ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

Evaluation of the Relationship and Factors Affecting Maternal and Paternal Fetal Attachment in the Couples During Prenatal Period: A Cross-Sectional Study

Prenatal Dönemde Çiftlerde Maternal ve Paternal Fetal Bağlanma Arasındaki İlişkinin ve Etkileyen Faktörlerin Değerlendirilmesi: Kesitsel Bir Çalışma

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ABSTRACT Objective: This study was aimed to evaluate the affecting factors and relationship of maternal fetal attachment (MFA) and paternal fetal attachment (PFA) in the couples during the prenatal period. **Material and Methods:** The study was designed as a cross-sectional study. The sample of the study consisted of 227 couples (totally 454 participants) who applied to the obstetrics outpatient clinic. The data were collected using the structured data collection form prepared by the researcher, the Maternal and Paternal Fetal Attachment Scale. **Results:** The MFA and PFA scores of the pregnant women and their partners were 4.11±0.416 and 3.82±0.523, respectively. The association of MFA was found to be statistically significant with educational status, parity, having amniocentesis (p<0.05) whereas PFA was found to be statistically significantly associated with number of children, relationship with partner, treatment for infertility, planning of pregnancy (p<0.05). There was a statistically positive relationship between MFA and PFA scores (r=0.586, p<0.001). **Conclusion:** It was determined that there was an essential relationship between MFA and PFA. Healthy prenatal period and healthy family structure can be provided by positive MFA and PFA attitudes. Health care proffesionals should have essential roles to increase awaressness of MFA and PFAs for couples during pregnancy and to support developing attachment behaviours in prenatal period.

Keywords: Maternal attachment; paternal attachment; pregnancy; fetus

ÖZET Amaç: Bu çalışmanın amacı, prenatal dönemde çiftlerde maternal fetal bağlanma (MFB) ve paternal fetal bağlanma (PFB) arasındaki ilişkinin ve etkileyen faktörlerin değerlendirilmesidir. **Gereç ve Yöntemler:** Kesitsel bir çalışma olarak tasarlanmıştır. Araştırmanın örneklemini kadın hastalıkları polikliniğine başvuran 227 çift (toplam 454 katılımcı) oluşturmuştur. Veriler, araştırmacı tarafından hazırlanan yapılandırılmış veri toplama formu, Maternal ve Paternal Fetal Bağlanma Ölçeği (MFB ve PFB) kullanılarak toplanmıştır. **Bulgular:** Gebelerin ve eşlerinin MFB ve PFB puanları sırasıyla 4,11±0,416 ve 3,82±0,523 idi. MFB'nin eğitim durumu, parite, amniyosentez yaptırma ile ilişkisi istatistiksel olarak anlamlı bulunurken (p<0,05), PFB çocuk sayısı, partner ile ilişki, infertilite tedavisi, gebelik planlaması ile istatistiksel olarak anlamlı bulunmuştur (p<0,05). MFB ve PFB puanları arasında istatistiksel olarak pozitif bir ilişki vardı (r=0,586, p<0,001). **Sonuç:** MFB ve PFB arasında önemli bir ilişki olduğu belirlenmiştir. Sağlıklı doğum öncesi dönem ve sağlıklı aile yapısı, olumlu MFB ve PFB tutumları ile sağlanabilir. Sağlık profesyonelleri, gebelik sırasında anne ve babanın fetal bağlanma farkındalığını artırmak ve doğum öncesi dönemde bağlanma davranışlarının gelişimini desteklemek için önemli roller üstlenmelidir.

Anahtar Kelimeler: Maternal bağlanma; paternal bağlanma; gebelik; fetüs

The attachment theory was first developed by Bowlby in order to define the attachment of the baby to the parents in the first year of life. According to this theory, parental attachment was an important factor influencing the cognitive, emotional and social development of infants during their lifespan.[1] Attachment may be defined as the search for intimacy or contact with a person and stems from the experience

of emotional bonding between the infant and the mother or caregiver.[2,3] Prenatal attachment is the emotional bond between the fetus and the future mothers and fathers, which may be considered as the first important contact between the infant and the parents. This bond has a positive impact on the relationship between the infants and the parents during the postpartum period.[2,4-6] Only maternal fetal attachment (MFA) is not sufficient for infant development. Paternal fetal attachment (PFA) will also have positive effects on cognitive, emotional and social development of the infant and the adaptation of the expectant father to the postpartum period.[7]

Maternal and PFA during the prenatal period is important for the formation of paternal identity and improvement of maternal-fetal health. Expectant fathers with high PFA are more sensitive towards prenatal care and health behaviors and more likely to establish a healthy relationship with their children after birth.[8] Inclusion of the expectant fathers to the care and treatment processes during the pregnancy and delivery is important for the development of paternal identity and feelings. It helps mothers develop MFA and reduces the hospitalization length of mothers with health risks during the pregnancy and postpartum period. Education on parental attachment, which is given during the prenatal period, may reduce the anxiety of the parents and have a positive impact on their mental health.[9,10]

The literature suggests that factors, including emotional maturity, planned pregnancy, fear and anxiety, social relations, ability to cope with environmental factors, parent's self-concept, willingness to breastfeed and previous experience with infant care, may influence parent-fetal and parent-infant attachment. Quality of life of the couples during the prenatal period, relationship between the expectant mother and father, lack of social support and educational status of the parents are among the other factors that may influence attachment behavior.[11] Additionally, some of the studies emphasized that disappointment about baby's gender may have a negative impact on maternal-infant attachment and the psychological development of the infant.[12] Another factor that negatively influences prenatal attachment is the lack of social support.[13-15]

Low prenatal attachment results in poor healthcare outcomes and risky behaviors of pregnant women. Women with low prenatal attachment may have health problems, such as irregular sleep, alcohol consumption, smoking habit, depression and failure to participate in regular follow-up during the prenatal period.[16] Fathers with high paternal-fetal attachment are more sensitive to prenatal care and health behavior of their partners and develop more positive with the infants after childbirth.[8] On the other hand, low MFA leads to higher risks for the newborn and has negative impact on the mental and psychological health of the infants and their mothers.[17]

It is important to maintain maternal and PFA for healthy families during prenatal and postnatal periods. It is known that literature has some limitations in studies reviewed the importance of maternal and PFA by trying to increase awareness of the expectant parents and the health professional on MFA and PFA. Having awareness about MFA and PFA are inevitable in finding optimal compatibility with parenthood. Therefore, considering the importance of prenatal attachment in fetal development and parental health and various factors that are effective on MFA and PFA and also lack of necessary information in this issue in Türkiye, analysis of the factors that may affect prenatal attachment, revealing the problems that have the potential to have negative impact on prenatal attachment and planning prenatal education and interventions to take necessary measures are highly important for healthy families in prenatal and postpartum periods. This study aimed to evaluate the affecting factors and relationship of MFA and PFA in the couples during the prenatal period.

◼ MATERIAL AND METHODS

STUDY DESIGN

This study was designed as a cross-sectional study.

SAMPLE

This study was conducted at the prenatal care units of a training hospital in Ankara between May and September 2019. Required sample size, which was calculated at 95% confidence interval and 5% error rate by using universe-known sampling method, was calculated 357 participants (approximately 179 cou-

ples) that should be enrolled in the present study. Two hundred twenty seven (n=227) couples participated in the study. Inclusion cirteria were as follows for pregnant women and their partners;

- Over the age of 19 and being married,

- Having at least primary school graduates,

- Being in the third trimester (24-40 weeks),

- Having no fetal anomalies, not being identified as having a high-risk pregnancy (diabetes, preeclampsia, multiple pregnancy, stillbirth, history of abortion, etc.) based on obstetric evaluation,

- Being volunteer to participate in the study.

In additon, 17 pregnant women and their partners, who left the study due to lack of time or unwillingness to give information, were excluded from the study.

The study started by informing the participants about the aim and scope of the research and receiving their informed consent. Data were collected by the researchers at the waiting room of the clinic by using face-to-face interview method. Interviews with each couple took about 30-35 minutes. In order to increase participation during data collection, the researchers answered the questions on pregnancy, which were asked by pregnant women and their partners.

DATA COLLECTION TOOLS

We used structured data collection forms, MFA and PFA Scales in order to collect data on the level of prenatal attachment and the factors affecting attachment.

Structured Data Collection Form for Pregnant Women

The form was developed by the researchers by considering the variables in the literature that may influence prenatal attachment.[12,15,18-20] The form comprised 34 questions on sociodemographic characteristics, obstetric and gynecological history of pregnant women.

Structured Data Collection Form for Expectant Father

The form included 19 questions on sociodemographic characteristics of the expectant fathers and the factors that may influence paternal attachment.

MATERNAL-FETAL ATTACHMENT AND PATERNAL-FETAL ATTACHMENT SCALES

MFA Scale was developed by Cranley (1981) in order to measure the attachment between the fetus and the pregnant women during the prenatal period. Reliability and validity of the Turkish version of the MFA Scale was evaluated by Ustunsoz et al.[15] MFA Scale has 24 items ranked on a 5-point Likert scale (1: Definitely no, 5: Definitely yes). Scoring is reversed for item 22 and the scale is evaluated by calculating mean score, with higher mean scores indicating higher attachment.

PFA Scale was developed by Weaver and Cranley (1983) in order to measure the attachment between the father and the fetus during prenatal period. Reliability and validity of the Turkish version of the MFA Scale was evaluated by Ustunsoz et al.[15] PFA Scale consists of 24 items ranked on a 5-point Likert scale (1: Definitely no, 5: Definitely yes). Scoring is reversed for item 22 and the scale is evaluated by calculating mean score, with higher mean scores indicating higher attachment. Cronbach's alpha values for the MFA and PFA in our study were 0.806 and 0.864, indicating high reliability.

DATA ANALYSIS

Data were analyzed by using IBM SPSS Statistics for Windows, Version 23.0. (IBM Corp. Armonk, NY: USA. Released 2014). Frequency distribution was used for categorical variables and descriptive statistics (mean±standard deviation and median) was used for numerical variables. Cronbach's alpha coefficient was used to analyze the reliability of the MFA and PFA Scales. Mean scores were calculated for the MFA and PFA Scales. Kolmogorov-Smirnov normality test, which was used to determine the statistical analysis to be used, showed that data followed normal distribution. Parametric tests were used for comparison of data. Independent sample t-test was used to compare the two independent groups, one-way analysis of variance was used to compare more than two groups, and Tukey test was used to identify the means that were different from each other. Pearson and Spearman's rho correlation coefficient was used to determine the level of non-causal relationship between two numerical variables.

ETHICAL CONSIDERATIONS

The research was approved by the University of Health Sciences Non-Interventional Research Ethics Committee (ethical approval date: March 26, 2019, number: 46418926). We also obtained permission to use MFA and PFA Scales from the reseracher who was evaluated the reliability and validity of the Turkish version of it, and from provincial health department to begin data collection process of this study (date: April 4, 2019; permission number: 64469785-770-E.18519). The study was conducted in accordance with the Declaration of Helsinki principles.

RESULTS

Mean age of the participants was 28.06±5.046 and 31.61±5.850 years, respectively and 42.3% (n=96) of the pregnant women and 41.0% (n=93) of the partners graduated from university. Of pregnant women, 49.3% had the first pregnancy (n=109). Median pregnancy interval of the women was 3.5 years; median gestational week was 36. The eighty point four percent of the pregnant women had planned (n=181) whereas 19.6% had unplanned pregnancies (n=44),

and 16.3% (n=31) of the pregnant women stated that they had a difficult pregnancy in the past and 4.9% (n=11) of the pregnancies occurred after treatment for infertility.

There was a statistically significant difference between the educational status of the pregnant women and MFA scores (p<0.05) (Table 1). The MFA score of the pregnant women that were graduated from secondary school was significantly lower than women graduated from high school and university. We also found a statistically significant difference between the employment status of the partners and their PFA scores (p<0.05). The PFA scores of the partners who were workers were statistically higher than the self-employed partners (p<0.05).

Table 2 shows the comparison of MFA and PFA scores in terms of some different variables. The association of MFA was found to be statistically significant with parity, number of children, "relationship with the partner" status and having amniocentesis (p<0.05). Accordingly, MFA scores of the nulliparous women were significantly higher than the multiparous women. MFA scores of with three or more children were significantly lower than the preg-

TABLE 1: Comparison of MFA and PFA scores in terms of sociodemographic variables.					
	MFA			**PFA**	
		t; p			t; p
	Mean±SD	F; p		Mean±SD	F; p
Age					
19-25	4.10±0.380	1.306; 0.273		3.95±0.439	1.900; 0.131
26-30	4.17±0.380			3.88±0.445	
31-35	4.07±0.460			3.80±0.571	
36 and above	3.98±0.563			3.71±0.578	
Education					
Primary school	4.01±0.591	3.091; **0.028***		3.78±0.683	0.256; 0.857
Secondary school	3.94±0.392	**Difference; 2-3.4**		3.77±0.520	
High school	4.16±0.370			3.84±0.408	
University	4.14±0.414			3.84±0.581	
Employment					
House wife	4.09±0.415	-0.947; 0.344	Worker	4.00±0.473	**6.922; 0.001†**
Employed	4.15±0.422		Civil servant	3.79±0.564	**Difference; 1-3**
			Self-employed	3.71±0.502	

*p<0.05; †p<0.001; SD: Standard deviation; F: One-way analysis of variance; Difference: Tukey test; t: Independent sample t-test; p: Significance level; MFA: Maternal fetal attachment; PFA: Paternal fetal attachment.

TABLE 2: Comparison of MFA and PFA scores in terms of some different variables.				
	MFA		**PFA**	
		t; p		t; p
	Mean±SD	F; p	Mean±SD	F; p
Relationship with the partner				
Very good	4.13±0.391	6.107; **0.003**†	3.91±0.499	9.898; **0.000**‡
Good	4.10±0.418	**Difference; 3-1.2**	3.63±0.483	**Difference; 1-2.3**
Moderate/bad/very bad	3.67±0.586		3.40±0.682	
Parity				
1	4.17±0.376	4.525; **0.012***	3,94±0,460	7,529; **0,001**†
3 and above	4,11±0.434	**Difference; 1-3**	3.79±0.507	**Difference; 1-3**
Number of children	3.97±0.428		3.62±0.575	
1	4.08±0.439	3.151; **0.047***	3.76±0.479	3.999; **0.021***
2	4.06±0.370	**Difference; 3-1.2**	3.73±0.629	**Difference; 3-1.2**
3 and above	3.73±0.519		3.29±0.394	
Pregnancy after treatment for infertility				
Yes	4.20±0.458	0.746; 0.456	4.16±0.480	2.187; 0.030*
No	4.10±0.413		3.81±0.522	
Planned pregnancy				
Yes	4.13±0.420	1.474; 0.142	3.87±0.519	2.834; **0.005**†
No	4.03±0.389		3.63±0.512	
Having amniocentesis				
Yes	4.45±0.307	2.262; **0.025***	4.29±0.446	2.431; **0.016***
No	4.09±0.415		3.81±0.520	
Desired gender of baby				
Male	4.19±0.392	2.627;	3.85±0.533	
Female	4.09±0.413	0.075	3.83±0.529	0.556; 0.574
No response	3.99±0.448		3.72±0.486	
Gender of infant				
Female	4.09±0.435	-0.637;	3.85±0.541	0.720; 0.472
Male	4.13±0.384	0.524	3.80±0.492	
	r value	p value	r value	p value
Gestational week***	0.019	0.773	0.044	0.512
Length of marriage***	-0.130	0.052	-0.246	**0.000**‡

*p<0.05; †p<0.01; ‡p<0.001; SD: Standard deviation; F: One-way analysis of variance; Difference: Tukey test; t: Independent sample t-test; p: Significance level; r: Spearman's rho correlation coefficient; MFA: Maternal fetal attachment; PFA: Paternal fetal attachment.

nant women with one and two children. MFA scores of the pregnant women, who had moderate, bad or very bad relationship with their husbands were significantly lower than the participants that had very good or good relationship with the husbands. MFA scores of the pregnant participants, who had amniocentesis were significantly higher than the participants that did not have amniocentesis.

The association of PFA was found to be statistically significant with parity, number of children, re-

lationship with partner, treatment for infertility, planning of pregnancy, having amniocentesis and having fetal ultrasound (p<0.05) (Table 2). Accordingly, PFA scores of the partners of nulliparous women were statistically significantly higher than the partners of women with three or more pregnancies. PFA scores of expectant fathers with three or more children were significantly lower than those of fathers with one and two children. PFA scores of the partners, who stated that they had very good relationship

with their wives, were significantly higher than those of fathers whose relations with their wives were good and moderate/bad/very bad. PFA scores of the expectant fathers, whose partners got pregnant after receiving treatment for infertility, were significantly higher than the participants that did not receive treatment. PFA scores of fathers with planned pregnancy were significantly higher than those of fathers with unplanned pregnancy. Finally, PFA scores of the fathers, whose wives had amniocentesis, were signifi-

cantly higher than those of fathers, whose wives did not have amniocentesis.

A statistically significant correlation was found between gestational week and MFA (r=0.019, p>0.05) and PFA (r=0.044, p>0.05) scores (Table 2). There was also no statistically significant correlation between length of marriage and MFA score (r=0.130, p>0.05). On the other hand, we found a negative and statistically significant correlation between length of marriage and PFA score (r=-0.246, p<0.001).

	MFA Mean±SD	t; p	PFA Mean±SD	t; p
TABLE 3: Comparison of MFA and PFA scores according to some emotional moods.				
Emotions when you found out you/your partner is pregnant				
Positive emotions (happiness, joy)				
Yes	4.13±0.387	1.796; 0.078	3.85±0.503	2.328; **0.021***
No	3.98±0.509		3.57±0.660	
Negative feelings (fear, sadness)				
Yes	4.08±0.489	-0.305; 0.761	3.51±0.661	-2.167; **0.031***
No	4.11±0.407		3.84±0.510	
Surprise				
Yes	4.11±0.443	0.086; 0.932	3.79±0.541	-0.591; 0.555
No	4.10±0.398		3.81±0.508	
Emotions when you felt the first moves of the fetus				
Positive emotions (happiness, joy)				
Yes	4.11±0.393	1.263; 0.208	3.84±0.526	1.110; 0.268
No	4.01±0.550		3.71±0.489	
Positive emotions (happiness, joy)				
Yes	3.90±0.597	1.907; 0.058	3.57±0.403	-1.779; 0.077
No	4.11±0.398		3.84±0.526	
Surprise				
Yes	4.13±0.465	0.638; 0.524	3.74±0.431	-1.407; 0.162
No	4.09±0.397		3.83±0.518	
Having fetal ultrasound				
Yes	4.11±0.406	1.183; 0.280	3.87±0.522	2.756; **0.006†**
No	3.94±0.416		3.62±0.485	
Emotions when you saw your baby via ultrasound				
Positive emotions (happiness, joy)				
Yes	4.10±0.398	0.097; 0.923	3.87±0.510	2.753; **0.006†**
No	4.09±0.521		3.64±0.532	
Negative feelings (fear, sadness)				
Yes	3.92±0.522	-1.646; 0.101	3.67±0.310	-0.860; 0.391
No	4.11±0.407		3.82±0.529	
Surprise				
Yes	4.20±0.393	2.221; **0.027***	3.83±0.475	0.139; 0.890
No	4.06±0.419		3.82±0.535	

*p<0.05; †p<0.01; SD: Standard deviation; t: Independent sample t-test; p: Significance level; MFA: Maternal fetal attachment; PFA: Paternal fetal attachment.

Comparison of MFA and PFA scores according to some emotional moods of participants was shown in Table 3. The association of MFA was found to be statistically significant with the feeling of surprise when couples saw their babies via ultrasound (p<0.05) whereas PFA was found to be statistically significant with having fetal ultrasound, positive feelings when couples saw their babies via ultrasound and emotions when the couples found out pregnancy (p<0.05).

MFA scores of the participants that felt surprised when they saw their babies via ultrasound were significantly higher than the participants that were not surprised. PFA scores of the partners, who had positive feelings when they found out pregnancy, was significantly higher than those of partners with no positive feelings. PFA scores of partners, who had negative feelings when they found out pregnancy, were significantly lower than those of partners with no negative feelings. PFA scores of the partners that saw their babies via ultrasound were significantly higher than those of other partners. Finally, PFA scores of expectant fathers, who had positive feelings when they saw their babies via ultrasound, were significantly higher than those of expectant fathers with no positive feelings.

Table 4 shows that the MFA and PFA scores were 4.11±0.416 and 3.82±0.523, respectively. There was a positive and moderate linear relationship between MFA and PFA scores (r=0.586, p<0.00).

DISCUSSION

The main purpose of the current study was to evaluate the affecting factors and relationship of MFA and PFA in the couples during the prenatal period. Maternal and PFA may be influenced by some factors including educational status, length of marriage, emotional maturity, planned pregnancy, parity and the others. Although the comparison of the educational status of expectant fathers did not find any significant difference in terms of PFA scores in this study, MFA scores of pregnant participants, who were graduates of secondary school, were significantly lower than the graduates of high school and university. Studies of Ustunsoz et al. and Delavari et al. found a positive relationship between educational status of pregnant

TABLE 4:	Correlation between MFA scores and PFA scores.	
	MFA score **Mean±SD** **(4.11±0.416)**	
PFA score	0.586	0.000*
(Mean±SD)		
3.82±0.523		

*p<0.00; r: Spearman's rho correlation coefficient; p: Significance level; MFA: Maternal fetal attachment; PFA: Paternal fetal attachment.

women and mean MFA scores.[15,21] In this sense, our findings are consistent with other studies in the literature. Consequently, we may argue that pregnant women with higher educational status will have more awareness on individual and fetal health, which, in turn, will have positive effects on maternal-fetal attachment.

The only study in the literature on the relationship between length of marriage and MFA and PFA scores did not find a significant relationship between these variables.[22] Although this study did not find a statistically significant relationship between length of marriage and MFA scores, PFA scores were found to be negatively associated with length of marriage. We believe that this finding may be related with the possibility that the interest of expectant fathers on marriage and pregnancy may decrease over time.

This study pointed that MFA and PFA scores were significantly higher for the nulliparous women compared to the participants, who had third or more pregnancies. This finding was supported in the study of Ustunsoz et al.[15] The study of Kaur and Mamta, Sagar also found a statistically significant relationship between parity and MFA and PFA scores.[22] This result, which is consistent with the literature, may be explained with the references to high levels of excitement and demand among the nulliparous women and their partners so that they may be more likely to develop prenatal attachment.

Participants that had 3 or more children had lower MFA and PFA scores compared to the participants with 1 or 2 children. This finding is similar to those reported earlier in the literature.[15,22] Based on this finding, we may argue that high number of chil-

dren in a family may increase physical and emotional burden on mothers and fathers, which, in turn, may negatively affect prenatal attachment.

Although there was no significant relationship between planning of pregnancy and MFA scores, we found that PFA scores of expectant fathers were significantly high for planned pregnancies compared to unplanned pregnancies. Existing studies also found that planned pregnancy was associated with higher PFA scores.[9,15,22] Our finding is similar to the literature on paternal attachment. We may conclude that since expectant fathers were more ready in case of planned pregnancy, their prenatal attachment was higher.

We also found that MFA and PFA scores were higher in case the pregnant women had amniocentesis. Since there is no study that deals with the impact of having amniocentesis on MFA and PFA scores, our findings are important. Amniocentesis is an invasive intervention, which aims to determine fetuses with chromosome anomalies during prenatal period and which may lead to complications.[23] We believe that this invasive intervention may lead to fears for losing the fetus, which, in turn, may increase prenatal parental attachment. Health professionals should support the pregnant women and their husbands during the process of amniocentesis.

Few studies analyze the impact of treatment for infertility on prenatal attachment. Kaur and Mamta, Sagar found that the treatment of infertility had a statistically significant impact on MFA scores rather than PFA scores.[22] In our study, although infertility had no impact on MFA score, PFA score of the expectant fathers that received infertility treatment was significantly higher than the participants without infertility treatment. A recent literature suggests that prenatal attachment was similar or higher for most couples who conceived following assisted reproductive technology (ART), the level of prenatal attachment was either similar to or higher than in couples who conceive without ART.[24] This finding should be investigated on larger groups of people.

We did not find a statistically significant difference between the MFA scores of the participants that saw their babies via ultrasound and that did not see.

On the other hand, PFA score of the expectant fathers, who saw their babies via ultrasound was significantly higher than other fathers. Seeing the fetus via ultrasound helps the couples to consider the fetus as an individual, establish communication with the fetus and maintain the participation of the father to the stages of pregnancy, which, in turn, contributes to prenatal attachment.[9,10]

Literature emphasized that partners may neglected the feelings of the pregnant women in prenatal period.[18] This situation is thought to be related with how much the pregnant women share about their pregnancy process with their spouses. On this topic, we found that the PFA scores of the fathers that had positive feelings when they found out pregnancy was significantly higher than the fathers without positive feelings whereas PFA scores of the fathers that had negative feelings were significantly lower than those of other fathers.

We also found that MFA scores of the pregnant women that were surprised when they saw their babies via ultrasound were statistically significantly higher than those of other women. These findings indicated that emotional mood of the couples influence prenatal attachment and has an impact on the adaptation of the expectant fathers to their parental roles.

Participants of our study had high prenatal attachment and there was a statistically significant relationship between MFA and PFA scores, which is parallel to the findings of other studies in the literature.[15,22,25] We may suggest that health professionals should deal with the factors that increase prenatal attachment in prenatal education programs so that awareness of the couples on the importance of prenatal attachment may increase. Our study also found that MFA and PFA scores of the couples that considered their relationship as very good and good were significantly higher than those of the couples that had moderate, bad or very bad relationship. Kaur and Mamta, Sagar study revealed the positive impact of couples' relationship on prenatal attachment.[22] Our findings are consistent with the literature. We may expect that a positive relationship between the couples may help couples tolerate the problems during pregnancy and increase prenatal attachment.

STUDY LIMITATIONS

Limitations of this study include the followings:

- Since the study was conducted at a single province in Türkiye, the findings may not be generalizable to the whole Turkish population.

- Findings of the study is limited to the scientific data form.

CONCLUSION

Healthy prenatal period and healthy family structure can be provided by positive MFA and PFA. This study found a positive relationship between the MFA and PFA scores of the pregnant women and their partners in prenatal period. Educational status, having very good or good relations with the partner, parity, number of children, having amniocentesis and feeling of surprise when seeing the baby via ultrasound had significant impact on MFA scores of pregnant women. On the other hand, length of marriage, evaluation of marriage relationship, parity, number of children, having amniocentesis, planned marriage, health problems during pregnancy, and positive feelings when the couples found out pregnancy and when they saw the baby via ultrasound, had significant impact on PFA scores of expectant fathers.

Health care professionals should have essential roles to increase awaressness of maternal- and paternal-fetal attachments for couples during pregnancy and develop effective intervention strategies evaluating factors that affect maternal- and paternal-fetal attachment of the couples and supporting them to develop attachment behaviours in prenatal period.

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