PERINATAL JOURNAL

Original Article

Perinatal Journal 2022;30(1):43–50

Prenatal attachment in the pregnancy: its relationship with fear of childbirth

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Abstract

Objective: The aim of this study was to determine the level of prenatal attachment of pregnant women and its relationship with fear of childbirth.

Methods: This descriptive and cross-sectional study was conducted with a total of 125 pregnant women who applied to outpatient obstetric unit of a training and research hospital in Ankara between September 2019 and March 2020. The data were collected using the "Participant Information Form", "Wijma Delivery Expectation Questionnaire Version A (W-DEQ A)" and "Prenatal Attachment Inventory (PAI)".

Results: The average PAI score of pregnant women is 67.19±9.56. It was found that there was a significant relationship between the education level of pregnant women and the average PAI score (p=0.002). There was no significant difference between the gestational age, income level, education level, working status, obstetric characteristics of pregnant women, and average PAI score (p<0.05). A negative, weak, and significant relationship was found between W-DEQ A and PAI scores (r=-0.183, p=0.041). According to the linear regression model, it was found that the age, duration of the marriage, and fear of childbirth of pregnant women had a significant effect on the total score of PAI (p=0.001, p=0.018, p=0.019, respectively).

Conclusion: The high fear of childbirth, young age and short marriage time may decrease prenatal attachment. As the fear of childbirth of pregnant women increases, the level of prenatal attachment decreases.

Keywords: Pregnancy, prenatal attachment, fear of childbirth.

Introduction

Pregnancy and childbirth are defined as the transitional stage of an existential process that women of reproductive age have to go through.[1] The expectations and experiences of women regarding childbirth can be experienced as positive and negative at the same time and can be seen as happiness, faith, anxiety or fear.[1,2]

According to the attachment theory first put forward by John Bowlby in the early 1960s, an adult willing to take care of and protect themselves is essential for newborn babies to maintain their lives.[3,4] Attachment bond, which takes shape at an early stage of life and is assumed to be continuous throughout life, is a conceptualized phenomenon that shapes the pattern of individuals forming relationships with other people.[4,5]

Prenatal attachment is the bond between parents and their babies during the prenatal period.[6] It is suggested that mother-infant bonding during pregnancy can be seen as an emotional bond that has similarities with attachment but is not the same as traditional infant-adult bonding.[7] The prenatal attachment consists of three essential components: cognitive (the ability to accept the fetus as a person and give it personality), emotional (the empathic bond established with the fetus), and behavioral (interaction and role-playing with the fetus).[8] Prenatal attachment is crucial since it is the first cognitive, emotional, and behavioral relationship between the mother and fetus. Feelings related to attachment begin to be observed from the first trimester of pregnancy, increase with the progression

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e-mail: meltemugurlu17@gmail.com / **Received:** February 4, 2022; **Accepted:** February 23, 2022

How to cite this article: Uğurlu M, Çoban Z. Prenatal attachment in the pregnancy: its relationship with fear of childbirth. Perinat J 2022;30(1):43–50. doi:10.2399/prn.22.0301010

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of pregnancy and intensify, especially in the last trimester.[9–12]

It is reported that the concept of prenatal attachment introduced by Rubin, a nurse, is also a strong predictor of postpartum mother-baby attachment today.[8,9,13] Many studies have investigated factors contributing to and preventing prenatal attachment. It has been determined that some psychosocial variables such as socio-demographic characteristics of individuals, risky situations related to pregnancy, obstetric characteristics, anxiety, depression, and fear of childbirth may be related to prenatal attachment.[2,11,13,14] It is stated that the fear of childbirth is experienced for various reasons such as pain during childbirth, the thought that harm may occur to the baby or herself, or the risk of losing control also affects the prenatal attachment of pregnant women.[14,15]

Strong prenatal attachment during pregnancy is vital for maternal and infant health. While a positive prenatal attachment facilitates psychological adaptation to the parenting role during pregnancy, excessive stress, inability to adapt to the motherhood role, and difficulties that harm the mother and her health during childbirth can lead to poor prenatal attachment.[8,11]

Nurses' and midwives' ability to manage the caring process by identifying prenatal attachment between mother and fetus and situations that may affect it can positively contribute to increasing the attachment levels of pregnant women by making appropriate interventions for women at risk of weak attachment. Of the healthcare professionals, nurses and midwives are the closest ones to women during the pregnancy and postpartum periods, and they are the most important sources of support for pregnant women. In this context, this study has been planned to evaluate prenatal attachment and the factors affecting prenatal attachment in pregnancy, develop recommendations for providing the necessary support to pregnant women with weak attachment, and provide educational counseling services.

Methods

Our study's sample, which is planned in descriptive and cross-sectional type, consists of 125 pregnant women who applied to outpatient obstetric unit of a training and research hospital in Ankara. Research data were collected between September 2019 and March 2020. The study inclusion criteria were the women over 18 who are literate in Turkish, those willing to participate in the study, and the exclusion criteria were multiple pregnancies, risky pregnancies and the women diagnosed with a psychiatric illness.

Three questionnaires were used for data collection: Participant Information Form (PIF), Wijma Delivery Expectation Questionnaire version A (W-DEQ A) and Prenatal Attachment Inventory (PAI). PIF consists of 16 questions including pregnant women's socio-demographic characteristics (age, income level, education level, family type, employment status, chronic disease) and obstetric characteristics (week of gestation, pregnancy planning status, regular antenatal follow-up, participation in training about birth and pregnancy, number of pregnancies, experiencing dilation/curettage, type of delivery in a previous pregnancy, having problems in a previous pregnancy, planned delivery type).

W-DEQ A is a standard form to assess fear of childbirth during pregnancy.[16] The scale consists of 33 items in 6-point Likert type, each of which is answered between 0 "extremely" and 5 "not at all". The total score obtained from the scale varies between 0 and 165. Some items on the scale (2, 3, 6–8, 11, 12, 15, 19, 20, 24, 25, 27, 31) are scored inversely. The scores obtained from the scale below 37 indicate low-level fear, 38–65 points indicate medium-level fear, 66–84 points indicate high-level fear and >85 points indicate clinical-level fear. The Turkish validity and reliability study of the scale was conducted by Korukcu et al. in 2012.[17]

PAI was developed by Muller and Mercer, to explain the thoughts, feelings, and situations experienced by women during pregnancy and determine the level of attachment to the baby during the prenatal period.[18] The scale consists of 21 items in 4-point Likert type, each of which is answered between 1 "sometimes" and 4 "always". The total score obtained from the scale varies between 21 and 84. Yılmaz and Beji conducted the Turkish validity and reliability study of the scale in 2013.[7]

The ethical approval of the study was obtained from the Ethics Committee of the University of Health Sciences for Non-Interventional Research (Ethics Committee protocol code: 25.09.2019-19/295). The study was conducted in accordance with the Helsinki declaration. The participants were informed about the purpose of the study and informed that personal information would be kept confidential and used only for research. Then, the consents were obtained from the women who volunteered to participate in the study and were included in the sample. Data collection forms were

distributed to the women, and they were asked to fill them out. It took an average of 15–20 minutes for the participants to complete the data collection forms.

The data were analyzed with SPSS 20.0 package program (IBM SPSS Statistics for Windows, Armonk, NY, USA). Number, percentage, mean, standard deviation, minimum, and maximum values were used for descriptive statistics. The Kolmogorov-Smirnov test was used to evaluate the suitability of the data for normal distribution. In comparing PAI score averages according to pregnant women's descriptive and obstetric characteristics, two independent sample T-tests and one-way ANOVA test were used for the normally distributed data. Pearson's correlation test was used to compare the scale scores. Multiple linear regression analysis evaluated the effect of independent variables on the PAI score average. In order to include variables in the model, the enter model was used. The level of error for all analyses was determined 0.05.

Results

First, the demographic data of the study are presented. The mean age of the pregnant women was 28.20±70 years, and the mean gestational age was 31.51±22 weeks. 51.2% of women are at the undergraduate and higher education level, 56.8% are not working, and 68.8% have an income equivalent to expenses. 86.4% of women stated that they had a planned pregnancy, 80% participated in regular antenatal follow-up, 48.8% participated education about pregnancy and childbirth, and 68% stated that the planned mode of delivery was a vaginal birth. 37.6% of women were primigravida, and 62.4% were multigravida.

It was found that there was no statistically significant difference between the PAI score averages of pregnant women according to gestational age, income level, family type, working status, and chronic disease status ($p>0.05$). It was found that there was a statistically significant difference between the education level of the participants and the PAI score averages ($p=0.002$). After further analysis, it was found that those at the undergraduate and higher education level score the highest in PAI; and those who are literate score the lowest; the difference between the average scores is due to these groups (**Table 1**).

Table 2 shows the distribution of PAI score averages according to some obstetric characteristics of pregnant

Table 1. Comparison of the pregnant women's mean scores of PAI according to socio-demographic characteristics.

		n	%	PAI score
Week of gestation	20–28	37	29.6	67.59±9.86
	≥29	88	70.4	67.02±9.49
	p-value			0.766*
Income level	Income less than expenses	17	13.6	66.75±9.56
	Income equivalent to expense	86	68.8	67.20±9.8
	Income more than expenses	22	17.6	67.69±2.35
	p-value			0.955†
Education level	Elementary schoolx	7	.6	57.85±9.44
	High schoolxy	54	43.2	65.61±9.48
	Undergraduate and masterz	64	51.2	69.55±8.86
	p-value			0.002†,‡
Family type	Nuclear	103	82.4	67.74±8.77
	Extended	22	17.6	64.62±12.57
	p-value			0.167*
Working status	Working	54	43.2	67.58±9.65
	Not working	71	56.8	66.89±9.56
	p-value			0.689*
Chronic disease	Yes	27	21.6	68.37±9.31
	No	98	78.4	66.87±9.65
	p-value			0.473*

*Student's t-test. †ANOVA. ‡$p<0.050$. ANOVA: analysis of variance. **x-z:** there is no difference between groups with the same letter (Tukey HSD).

Table 2. Comparison of the pregnant women's mean scores of PAI according to obstetrics characteristics.

		n	%	PAI score
Planned pregnancy	Yes	108	86.4	67.50±9.25
	No	17	13.6	65.23±11.50
	p-value			0.366*
Regular antenatal follow-up	Yes	100	80.0	67.39±9.68
	No	25	20.0	66.38±9.25
	p-value			0.636*
Education about pregnancy and childbirth	Yes	61	48.8	67.37±9.84
	No	64	51.2	67.00±9.34
	p-value			0.833*
Number of pregnancies	1	47	37.6	67.75±9.62
	2	46	36.8	66.93±9.84
	≥3	32	25.6	66.75±9.33
	p-value			0.879†
D&C	Yes	34	27.2	66.97±8.77
	No	91	72.8	67.27±9.89
	p-value			0.874*
Type of previous delivery	Vaginal	43	64.2	6.23±9.54
	C/s	24	35.8	69.79±9.14
	p-value			0.061*
Problem in previous pregnancy	Yes	14	18.0	66.50±11.16
	No	64	82.0	66.84±9.38
	p-value			0.905*
Planned mode of delivery	Vaginal	85	68.0	67.10±9.72
	C/s	40	32.0	67.37±9.35
	p-value			0.886*

*Student's t-test. †ANOVA. ANOVA: sanalysis of variance; **C/s:** cesarean section; **D&C:** dilatation and curettage.

women. It was found that there was no statistically significant difference between the obstetric characteristics of pregnant women and the PAI score averages (p<0.05) (**Table 2**).

The data of fear of childbirth at clinical level according to subgroups are reflected in **Fig. 1.** It was found that the mean W-DEQ-A score of pregnant women was 52.01±22.32, and the mean PAI score was 67.19±9.56. It was found that there was a negative significant relationship between the mean W-DEQ A score and the mean PAI score of pregnant women (r=-0.183; p=0.041). Accordingly, prenatal attachment levels decrease as the fear of childbirth of pregnant women increases (**Table 3**).

The effects of age, gestational age, educational status, working status, income level, marriage period, regular antenatal check-up, participation in birth preparation training, planned pregnancy status, dilation & curettage (D&C) history, currently having problems

Table 3. The correlation between W-DEQ-A and PAI scores.

	Min–max	Mean±SD	Correlation*
W-DEQ-A-total	0–165	52.01±22.32	r=-0.183
PAI-total	21–84	67.19±9.56	**p=0.041**

The bold values represent the p<0.05, and show that the item has statistical difference. *Pearson's correlation coefficient was used to analyze the relationship of two quantitative variables in data with normal distribution.

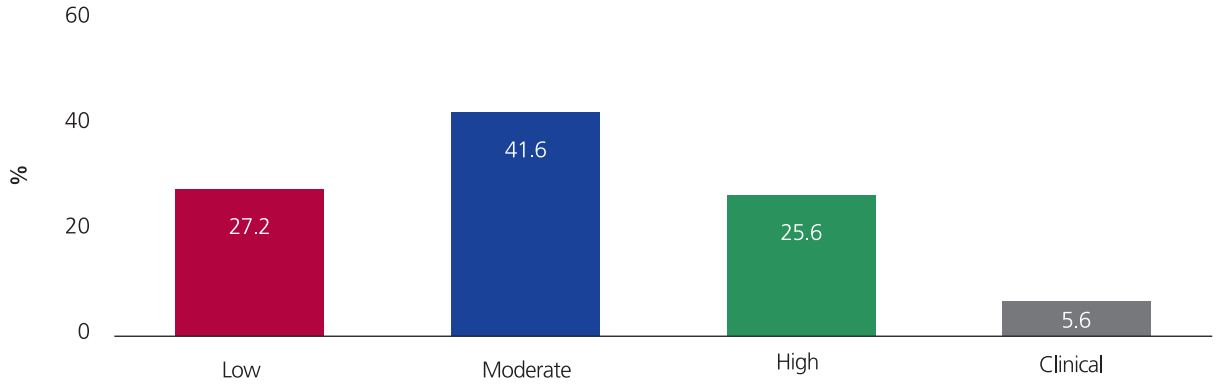

Fig. 1. W-DEQ A scores of women according to subgroups.

with pregnancy, and W-DEQ A total score variables on the total score of PAI were examined in the multiple linear regression analysis applied in our study. As a result, it was found that age, duration of the marriage, and fear of childbirth had a significant effect on the total score of PAI (p=0.001, p=0.018, p=0.019, respectively). According to the model, when there is one unit decrease in age, there will be an increase of 0.728 in the pregnant woman's score. It was determined that when there is an increase of one unit in the marriage period, there will be an increase of 2.612 in the pregnant woman's score. When there is one unit decrease in fear of childbirth, there will be an increase of 0.097 in the pregnant woman's score. The model describes 13.3% of the PAI score of pregnant women (**Table 4**).

Discussion

This study is planned to determine the factors affecting prenatal attachment during pregnancy, evaluate the relationship between prenatal attachment and fear of childbirth, and develop recommendations for positive supporting the attachment of pregnant women in the prenatal period.

Our study determined that the prenatal attachment level of pregnant women was high (67.19±9.56). When the literature is examined, prenatal attachment levels are at a good level,[5,11,19–21] but they are at a lower level than our findings. In our study, we can say that the prenatal attachment levels of pregnant women are high. This may be because the number of pregnant women

Table 4. Multiple linear regression analysis results on the factors affecting the PAI total score.

	B (95% CI)	Beta	t	p	Zero-order	Partial
(Constant)	76.552 (64.543–88.561)	0.000				
Age	-0.728 (-1.15–-0.306)	-0.434	-3.421	**0.001***	-0.158	-0.31
>29 weeks of gestation	-0.445 (-4.076–3.186)	-0.021	-0.243	0.809	-0.027	-0.02
Graduate university degree	2.168 (-3.036–7.371)	0,076	0.825	0.411	0.027	0.08
Income equal to expenses	0.482 (-4.254–5.218)	0.023	0.202	0.841	0.002	0.02
Income more than expenses	1.32 (-5.435–8.074)	0.047	0.387	0.699	0.021	0.04
To be working	0.878 (-3.25–5.007)	0.046	0.422	0.674	0.036	0.04
Marriage time	2.612 (0.457–4.766)	0.307	2.402	**0.018†**	-0.005	0.22
Regular antenatal follow-up	-0.882 (-5.623–3.86)	-0.037	-0.368	0.713	0.043	-0.03
Education about pregnancy and childbirth	-1.2 (-4.859–2.458)	-0.063	-0.650	0.517	0.019	-0.06
D&C	-0.311 (-4.102–3.481)	-0.015	-0.162	0.871	-0.014	-0.02
W-DEQ A total	-0.097 (-0.178–-0.016)	-0.227	-2.371	**0.019†**	-0.183	-0.22

*p<0.001; †p<0.05. **B:** non-standardized coefficient; **Beta:** standardized coefficient; f=2.463, p=0.006, Adj.R^2=0.133, SE=8.909; **D&C:** dilatation and curettage.

who have a high fear of childbirth and a low clinical level in our study is low.

In our study, a significant relationship was found between the level of education and the average prenatal attachment score in pregnant women. Pregnant women with a high level of education have a higher average prenatal attachment score. Yılmaz and Beji[22] and Tuncel and Sut[23] have obtained similar results to our findings in their studies. Camarneiro and Justo[6] reported that the quality of attachment in pregnant women did not change according to age, while Yarzheski[24] stated that the level of education had a low effect on maternal-fetal attachment. Elkin[10] also found that educational status had no effect on prenatal attachment. In order to obtain accurate information about the effect of education on prenatal attachment, it is recommended to conduct studies with a high level of evidence.

There was no significant difference between the income level of pregnant women, family type, working status, chronic disease situation, and prenatal attachment. Similarly, it has been determined that there is no difference between family type[10,22] and economic status[22] and prenatal attachment levels of pregnant women in the literature. Differently, Yılmaz and Beji[22] determined that prenatal attachment decreased in pregnant women who did not work, while Tuncel and Sut[23] determined that prenatal attachment decreased in pregnant women who worked. In addition, Elkin[10] found that prenatal attachment was significantly higher in pregnant women whose income was higher than their expenses. A meta-analysis study found that the effect of age and income on maternal-fetal attachment was low.[24]

In the study, there was no difference between the participants' pregnancy week, pregnancy planning status, regular antenatal follow-up, participation in pregnancy and birth-related education, number of pregnancies, previous delivery, D&C history, and prenatal attachment levels according to the planned delivery type. Similar to our findings, there was no relationship between prenatal attachment and voluntary pregnancy,[10,25] number of pregnancies,[10,22] weeks of gestation,[13] and miscarriage[13] in the literature. However, unlike our findings, there are also studies indicating the prenatal attachment level of those planning a pregnancy[22] and primiparas[11,22,26] are higher. On the other hand, Tuncel and Sut[23] and Elkin[10] stated that prenatal attachment increases in pregnant women as the week of gestation increases. According to these findings, socio-demographic and obstetric characteristics affect prenatal attachment, but they vary. It is thought that these changes may be because the studies were conducted with sample groups with different socioeconomic, cultural, and social characteristics.

Our study found that the average score of pregnant women's fear of childbirth was moderate, and in other studies conducted in Turkey, it was partially higher.[27,28] In this study, it was found that pregnant women who experience fear at a high level (25.6%) and a clinical level (5.6%) have a lower rate than the results of similar studies conducted in Turkey.[2,27,28] In a systematic review on the fear of childbirth, it was reported that 6.3–14.8% of pregnant women experience severe levels of fear.[1] Per these data, it was evaluated that the rates of pregnant women who experienced fear at the clinical level were relatively lower.

Our study determined that there is a significant relationship between women's fears of childbirth and prenatal attachment in the opposite direction, and as women's fears of childbirth increase, their attachment levels decelerate. Our findings obtained from the regression model support that fear of childbirth has a significant effect on the total score of prenatal attachment. Garthus-Niegel et al.[29] found similar results to our finding, but on the contrary, Gürol et al.[14] found a positive relationship between fear of childbirth and prenatal attachment. In our study, it can be interpreted that the reason for finding a significant inverse relationship in our study is that communication between the mother and fetus decays due to high levels of fear of childbirth, and the mother cannot focus on her baby since her mind is busy with fear of childbirth. In this case, to increase the level of prenatal attachment during pregnancy, it is recommended that pregnant women with a high fear of childbirth be identified by nurses and midwives and planned training and counseling for prevention.

According to the multiple linear regression model, we found that apart from fear of childbirth, the duration of marriage and age also had a significant effect on the total score of PAI. According to the model, as age decreases, there is an increase in the level of prenatal attachment. Yılmaz and Beji[22] found that the PAI

scores of thirty-five years of age and older are significantly lower. The results of the study conducted by Camarneiro and Justo[6] also indicated that younger pregnant women had higher attachment quality. Damato[25] reported that younger mothers have more prenatal attachment to their twin babies. These studies support our findings. On the other hand, Elkin[10] found no significant relationship between age and prenatal attachment. At the same time, in this study, it was found that prenatal attachment levels increase as the duration of marriage increases. There is no study in the literature examining the effect of the duration of marriage on prenatal attachment. This finding contributes to the literature.

The study's limitations should be taken into account when evaluating the results of the study. Our most significant limitation is using rating scales based on participants' self-reports in the collection of data. Therefore, their answers are the personal statements of pregnant women, and it is not always possible to say that they will be absolutely correct. At the same time, scales can be interpreted differently according to society's cultural habits and social circles in which they are used. This situation can be considered a limitation on the validity and reliability of the study. In addition, since this study is a cross-sectional study and the number of the participants is limited to 125 pregnant women, studies with larger samples can add new information to the literature.

Conclusion

As a result, in this study, we determined that the prenatal attachment levels of pregnant women were high, and the fear of childbirth was at a moderate level. There was a significant difference between the educational status of women and their PAI score averages. However, there was no significant difference between the other sociodemographic and obstetric characteristics and their mean PAI scores. In our study, we found that prenatal attachment levels decrease as women's fears of childbirth increase. According to the linear regression model, we found that the age, duration of the marriage, and fear of childbirth of pregnant women had a significant effect on the total score of PAI. If other pregnant women with a clinical level of fear of childbirth and risk of prenatal attachment are detected early, a better level of prenatal attachment can be achieved during pregnancy. In order to identify risky situations, if necessary, it is recommended to use validity-based measurement tools and take the necessary measures to increase prenatal attachment. Increasing the level of prenatal attachment is also essential to help prevent possible problems after childbirth.

Nurses and midwives have important roles while giving care to women during the pregnancy period. For them, knowing the level of women's prenatal attachment and determining the factors affecting them in the antenatal period is of great significance in planning and implementing their training and care.

Funding: This work did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Compliance with Ethical Standards: The authors stated that the standards regarding research and publication ethics, the Personal Data Protection Law and the copyright regulations applicable to intellectual and artistic works are complied with and there is no conflict of interest.

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