





# The Relationship Between Distress and Prenatal Attachment During Pregnancy

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Article Info	ABSTRACT
<b>Article History</b> Received: 16.05.2023 Accepted: 01.07.2023 Published: 26.08.2023	<b>Purpose:</b> This study aimed to examine the relationship between the distress levels of pregnant women and prenatal attachment. <b>Method:</b> It was a cross-sectional study that was conducted on pregnant women applying to Maternity Hospital Non-Stress Test unit in Anatolia between May and September 2014. A total of 310 pregnant women who met the inclusion criteria participated in the study. Data were collected using the Tilburg Pregnancy Distress Scale (TPDS) and Prenatal Attachment Inventory (PAI) questionnaires. The data were presented with numbers, mean, and percentages. Moreover, Pearson's correlation analysis, independent samples t-test, and one-way analysis of variance were performed to analyze the data. Statistical significance level was accepted as $p < 0.05$ . <b>Results:</b> While the TPDS mean score was $17.48 \pm 6.98$ , the mean PAI score was $53.63 \pm 12.75$ . It was observed that 8.1% of pregnant women were diagnosed with distress (TPDS score $\geq 28$ ). The prenatal attachment score was determined as $45.40 \pm 13.54$ in pregnant women diagnosed with distress and $54.35 \pm 12.45$ in women diagnosed without distress ( $p = 0.001$ ). A significant correlation was found between the prenatal attachment and the distress mean scores ( $r = -0.245$ , $p = 0.001$ ). <b>Conclusion and Suggestions:</b> A negative and weak relationship was found between the distress levels of pregnant women and their prenatal attachment mean score. As the distress scores increased in pregnant women, the prenatal attachment mean scores decreased. So, it is important to determine the level of mother-infant attachment. In this context, it may be suggestable to carry out studies involving more centers and other variables that can be affected.
<b>Anahtar Kelimeler:</b> Distress, Midwifery, Pregnant, Attachment.	

## Gebelikte Distres ile Prenatal Bağlanma Arasındaki İlişki

Makale Bilgileri	ÖZ
<b>Makale Geçmişi</b> Geliş: 16.05.2023 Kabul: 01.07.2023 Yayın: 26.08.2023	<b>Amaç:</b> Bu çalışmanın amacı, gebelikte distres ile prenatal bağlanma arasındaki ilişkiyi incelemektir. <b>Yöntem:</b> Araştırma ilişki arayıcı tasarımda, Anadolu'da bulunan kadın doğum hastanesinin Non-Stress Test biriminde Mayıs-Eylül 2014 tarihleri arasında başvuran gebeler üzerinde yapıldı. Çalışmaya dahil edilme kriterlerini karşılayan toplam 310 gebe katıldı. Veriler, Tilburg Gebelikte Distres Ölçeği ve Prenatal Bağlanma Envanteri kullanılarak toplandı. Veriler sayı, ortalama ve yüzde olarak sunuldu. Ayrıca Pearson korelasyon analizi, bağımsız örneklem t-testi ve tek yönlü varyans analizi yapıldı. <b>Bulgular:</b> TPDS ortalama puanı $17.48 \pm 6.98$ iken PAI puanı $53.63 \pm 12.75$ idi. Gebelerin %8.1'inin distres (TPDS skoru $\geq 28$ ) tanısı aldığı görüldü. Prenatal bağlanma puanı distresli gebelerde $45.40 \pm 13.54$ , distresiz gebelerde $54.35 \pm 12.45$ olarak belirlendi ( $p = 0.001$ ). Gebelikte distres ile prenatal bağlanma puan ortalamaları arasında anlamlı bir ilişki bulundu ( $r = -0.245$ , $p = 0.001$ ). <b>Sonuç ve Öneriler:</b> Gebelerin distres düzeyleri ile prenatal bağlanma puan ortalamaları arasında negatif yönde ve zayıf düzeyde bir ilişki bulunmuştur. Gebelerin distres puanları arttıkça doğum öncesi bağlanma puan ortalamaları azalmaktadır.
<b>Keywords:</b> Distres, Ebelik, Gebe, Bağlanma.	

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### INTRODUCTION

Pregnancy is an experience that causes many physiological, psychological, and social changes in woman from her appearance to the social status. While many women easily adapt to these changes, some women find it difficult to adapt, so physiological or psychological problems may arise (Dündar et al., 2019).

One of the most important events during pregnancy is prenatal attachment. It is an emotional bond formed between parents and unborn baby. This sense of attachment begins when the pregnancy responds in a positive way. The attachment of the expectant mother to her baby increases as she physically changes for example when the abdomen expands or when she feels fetal movements (Akarsu et al., 2017). It is emphasized that there is a positive relationship between the level of psychosocial health and prenatal attachment especially during pregnancy (Bekmezci and Özkan, 2017).

It is estimated that one out of ten pregnant women experience distress during pregnancy (Dündar et al., 2019). In a meta-analysis consists of 66 studies conducted in 25 countries including Turkey in 2017, it was found that the prevalence of anxiety and depression disorder during pregnancy was 9.3% and the prevalence of co-diagnosis of anxiety and depression disorders was 1.7% (Falah-Hassani et al., 2017). Anxiety and depression experienced during pregnancy can cause many complications for newborn such as birth complications, preterm birth, low birth weight, and intrauterine growth retardation (Dağlar et al., 2015). So, the early diagnosis of anxiety and depression during pregnancy is very important not only for the pregnant woman but also for the health of the baby and the family (Dağlar et al., 2015; Öztürk and Aydın, 2017; Topaç Tunçel and Kahyaoğlu Süt, 2019). Also, a review of the literature highlighted the importance of evaluating the stress during pregnancy, obtaining detailed information as well as applying appropriate interventions to reduce stress (Topaç Tunçel and Kahyaoğlu Süt, 2019). So, this study aimed to examine the relationship between the distress levels of pregnant women and prenatal attachment.

### Research Questions

1. Is there any differences in attachment score in pregnant women with and without distress?
2. Is there a relationship between prenatal attachment and distress in pregnancy?

### METHOD

#### Research Design

This was a cross-sectional study that was conducted between May to September 2014. The setting was the Non-stress Test (NST) unit of a Maternity Hospital in Anatolia, Turkey. This hospital offers services to women of all socio-economic statuses.

#### Participants

Considering the mean score ( $60.7 \pm 10.1$ ) stated in the study of Dereli Yılmaz and Kızılkaya Beji (2010), one unit difference, 80% power,  $\alpha = 0.05$  margin of error, 310 people were included in the sampling. The study included pregnant women who were above the 20th gestational week, had no high-risk for pregnancy (i.e. diabetes mellitus, preeclampsia-eclampsia, early rupture of membrane, and premature birth threat, etc.), had not a known mental disorder, had at least primary school education, and agreed to participate in the study.

#### Research Instruments and Processes

The data were collected with face-to-face interviews by using a personal information form, Tilburg Pregnancy Distress Scale, and Prenatal Attachment Inventory.

**Personal Information Form:** This form consists of 15 questions regarding age, income, education level, employment status, family type, number of pregnancies, number of children, pregnancy status, and support during pregnancy.

**Tilburg Pregnancy Distress Scale (TPDS):** This scale was developed by Pop et al. (2011) to assess distress during pregnancy. The scale consists of 16 items. Each item is rated on a 4-point Likert scale ranging from “very often” (0) to “rarely or never” (3). While the lowest score on the scale is zero, the highest score is 48. A score of 28 and above shows distress. The scale can be applied to pregnant women with a pregnancy of 12 weeks and above. Turkish validity and reliability study of the scale was conducted by Çapık and Pasinlioğlu in 2015. In that study, the Cronbach Alpha value was determined as 0.83 (Capik & Pasinlioglu, 2015). In this study, the Cronbach Alpha was determined as 0.72 for the total TPDS.

**Prenatal Attachment Inventory (PAI):** This scale was developed by Muller in 1993 to explain the thoughts, emotions, and conditions experienced by women throughout pregnancy and determine the level of prenatal attachment to their infants. Turkish validity-reliability of the study was conducted by Dereli Yılmaz and Kızılkaya Beji (2013). The scale consists of 21 items. Each item is rated on a four-point Likert scale varying between never (1) to always (4). The lowest and the highest scores on the scale are 21 and 84, respectively. The increase in the score shows an increase in attachment level. The Cronbach alpha of the overall scale was reported as 0.84 (Dereli Yılmaz & Kızılkaya Beji, 2013). In this study, the Cronbach alpha was found to be 0.90.

### **Data Analysis**

Compliance of numerical data with normal distribution was determined by Kolmogorow–Smirnow test, Skewness, and Kurtosis. The data were assessed using the percentage distribution, mean, standard deviation, Pearson’s correlation analysis, independent samples t-test, one-way analysis of variance (ANOVA), and the post-hoc Bonferroni test. It was determined that the power of the study for the correlation analysis (for correlation between TPDS and PAI) at the significance level of 0.05 and in the confidence interval of 95% was 0.99 (G\*Power analysis program was used for power calculation). These parameters were used in two-way analysis:  $r = -0.245$ ,  $\alpha \text{ error} = 0.05$ ,  $n = 310$  parameters were used). The SPSS software (version 16, SPSS Inc., Chicago) was used to analyze the data. Statistical significance level was accepted as  $p < 0.05$ .

### **Ethic**

In order to conduct the study, an approval from the Ethics Committee of a university in Anatolia. (no:2014/01/01), was obtained. Also, a written permission from the institution and verbal consent from the participants were received.

### **RESULTS**

Pregnant women had a mean age of  $27.06 \pm 4.95$ . Almost half of the pregnant women (44.2%) were primary school graduates and 90.6% were housewives. Also, 31.9% had their first pregnancy, and 33.9% had no children (Table 1). The analysis showed that those women with a high income ( $p = 0.001$ ), a high education level ( $p = 0.001$ ), living in a nuclear family ( $p = 0.004$ ), without children ( $p = 0.001$ ), who want to be pregnant again ( $p = 0.001$ ), and who are supported during pregnancy ( $p = 0.001$ ) had the highest prenatal attachment levels. Also, it was found that pregnant women who were housewives had lower levels of prenatal attachment compared to those who were clerk ( $p = 0.007$ ). Women who had their first pregnancy had higher levels of prenatal attachment compared to those who had their third and fourth pregnancies. Also, those who had their second pregnancy had higher levels of prenatal attachment compared to those who had the fourth pregnancy ( $p = 0.001$ ) (Table 1).

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**Table 1.** Sociodemographic Characteristics of Pregnant Womens and Comparison of Prenatal Attachment Scores

Sociodemographic characteristics	n (%)	PAI Mean±SD	p-value
Age (Mean±SD)	27.06 ± 4.95		0.085 <sup>a</sup>
Income (TL) (Mean±SD)	1586.48± 1046.86		0.001 <sup>a</sup>
<b>Educational level</b>			
Primary school	137 (44.2)	49.41± 12.73	
Middle school	69 (22.3)	53.59± 11.85	
High school	70 (22.6)	58.05± 11.24	0.001 <sup>b</sup>
University and above	34 (11.0)	61.61± 10.95	
<b>Employment status</b>			
Housewife	281 (90.6)	53.01± 12.53	
Clerk	24 (7.7)	61.41± 13.11	0.007 <sup>b</sup>
Worker	5 (1.6)	51.20± 13.86	
<b>Family type</b>			
Nuclear family	222 (71.6)	54.94± 12.13	0.004 <sup>c</sup>
Extended family	88 (28.4)	50.34± 13.73	
<b>Number of pregnancy</b>			
1	99 (31.9)	58.31 ± 11.98	
2	82 (26.5)	54.89 ± 12.22	0.001 <sup>b</sup>
3	76 (24.5)	50.69 ± 11.89	
4 or more	53 (17.1)	47.16 ± 12.65	
<b>Number of children</b>			
No	105 (33.9)	58.51 ± 12.11	
1	91 (29.4)	53.63 ± 12.69	0.001 <sup>b</sup>
2	75 (24.2)	50.50 ± 11.56	
3 or more	39 (12.6)	46.51 ± 11.92	
<b>Pregnancy status</b>			
Wanted	252 (81.3)	55.90 ± 11.64	
Unwanted	58 (18.7)	43.77 ± 12.80	0.001 <sup>c</sup>
<b>Support during pregnancy</b>			
Yes	227 (73.2)	55.33 ± 11.49	
No	83 (26.8)	49.00 ± 14.82	0.001 <sup>c</sup>

<sup>a</sup> Pearson's correlation <sup>b</sup> One-way Anova <sup>c</sup> T-test

The pregnant women had a distress score of 17.48±6.98. According to the cut-off point of TPDS, 8.1% of pregnant women were diagnosed with distress. The pregnant women had a prenatal attachment mean score of 53.63±12.75 (Table 2).

**Table 2.** The Mean Scores of TPDS and PAI

Scales	(Mean ± SD)
TPDS	17.48 ± 6.98
PAI	53.63 ± 12.75

The prenatal attachment score was determined as 45.40±13.54 in pregnant women diagnosed with distress and 54.35±12.45 in women diagnosed without distress (t=3.424, p=0.001). Pregnant women with distress had lower levels of prenatal attachment compared to those without distress (Table 3).

**Table 3.** Comparison of Prenatal Attachment score According to The Presence of Distress

State of distress	n (%)	PAI	p value
≥28	25 (8.1)	45.40 ± 13.54	0.001 <sup>a</sup>
<28	285 (91.9)	54.35 ± 12.45	

<sup>a</sup> T-test

A negative relationship was found between prenatal attachment and distress scores ( $r=-0.245$ ,  $p=0.001$ ). As the prenatal attachment levels of pregnant women increased, their distress levels decreased. Also, it was found that as the income decreased, the distress score increased ( $p=0.001$ , Table 4).

**Table 4.** *The Relationship between of TPDS and PAI*

Scales	TPDS
PAI	$r = -0.245$ $p = 0.001^a$

<sup>a</sup> Pearson's correlation

### DISCUSSION

This study aimed to examine the relationship between the distress levels of pregnant women and prenatal attachment. Our results showed that pregnant women had moderate levels of prenatal attachment. Dereli Yılmaz et al. also determined that the pregnant women had moderate levels of prenatal attachment (Dereli Yılmaz & Kızılkaya Beji, 2010). According to Lindgren (2001) a higher prenatal attachment may change the behaviors of pregnant women and enable them to participate in positive health behaviors which contributes to positive neonatal outcomes (Lindgren, 2001).

The present study showed that 8.1% of pregnant women were diagnosed with distress. In various studies, the rate of distress and depression in pregnancy was found to be 11.9% and 24% (Bodecs et al., 2009; Capık et al., 2015; Pop et al., 2011:80; Prost et al., 2012). This difference might be attributed to cultural features since different cultures have different family structures and also the value of pregnant women and pregnancy differs from culture to culture.

Also, the present study showed no relationship between age and prenatal attachment. Also, it was determined that while university graduates had higher levels of prenatal attachment, housewives had a lower level and as the income status increased, the level of attachment increased. In some studies done by Topaç Tunçel and Kahyaoğlu Süt (2019), Ustunsoz et al., (2010), Chen et al., (2011), and Kwon and Bang (2011), it was determined that there is a positive relationship between the educational level and prenatal attachment. A higher education level positively affects the working condition and consequently the income status. A good income status enables pregnant women to meet their own needs sufficiently, keep away from stress, and establish better relationships with their infants.

In this study, it was determined that pregnant women living in nuclear family structure had higher levels of prenatal attachment compared to those living in extended families. This situation could be associated with the fact that pregnant women living in a nuclear family structure take better care of themselves and spend a more efficient time with their infants (talking to their infants, caressing their tummies).

Furthermore, this study found that as the number of pregnancies decreased, the level of prenatal attachment increased. Women with no children had higher levels of attachment compared to other groups. Similarly, Rubertsson et al., (2015) and Ustunsoz et al., (2010) determined that multipara pregnant women had lower levels of prenatal attachment. Also, Dereli Yılmaz and Kızılkaya Beji (2010) stated that women with no children had higher levels of prenatal attachment.

According to our results, women who had wanted pregnancy and received support during the pregnancy had higher levels of prenatal attachment. Various studies also have reported that the group intending the pregnancy had higher levels of prenatal attachment compared to those not intending the pregnancy (Dereli Yılmaz & Kızılkaya Beji, 2010; Ustunsoz et al., 2010). The support received during pregnancy enables pregnant women to efficiently cope with problems and removes the concept of loneliness. In this way, the pregnant women receiving social support may experience a more efficient process of attachment.

Finally, according to the study results, the pregnant women experiencing distress were observed to have lower levels of prenatal attachment compared to those experiencing no distress. As the prenatal attachment increased, the level of distress decreased. Topaç Tunçel and Kahyaoğlu Süt (2019), stated that as prenatal distress level increases in the first trimester, prenatal attachment increases, and as depression level increases in the third trimester, prenatal attachment decreases. Also, Walsh et al., (2014) stated that mental health in pregnancy was an important determinant of prenatal attachment. In this regard, Lingren (2001) determined that as prenatal depression increased, attachment decreased. Furthermore, McFarland et al., (2011) determined a relationship between the major depressive disorders in the second and third trimester of pregnancy and the low level of mother-infant attachment.

### CONCLUSION AND SUGGESTIONS

A negative relationship was found between prenatal attachment and distress levels. Lower levels of distress and higher levels of prenatal attachment were determined in those who had higher education and income levels, were employed, lived in nuclear families, had intended the pregnancy, and received support during the pregnancy. It was also found that those who had the first pregnancy and no children had higher levels of prenatal attachment. So, it is important to determine the level of mother-infant attachment. As well as a physical evaluation, it is important to perform a psychological evaluation in pregnancy follow-ups with a holistic approach. In the prenatal period, it is important to prepare training programs for protecting, developing, and treating the mental health of pregnant women, diagnose the pregnant women experiencing distress, and have them take professional support. In this context, it may be suggestable to carry out studies involving more centers and other variables that can be affected.

### LIMITATIONS

The study was conducted in Anatolia. It is therefore not clear if these results can be generalizable to other regions. Besides, women were excluded if they were less than 20 weeks of gestational age and had high-risk for pregnancy. Future studies are required to address these drawbacks which were inevitable in our study.

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No financial support.

#### Conflict of Interest

The authors declare that they have no conflict of interest.

#### Author Contributions

Design: A.K, H.O., Data Collection or Processing: H.K, Analysis or Interpretation: A.K, H.O., H. K., Literature Search: A.K, H.O., H. K., A. N.A., Writing: A.K, H.O., H. K., A. N.A.

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