarcity of studies on the impact of training paternal-fetal attachment on marital satisfaction. Therefore, in this study we sought to determine the effect of paternal-fetal attachment training on marital satisfaction.

Materials and Methods

This clinical trial was performed on 60 nulliparous women and their husbands referring to two health centers covered by Mashhad Health Center No. 5, in 2015. To determine the sample size, means comparison formula was used. The participants were chosen through convenience sampling. At first, among the health centers covered by Mashhad Health Center No. 5, two health centers were selected with regard to sample availability and homogeneity (in terms of economic and cultural conditions). Subsequently, these two centers were randomly assigned (through tossing biased coin) to two groups of intervention (Karmandan health center) and control (22 Bahman health center). It should be noted that the attendance time in the two centers was randomly selected (even days for the intervention group and odd days for the control group).

The researcher presented to the health centers, evaluated the medical records, and invited the qualified couples to the respective center. It is worth mentioning that sample attrition was observed in neither group.

After obtaining approval of the Ethics Committee (code: 940546) of Mashhad University of Medical Sciences, Mashhad, Iran, and explaining the objectives of the study to the participants, a written consent form was taken from the subjects. All the ethical codes were adhered to in the conduct of this study.

The inclusion criteria for mothers included Iranian, living in Mashhad, nulliparous, gestational age of 28-32 weeks based on last menstrual period or first trimester ultrasonography, age 18-35 years, singleton pregnancy, and basic education. The inclusion criteria for fathers comprised of Iranian, living in Mashhad, basic education, monogamy, and first time father.

The exclusion criteria for mothers consisted of history of psychological problems, admission to psychiatric clinics, use of drugs affecting mental health, history of acute or chronic medical diseases, high-risk pregnancy, current use of opiate drugs or alcohol during pregnancy, history of infertility, severe stressful events during the last six months, unwillingness to participate in the study, and pregnancy complications. The exclusion criteria for fathers

were drug and alcohol abuse, history of psychological problems, referral to psychiatric clinics, use of drugs affecting mental health, hospitalization, severe stressful events during the last six months, unwillingness to participate in the study, absence in more than one training session, and unpleasant and stressful events during the study period.

The instruments used in this study were unit selection form, reproductive-individual characteristics questionnaire, and Marital Satisfaction Modified questionnaire of Nathan H. Azarin. The Modified Marital Satisfaction questionnaire consists of eight items with anchors ranging from *completely dissatisfied* (1) to *completely satisfied* (10). The minimum and maximum possible scores of this questionnaire were 8 and 80, respectively, and its validity was confirmed by Sohrabi and Birashk (1988) in Iran and by Heidari in Mashhad (2005) (29, 30). In this study, the reliability of the Modified Marital Satisfaction questionnaire was confirmed by calculating the Cronbach's alpha coefficient ($\alpha=0.88$) among men and women.

Fathers in the intervention group received the paternal-fetal attachment training program in three 2-hour sessions (once a week) in the form of group discussions, lectures, questions and answers, film screening, and educational booklets. The first training session was on fetal development stages (film screening) and the common problems and physical changes in women during pregnancy. In the second session, psychological and mental health of pregnant mothers, their impact on family health, and duties of husband during pregnancy were delineated. Ultimately, the third training session embraced paternal role, the concept of attachment and fetal attachment, the time formation of the paternal-fetal attachment, ways of communication with the fetus, and paternal-fetal attachment behaviors. The Marital Satisfaction questionnaire was completed by all the participants before and three weeks after the completion of paternal-fetal attachment training.

To analyze the data, descriptive statistics, analysis of covariance, t-test, Chi-square test, Wilcoxon, and Mann-Whitney U test were used in SPSS, version 22. P-value less than 0.05 was considered statistically significant.

Results

Subjects of the two groups were matched in terms of age, educational level, occupation, income, residence status, and gestational age. The mean ages of the fathers in the intervention and control group were 28.67 ± 0.24 and 28.77 ± 0.26 years, respectively. The mean ages of the mothers in the intervention and control groups were 23.83 ± 0.77 and 24.5 ± 0.44 years, respectively. In general, 56.5% of the fathers in the intervention group and 50% of the fathers in the control group and 53.3% of the mothers in the intervention and control groups had diploma. Furthermore, 96.7% of mothers in the intervention and control groups were housewives and 100% of the fathers in the intervention and control groups were employed. Moreover, 76.7% of the couples in the intervention and control groups had sufficient income, 56.7% of the couples in intervention

group and 46.7% of the couples in the control group lived in rental houses. Finally, the mean gestational ages in the intervention and control groups were 28.07 ± 0.76 and 27.67 ± 0.80 weeks, respectively. The intervention and control groups were matched in terms of fetus gender, satisfaction with the feus gender, wanted pregnancy, and the effect of pregnancy on the emotional relationship of couples (Table 1).

Mann-Whitney test reflected no significant differences between the mean scores of marital satisfaction among women in the intervention and control groups before ($P=0.748$) and after ($P=0.198$) the intervention. However, comparison of the mean scores of marital satisfaction in women of the intervention group (intra-group comparison) by Wilcoxon test showed significant differences before and after the intervention ($P=0.047$).

Table 1. Distribution of feus gender, satisfaction of feus gender, wanted pregnancy, and the effect of pregnancy on the emotional relationship of couples based on the intervention and control groups

Variable		Group				Test results
		Intervention		Control		
		N	%	N	%	
Feus gender	Girl	10	33.3	12	40.0	Exact $\chi^2=1.111$ df=1 P=0.793
	Boy	20	66.7	18	60.0	
	Total	30	100.0	30	100.0	
Father's satisfaction with feus gender	Yes	30	100.0	29	96.7	Exact $\chi^2=1.017$ df=1 P=0.999
	No	0	0.0	1	3.3	
	Total	30	100.0	30	100.0	
Mother's satisfaction with fetus gender	Yes	29	96.7	28	93.3	Exact $\chi^2=0.351$ df=1 P=0.999
	No	1	3.3	2	6.7	
	Total	30	100.0	30	100.0	
Wanted or unwanted pregnancy in the view of father	yes	25	83.3	28	93.3	Exact $\chi^2 =1.456$ df=1 P=0.424
	No	5	16.7	2	6.7	
	Total	30	100.0	30	100.0	
Wanted or unwanted pregnancy in the view of mother	Yes	29	96.7	27	90	Exact $\chi^2 =1.071$ df=1 P=0.612
	No	1	3.3	3	10	
	Total	30	100.0	30	100.0	
Effects of pregnancy on the relationship with spouse (in the view of mother)	No effect	8	26.7	5	16.7	Exact $\chi^2=3.692$ df=2 P=0.170
	Close	22	73.3	22	73.3	
	Alienated	0	0.0	3	10.0	
	Total	30	100.0	30	100.0	
Effects of pregnancy on the relationship with spouse (in the view of father)	No effect	8	26.7	6	20.0	Exact $\chi^2=2.286$ df=2 P=0.433
	Close	22	73.3	22	73.3	
	Alienated	0	0.0	2	6.7	
	Total	30	100.0	30	100.0	

Table 2. Comparison of the mean score of women's marital satisfaction before and after the study in the intervention and control groups

Variable		Group				Results of Mann-Whitney U test
		Intervention		Control		
		Mean±SD	N	Mean±SD	N	
Women's marital satisfaction	Pre-intervention	62.63±2.58	30	64.60±2.29	30	z=0.274 P=0.784
	Post-intervention	66.50±2.43	30	63.37±2.21	30	z=-1.278 P=0.198
Results of Wilcoxon test		t=-1.984 P=0.047		t=-0.821 P=0.411		

There were no significant differences in the control group before and after the intervention (P=0.411; Table 2).

To investigate the effect of training on the intervention and control groups, analysis of covariance was performed. In this test, marital

satisfaction in women before training was considered as the intervening variable, and taking into account its effect, marital satisfaction was not significantly different between the intervention and control groups after the intervention (P=0.083; Table 3).

Table 3. Results of analysis of covariance for the effect of the educational intervention on marital satisfaction in women with controlling for marital satisfaction in women before training

Variable	β	T	P-value
Intervention group	4.377	1.763	0.083
Control group	0		
Mean scores of marital satisfaction in women before training	0.632	6.717	0.001 <

Based on the results of Mann-Whitney test, there was no significant difference between the men in the intervention and control groups regarding the mean score of marital satisfaction before (P=0.180) and after the intervention (P=0.500). Comparison of mean scores of marital satisfaction in men of the intervention

group (intra-group comparison) by Wilcoxon test revealed a significant difference between the pre- and post-intervention scores (P<0.001). Nonetheless, there was no significant difference in the control group in this regard (P=0.831; Table 4).

Table 4. Comparison of mean marital satisfaction score in men pre- and post-intervention in the intervention and control groups

Variable		Group				Results of Mann-Whitney test
		Intervention		Control		
		Mean±SD	N	Mean±SD	N	
Men's marital satisfaction	Pre-intervention	62.80±2.46	30	67.17±2.01	30	z=1.339 P=0.180
	Post-intervention	68.83±2.22	30	67.73±2.01	30	z=-0.674 P=0.500
Results of Wilcoxon test and paired t-test		t=-3.866 P<0.001		t=-0.214 P=0.831		

To investigate the effect of the training program on the intervention and control groups, analysis of covariance was run. In this test, marital satisfaction in men before training was

considered as the intervening variable, the effect of which was taken into account. Marital satisfaction was not significantly different

between the intervention and control groups after the intervention ($P=0.003$; Table 5).

Table 5. The results of analysis of covariance for the effect of educational intervention on the mean score of marital satisfaction in men by controlling for marital satisfaction in men before training

Variables	β	T	P-value
Intervention group	4.686	3.068	0.003
Control group	0		
Mean score of marital satisfaction in men before training	0.821	13.219	<0.001

Discussion

The results of this study showed that the training program on paternal-fetal attachment significantly enhanced men's marital satisfaction at three weeks post-intervention. In this regard, a study by de Mendonça et al. (2015) evaluating the association between father-child relationship and postpartum depression in 68 pregnant women and their husbands in Brazil illustrated that fathers who had higher marital satisfaction established a closer relationship with their children (31), which is consistent with the results of the present study. The instrument used in that study was a researcher-made marital satisfaction questionnaire, the study population was women in the third trimester of pregnancy, and the duration of the study was from the third trimester of pregnancy up to 36 postnatal months.

Tova et al. (2013) also reported that the quality of marital satisfaction and couples' relationship are determinants of paternal role and communication with the fetus (32). The results of Weaver and Cranely (1983) on 100 fathers whose wives were at the third trimester of pregnancy also showed that increasing paternal-fetal attachment was linked with higher marital satisfaction in fathers (20), which is consistent with our findings. Condone et al. (2008) assessed paternal-fetal attachment in 200 Australian fathers at 6 and 12 postnatal months. They exhibited that marital satisfaction was a factor affecting father-child attachment (33). In addition, Brandon et al. (2009) examined the theory of attachment during pregnancy and suggested that marital adjustment during pregnancy plays an important role in paternal-fetal attachment (34).

Lotifses et al. (2005) performed a study to determine the effect of training massage therapy and relaxation on marital anxiety in 283 fathers

living in London. They proposed that training massage therapy and relaxation promoted marital adjustment in fathers, and the fathers who had proper marital adjustment had stronger attachment to the fetus (35), which is consistent with the present results. The findings of Lotifses et al. and the present study suggest that implementation of educational programs in fathers improves paternal-fetal attachment and marital satisfaction.

However, Gerner et al. (2005) in a study investigating the factors affecting paternal-fetal attachment showed that paternal-fetal attachment had no significant relationship with marital satisfaction, which is not consistent with our results. In the study of Gerner, marital satisfaction was measured by Marriage Satisfaction questionnaire designed by Locke and Wallace (1959). Outdatedness of the marital satisfaction tool could be the reason for this contradiction (36).

Mercker et al. (1988) also conducted a study to examine parental-fetal attachment in two groups of high- and low-risk mothers. Their results did not show any correlation between marital satisfaction and paternal-fetal attachment (21), which is not consistent with the present findings.

We found that although the mean score of marital satisfaction was not significantly different between women of the two groups after training, the mean score of women's marital satisfaction in the intervention group increased after training (from 62.63 ± 2.58 to 66.50 ± 2.43). Pregnancy and specific problems of this period adversely affect marital satisfaction, which can ultimately threaten maternal and family mental health (37); therefore, educational interventions are necessary to improve awareness and attitude of couples during pregnancy, increase marital satisfaction

and attachment, and ultimately, promote maternal mental health.

Couples' attitudes toward physical and emotional changes during pregnancy can impact their relationship, and lack of awareness regarding these changes can deteriorate their psychological status (38). In this regard, Mangeli et al. (2008) conducted a study on 112 pregnant women to examine the effect of training on natural changes during pregnancy and adjustment to them. They revealed that by raising awareness of couples regarding physical, mental, and psychological changes during pregnancy, marital satisfaction increased in mothers (39). The results of that study were not consistent with the present ones. In the present study, despite the increase in the mean score of women's marital satisfaction in the intervention group after the training, there was no significant difference between the intervention and control groups that can be due to lack of mothers' participation in training program. We recommend simultaneous training of couples in future studies. Other reasons for this discrepancy in results might be differences in study population, study design, and marital satisfaction measurement tool. The study by Mangeli had a single-group design, their study population consisted of pregnant mothers (nulliparous and multiparous), and marital satisfaction measurement tool was ENRICH standard questionnaire.

Considering that pregnancy is one of the most important distressing events in marital life and that attention of couples, especially mothers, is focused on specific problems of this period (38), marital satisfaction can diminish during pregnancy. This problem can be eliminated by implementing paternal-fetal attachment programs to increase marital satisfaction among couples during pregnancy and encourage participation of fathers in newborn care. The limitations of this study included the limited number of training sessions and shortage of male trainers.

Conclusion

Paternal-fetal attachment training can improve marital satisfaction. Therefore, we suggest implementing prenatal care and fetal

attachment programs in the presence of fathers to improve the relationship between couples.

Acknowledgements

This article is the result of a research project approved by Mashhad University of Medical Sciences with No 940546, dated 2015/11/11, and IRCT ID: IRCT2016010225808N1. Hereby, we appreciate the Deputy of Research of Mashhad University of Medical Sciences for their financial support. We also thank the authorities of the health centers and all the couples who collaborated in the implementation of this project.

Conflicts of Interest

Authors declared no conflicts of interest.

References

1. Taban M, Dolatshahi B, Eftekhari M, Pourshabaz A. The relationship between marital satisfaction with demographics characteristics in the population of Tehran 2016. *Advances in Nursing & Midwifery*. 2017; 26(94):37-45.
2. Mirzaian B, Hasanzade R, Shahidi M. Comparing sexual attitudes of fertile and infertile couples. *Journal of Mazandaran University of Medical Sciences*. 2012; 22(1):272-281 (Persian).
3. Nazari AM, Taheri Rad M, Asadi M. The effectiveness of enhancement program on marital adjustment. *Family Counseling and Psychotherap*. 2014; 3(4):527-540 (Persian).
4. Mosalanejad L, Kheshti AS, Gholami B. Evaluation of mental health during pregnancy and psychological factors. *Journal of Medical Sciences*. 2008; 5(5):22-29 (Persian).
5. Delgosha Z. *Maternity and newborn nursing*. 1st ed. Tehran: Salemi; 2006 (Persian).
6. Mangeli M, Gholami M. Marital satisfaction and related factors in pregnant women. The 1st Conference on Hygiene and Health, Iran, Marand; 2007 (Persian).
7. Boyce P, Condon J, Barton J, Corkindale C. First-time fathers' study: psychological distress in expectant fathers during pregnancy. *Australian & New Zealand Journal of Psychiatry*. 2007; 41(9):718-725.
8. Salehi S, Mehr AH. The prevalence and types of domestic violence against pregnant women referred to maternity clinics in Shahrekord, 2003. *Shahrekord University of Medical Sciences Journal*. 2006; 8(2):72-77 (Persian).
9. British Columbia Reproductive Care Program. *Obstetric guideline 13: intimate partner violence during the perinatal period*. London: British

- Columbia Reproductive Care Program; 2003. P. 1-23.
10. Condon JT, Cortlindale C. The correlates of antenatal attachment in pregnant women. *Psychology and Psychotherapy: Theory, Research and Practice*. 1997; 70(4):359-372.
 11. Kim YK, Hur JW, Kim KH, Oh KS, Shin YC. Prediction of postpartum depression by socio-demographic, obstetric and psychological factors: a prospective study. *Psychiatry and Clinical Neurosciences*. 2008; 62(3):331-340.
 12. Carter M. Husbands and maternal health matters in rural Guatemala: wives' reports on their spouses' involvement in pregnancy and birth. *Social Science & Medicine*. 2002; 55(3):437-450.
 13. Genesoni L, Curran R, Huertas-Ceballos A, Tallandini MA. Kangaroo mother care and its effect on parenting stress and maternal postnatal attachment in case of premature birth. *Archives of Disease in Childhood. Fetal and Neonatal Edition*. 2008; 93:80.
 14. Ustunsoz A, Guvenc G, Akyuz A, Oflaz F. Comparison of maternal-and paternal-fetal attachment in Turkish couples. *Midwifery*. 2010; 26(2):e1-e9.
 15. Sadeghi MS, Mazaheri A. Attachment styles in mothers with or without abortions. *Journal of Reproduction & Infertility*. 2007; 8(1):60-69 (Persian).
 16. Cranley MS. Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing Research*. 1981; 30(5):281-284.
 17. Carter MW, Speizer I. Salvadoran fathers' attendance at prenatal care, delivery, and postpartum care. *Revista Panamericana de Salud Pública*. 2005; 18(3):149-156.
 18. Condon JT, Boyce P, Corkindale CJ. The first-time fathers study: a prospective study of the mental health and wellbeing of men during the transition to parenthood. *Australian and New Zealand Journal of Psychiatry*. 2004; 38(12):56-64.
 19. Gutierrez-Galve L, Stein A, Hanington L, Heron J, Ramchandani P. Paternal depression in the postnatal period and child development: mediators and moderators. *Pediatrics*. 2015; 135(2):e339-e347.
 20. Weaver RH, Cranley MS. An exploration of paternal-fetal attachment behavior. *Nursing Research*. 1983; 32(2):68-72.
 21. Mercer RT, Ferketich S, May K, DeJoseph J, Sollid D. Further exploration of maternal and paternal fetal attachment. *Research in Nursing and Health*. 1988; 11(2):83-95.
 22. Deave T, Johnson D, Ingram J. Transition to parenthood: the needs of parents in pregnancy and early parenthood. *BMC Pregnancy and Childbirth*. 2008; 8(1):30.
 23. Farsianpur F. Health education, efficiency and effect. 1st ed. Tehran: Boshra Publisher; 1992. P. 1-20 (Persian).
 24. Simbar M, Nahidi F, Ramezankhani A. Fathers' educational needs about perinatal care: a qualitative approach. *Hakim Research Journal*. 2009; 12(2):19-31 (Persian).
 25. Sahip Y, Turan JM. Education for expectant fathers in workplaces in Turkey. *Journal of Biosocial Science*. 2007; 39(6):843-860.
 26. Barclay LM, Lupton D. The experiences of new fatherhood: a socio-cultural analysis. *Journal of Advanced Nursing*. 1999; 29(4):1013-1020.
 27. Tafzoli M, Bagheri M, Boskabadi H, Setayesh Y. The comparative study of the impact of antenatal training care infants to fathers and couple on the fathers' participations after birth. *International Journal of Pediatrics*. 2013; 1(1):31-38 (Persian).
 28. Hutti MH. Social and professional support needs of families after perinatal loss. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2008; 34(5):630-638.
 29. Sohrabi H. Recognize and treatment of marital conflict. 1st ed. Tehran: Cultural Services Anistitue Rsa; 1988. P. 2-21 (Persian).
 30. Heidari P, Latifnejad R, Sahebi A, Jahaniyan M, Mazloun SR. Impact of cognitive behaviour therapy on anxiety level of primary infertile women undergoing IUI. *Journal of Reproduction & Infertility*. 2002; 3(3):40-51 (Persian).
 31. de Mendonça JS, Raad Bussab VS, Lucci TK, Kärtner J. Father-child interactional synchrony in Brazilian families with maternal depression. *Human Ethology Bulletin*. 2015; 30(1):121-138.
 32. Neugut TB. Three studies of fathers' adaptation to pregnancy and parenthood: (1) Moving up the émagic momentí: fathers' experience of prenatal ultrasound; (2) The longitudinal development of paternal-fetal attachment; (3) Fathering after Military Deploymen. Michigan: University of Michigan; 2013.
 33. Condon JT, Corkindale CJ, Boyce P. Assessment of postnatal paternal-infant attachment: development of a questionnaire instrument. *Journal of Reproductive and Infant Psychology*. 2008; 26(3):195-210.
 34. Brandon AR, Pitts S, Denton WH, Stringer CA, Evans HM. A history of the theory of prenatal attachment. *Journal of Prenatal & Perinatal Psychology & Health*. 2009; 23(4):201-222.
 35. Latifses V, Estroff DB, Field T, Bush JP. Fathers massaging and relaxing their pregnant wives lowered anxiety and facilitated marital adjustment. *Journal of Bodywork and Movement Therapies*. 2005; 9(4):277-282.
 36. Gerner L. Exploring prenatal attachment: factors that facilitate paternal attachment during pregnancy. [PhD Thesis]. Fresno: Alliant International

- University, 2005.
37. Attari Y, Amanollahy A, Mehrbizade M. Examine the relationship between personality characteristics and personal-family factors with marital satisfaction in employees of government departments Ahvaz city. *Psychology and Educational Sciences*. 2006; 13(3):81-108 (Persian).
38. Moin Z. *Mental health in pregnancy period*. 1st ed. Tehran: Central Rehabilitation Organization; 2002 (Persian).
39. Mangeli M, Ramezani T, Mangeli S. The effect of educating about common changes in pregnancy period and the way to cope with them on marital satisfaction of pregnant women. *Iranian Journal of Medical Education*. 2009; 8(2):305-313 (Persian).