

# THE RELATIONSHIP BETWEEN ADAPTATION TO PREGNANCY AND PRENATAL ATTACHMENT IN HIGH-RISK PREGNANCIES

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## SUMMARY

**Background:** Although pregnancy is a physiological process, there are various changes which need to be adapted to. Adaptation and prenatal attachment are important for both the mother's and baby's health. These situations are more crucial for women with high-risk pregnancy. The study aimed to determine the relationship between adaptation to pregnancy and prenatal attachment among women with high-risk pregnancy, as well as socio-demographic and obstetric parameters which affected this adaptation.

**Subjects and methods:** This descriptive and analytic study's data were collected from high-risk pregnant women (n=479) who were receiving treatment at two public hospitals in Turkey using Prenatal Self-Evaluation Form (PSEQ) and Prenatal Attachment Inventory (PAI). Descriptive statistics, correlation and comparative analyses were used in data analyses.

**Results:** It was determined that adaptation to pregnancy was medium and prenatal attachment was high in high-risk pregnant (PSEQ mean score: 159.43±27.05; PAI mean score: 63.79±10.75). There was a significant negative relationship between the scales ( $r=-0.556$ ,  $p<0.01$ ). This relationship showed that as adaptation to pregnancy increased, prenatal attachment also increased. There was significant difference in the PSEQ by age, educational status, employment status, marital status, year of marriage, spouse's educational and employment status, having health insurance, family type, income status, spouse's attitudes towards pregnancy, number of pregnancies, number of births, having living children, whether the pregnancy was planned, pregnancy week and prenatal attachment.

**Conclusion:** According to results, there is relationship between adaptation to pregnancy and prenatal attachment in high-risk pregnancies and some sociodemographic and obstetric factors affects adaptation to pregnancy. Determining these factors can serve as a guide for preventing and reducing additional problems that may be encountered in pregnancy and postpartum period in high-risk pregnant women.

**Key words:** adaptation to pregnancy - high-risk pregnancy - prenatal attachment - prenatal self-evaluation

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## INTRODUCTION

Pregnancy is a period which can be experienced by all fertile women. It causes several physiological, psychological and social changes to which women must adapt (Daş 2016). Some women do so easily, while mild, moderate and severe mental health problems can be observed among others (Karaçam & Ançel 2009). Although pregnancy is a physiological event, pathological cases occur in 5-20% of pregnancies. High-risk pregnancies are situations in which the mother, fetus or newborn has a risk of increased morbidity and mortality before or after birth (Sabuncuoğlu & Berkem 2006, Serçekuş & Okumuş 2004, Stark 2002). In high-risk pregnancies, if there is the risk of pregnancy or fetal disease or death, the women will face a major situational crisis and stressors (Gilbert & Harmon 2002). The pregnant woman needs to adapt to the new situation to improve her and her fetus' health (Coşkun 1996). Risk of loss can make it difficult to adapt or interrupt the adaptation to pregnancy (Gilbert & Harmon 2002). Paşalak (2016) found that as the prenatal distress scores of the pregnant women increased, the level of adaptation to pregnancy decreased. If pregnant women do not adapt well to their pregnancy,

it may affect the progress of their pregnancy and the status of fetal health (Daş 2016). Risk factors that threaten the health of mothers and their infants and high-risk pregnancies negatively affect the transition to healthy maternity (Körükçü & Kabukcuoğlu 2014).

The mental health of women in the perinatal period is associated with their attachment to their infants. Attachment is defined as a strong bond between two individuals (Sabuncuoğlu & Berkem 2006, Kuğu & Akyüz 2001). Sabuncuoğlu and Basgul (2016) expressed that insecure attachment style is related with certain health problems during pregnancy and low birth weight in the newborn and more likely to have depressive symptoms. Attachment begins in the prenatal period, in which women give positive reactions to pregnancy. As the mother feels quickening and as the body changes, she pays attention to her baby and an attachment begins to develop between the mother and the fetus (Daş 2016, Gilbert & Harmon 2002, Kuğu & Akyüz 2001). Malm et al. (2016) found that perception of fetal movements three or more times in a day was associated with higher prenatal attachment.

The development of a risky situation in pregnancy leads to the maternal role becoming more complex and causes stress. Because of this complexity and stress, attachment may be slow to develop or there may be no

attachment due to the fear of losing the fetus (Gilbert & Harmon 2002). Prenatal attachment motivates pregnant women to acquire good health practices, facilitates adaptation to the role of motherhood and protects them against prenatal depression (Körükçü & Kabukcuoğlu 2014, Muller 1993).

As pregnant women's adaptation to pregnancy increases, they accept the pregnancy and consequently develop positive prenatal behavior (Yekenkürül & Mete 2012). Health workers should take precautions against the physical and emotional difficulties that pregnant women may have in pregnancy, support their adaptation to pregnancy and maternity, and plan and perform nursing interventions to bring the pregnancy to a healthy end (Koyunet al. 2011).

The number of studies evaluating adaptation to pregnancy (Fiskin et al. 2017) and prenatal attachment (Bakır et al. 2014, Aksoy et al. 2016) in high-risk pregnancies is limited in Turkey. There is no study that examines the relationship between prenatal adaptation and attachment in high-risk pregnancies. The study questions were: "Does prenatal attachment affect adaptation to pregnancy in high-risk pregnancies?" and "Which socio-demographic and obstetric factors affect adaptation to pregnancy in high-risk pregnancies?" This study thus aimed to determine the relationship between adaptation to pregnancy and prenatal attachment in women with high-risk pregnancies and the factors that affect the adaptation.

## SUBJECTS AND METHODS

This descriptive and analytic study was conducted in the perinatology services of two public hospitals in İzmir between March 30, 2014 and March 30, 2015. The data were collected in these hospitals serving pregnant women with similar sociodemographic characteristics in order to increase the number of data. The number of pregnant women treated in the first hospital was 235 and the number in the second one was 2000 (N=2235) in 2013. The sample of study was determined at a 95% confidence interval by using the population known formula and stratified sampling method and it was found that 147 pregnant women from the first hospital and 323 from the second hospital should be included in the sample. According to this formulation, 159 and 320 pregnant women from these hospitals respectively constituted the sample (n=479). All pregnant women considered high risk who were hospitalized in the hospitals, and the distinction between the diagnosis has not been made.

### Data Collection Tools

The data were collected using an Identification Form for the descriptive and obstetric characteristics of the pregnant women, and through face-to-face interviews for the Prenatal Self-Evaluation Questionnaire (PSEQ) and the Prenatal Attachment Inventory (PAI).

### Prenatal Self-Evaluation Questionnaire (PSEQ)

The PSEQ was developed by Ledermen in 1979 to assess the adaptation of women in the prenatal period to maternity. It is a four-point Likert-type scale with 79 items and seven sub-dimensions. Low scores on the scale indicate high levels of adaptation to pregnancy. The validity and reliability study of the Turkish form of the scale was conducted by Beydağ and Mete (2008). Its Cronbach's alpha reliability coefficient was found to be 0.81, and the reliability coefficients of its subscales were between 0.72 and 0.85 (Beydağ & Mete 2008). This study found its Cronbach's alpha reliability coefficient to be 0.92, and the reliability coefficients of its subscales were between 0.67 and 0.88.

### The Prenatal Attachment Inventory (PAI)

The PAI was developed by Muller in 1993 to explain the thoughts, feelings and experiences of women during pregnancy and to determine their levels of attachment to their babies during the prenatal period. It is a four-point Likert-type scale with 21 items. Higher scale scores indicate higher levels of attachment (Yılmaz & Beji 2013). The validity and reliability study of the Turkish form of the scale was conducted by Yılmaz and Beji (2013), and its Cronbach's alpha reliability coefficient was found to be 0.84. Its Cronbach's alpha reliability coefficient was found to be 0.92 in this study.

### Data analysis

The data analyses were conducted using Statistical Package for Social Science (SPSS) 16.0 software. Neither scale scores had a normal distribution (Kolmogorov-Smirnov and Shapiro-Wilk  $p < 0.05$ ). Data were analyzed using numbers, percentages, correlation analyses and nonparametric tests as well as Kruskal-Wallis variance analysis and Mann-Whitney U test.

### Ethics of the study

The necessary approvals were received from the researchers who conducted the validity and reliability studies of the Turkish forms of the scales. Ethical approval was obtained from relevant institution (approval number: 2014-31; date of approval: 07.03.2014) and institutional permission was obtained from the hospitals. The aim of the study was explained to the pregnant women and their verbal consent was obtained.

## RESULTS

The mean age of the women with high-risk pregnancies was  $28.16 \pm 5.97$  years. Of the pregnant women, 43% had completed elementary or middle school, 77.5% were not employed, and 94.2% were married. Of the participants 70.4% had a nuclear family, and 69.5% had income levels that were less than their expenses.

**Table 1.** Descriptive characteristics of high-risk pregnant women and their husbands

Characteristics	n (%)	Mean <sup>a</sup> - Median <sup>b</sup>	
Age Group	16-20	61 (12.7)	28.16±5.97 <sup>a</sup>
	21-25	101 (21.1)	
	26-30	146 (30.5)	
	31-35	118 (24.6)	
	36 or more	53 (11.1)	
Level of education	Illiterate/Literate	72 (15.0)	
	Primary/Secondary school	206 (43.0)	
	High school	143 (29.9)	
	College/University	58 (12.1)	
Employment status	Employment	108 (22.5)	
	Unemployment (housewife)	371 (77.5)	
Marital status	Married	451 (94.2)	
	Single	28 (5.8)	
Health insurance	Absent	50 (10.4)	
	Social security institution	395 (82.5)	
	Private health insurance	34 (7.1)	
Family type	Nuclear family	337 (70.4)	
	Extended family	135 (28.2)	
	Fragmented family	7 (1.4)	
Perceived Income	Income less than expenditure	333 (69.5)	
	Income equal to expenditure	138 (28.8)	
	Income greater than expenditure	8 (1.7)	
Spouse's education level	Illiterate/literate	33 (6.9)	
	Primary/secondary school	226 (47.2)	
	High school	159 (33.2)	
	College/University	61 (12.7)	
Spouse's employment status	Employed	427 (89.1)	
	Unemployed	52 (10.9)	
Spouse's attitudes towards pregnancy	Wanted	461 (96.2)	
	Unwanted/hesitant	18 (2.8)	
Number of pregnancies	1 pregnancy	222 (46.3)	
	2 or more pregnancies	255 (53.7)	
Number of birth	Absent	246 (51.4)	
	1 birth	113 (23.6)	
	2 or more births	120 (25.0)	
Having living children	Absent	260 (54.3)	
	1 child	113 (23.6)	
	2 or more children	106 (22.1)	
Planned pregnancies	Planned	335 (69.9)	
	Unplanned	144 (30.1)	
Pregnancy week	1-12 weeks	35 (7.3)	
	13-24 weeks	139 (29.0)	
	25-40 weeks	305 (63.7)	
Date of hospitalization	1-2 days	258 (53.9)	2 <sup>b</sup>
	3-4 days	146 (30.5)	
	5 days or more	75 (15.6)	
Pregnancy problem	Threat of preterm birth	52 (10.9)	
	Gestational diabetes	37 (7.7)	
	Fetal anomaly	35 (7.3)	
	placenta previa/ablatio placenta	32 (6.7)	
	Polyhydramnios/oligohydramnios	28 (5.8)	
	Hyperemesis gravidarum	25 (5.2)	
	Infection	21 (4.4)	
Other risk factors	117 (24.5)		
Total	479 (100)		

**Table 2.** Relationship between Prenatal Self-Evaluation Questionnaire (PSEQ) and Prenatal Attachment Inventory (PAI) mean scores

PSEQ and Subscales	Mean±Sd	PAI	
		r	p
Concern for well-being of self and baby	29.95±5.53	-0.223	0.000
Acceptance of pregnancy	26.42±8.60	-0.561	0.000
Acceptance of motherhood role	22.43±5.52	-0.302	0.000
Preparation for labor	23.64±5.04	-0.383	0.000
Fear of labor	22.63±4.63	-0.281	0.000
Relationship with own mother	17.36±4.95	-0.415	0.000
Relationship with husband	16.97±5.03	-0.401	0.000
<i>PSEQ</i>	159.43±27.05	-0.556	0.000
<i>PAI</i>	63.79±10.75	-	-

It was also found that 47.2% of the pregnant women's spouses had completed elementary or middle school, 89.1% were employed, 96.2% had wanted the pregnancy. Of the pregnant women 69.9% had planned their pregnancy, and 63.7% were in the 25<sup>th</sup>-40<sup>th</sup> week of pregnancy, 46.3% were experiencing their first pregnancy and 54.3% were not have any living children. The duration of hospitalization was 1-2 days for 53.9%. Problems with the pregnancy were the threat of preterm birth (15.4%); hypertension-preeclampsia-eclampsia (12.1%); preterm membrane rupture (10.9%) (Table 1).

PSEQ and PAI mean scores were calculated as 159.43±27.05 and 63.79±10.75, respectively. A negative and statistically significant relationship was found between the PSEQ and its sub-dimensions, and the PAI (p<0.05) (Table 2). This result shows that the prenatal attachment of the pregnant women whose adaptation to pregnancy was good was also positive.

It was found that the women with high-risk pregnancies, who were between 26-35 years old, who were employed and had employed spouses, who were married, who had health insurance, who had nuclear families, who had spouses who wanted the pregnancy, who were pregnant for the first time, who did not have any living children, who had planned their pregnancy, and who were in the 25<sup>th</sup>-40<sup>th</sup> week of pregnancy had a better adaptation to pregnancy (p<0.05). The study found that the as the educational status of pregnant women and their spouses and their family incomes increased, so their adaptation to pregnancy also increased (p<0.05) (Table 3). There was no significant difference between having chronic illnesses, problems with previous pregnancies, duration of hospitalization and adaptation to pregnancy.

## DISCUSSION

In studies which were conducted with high-risk pregnant women in Turkey, PSEQ scores were found to be moderate (Paşalak 2016, Bulut 2016). Türkmen (2019) pointed out that acceptance of pregnancy and acceptance of the role of motherhood were lower in the

hyperemesis gravidarum pregnancies in comparison to the healthy pregnancies. Aba et al. (2017) found that 47% of high-risk pregnant women have a poor level of psychosocial adaptation. Nakamura et al. (2011) stated that the hospitalized women had significantly lower adaptation scores for acceptance of pregnancy and preparation for labor compared to low-risk pregnant women. Silva et al. (2011) expressed that maternal role sub-dimension of PSEQ showed the highest mean score.

Pregnant women's age, educational level, employment status, marital status, health insurance, family type, income level, educational level of spouses, employment status of spouses, attitudes of spouses towards pregnancy, number of pregnancies, number of births, number of living children, whether the pregnancy was planned and the week of pregnancy affected adaptation to pregnancy.

Significant differences in maternal prenatal attachment were observed as a function of age, education, socioeconomic status, pregnancy planning, previous pregnancies, pregnancy interruptions and gestational age.

Bulut (2016) found that adaptation to pregnancy was high in pregnant women who were aged 24 and below. In addition, Aba and Kömürçü (2017) and Öçal (2011) found that adaptation to pregnancy was high in adolescent pregnant women. According to the literature, the best age to have a baby is between 20 and 35 (Daş 2016). The result of the study suggests that women who are at the ideal pregnancy age adapt better to high-risk pregnancies. This difference may arise because mature pregnant women have had more experience with problem-solving.

In the study, as the educational status of pregnant women and their spouses, and their family incomes increased their adaptation to pregnancy also increased. Demirbaş and Kadioğlu (2014) found that pregnant women who were high school or university graduates, who were employed, who had health insurance, who had nuclear families, who had high or good income levels adapted better to the process. Stark (2001) found that as the educational levels of pregnant women increased, their adaptation to maternity also increased.

**Table 3.** PSEQ and affected factors in high risk pregnancies

Affected Factors		Mean±Sd	X <sup>2</sup> -U/Z	p
Age group	16-20 ages	168.14±24.50	18.58 <sup>a</sup>	0.00
	21-25 ages	163.13±27.91		
	26-30 ages	155.31±27.07		
	31-35 ages	155.65±25.44		
	36 ages and above	162.07±28.82		
Level of Education	Illiterate/literate	170.62±25.09	42.41 <sup>a</sup>	0.00
	Primary/secondary school	162.51±26.96		
	High school	156.34±26.98		
	University/college	142.15±20.07		
Employment status	Employment	154.75±25.78	17128.50/-2.29 <sup>b</sup>	0.02
	Unemployment	160.78±27.29		
Marital status	Married	158.55±27.00	4084.50/-3.13 <sup>b</sup>	0.00
	Single	173.53±24.09		
Health insurance	Absent	168.22±26.88	9.39 <sup>a</sup>	0.00
	Social security institution	157.85±26.85		
	Private health insurance	164.79±27.19		
Family type	Nuclear family	155.56±24.68	24.31 <sup>a</sup>	0.00
	Extended family	167.02±28.79		
	Fragmented family	199.00±41.09		
Perceived Income	Income less than expenses	163.85±27.01	28.61 <sup>a</sup>	0.00
	Income equal the expenses	149.47±24.78		
	Income greater than expenses	147.00±16.37		
Spouse's education level	Illiterate/literate	167.84±23.71	26.56 <sup>a</sup>	0.00
	Primary/secondary school	163.73±27.45		
	High school	156.45±26.88		
	College/University	146.68±22.41		
Spouse's employment status	Employed	158.55±26.86	9125.00/-2.09 <sup>b</sup>	0.03
	Unemployed	166.57±27.74		
Spouse's attitudes towards pregnancy	Wanted	158.07±26.10	1496.50/-4.60 <sup>b</sup>	0.00
	Unwanted/hesitant	194.16±28.33		
Number of pregnancies	1 pregnancy	156.32±26.50	25316.00/-1.99 <sup>b</sup>	0.04
	2 and more pregnancies	162.12±27.35		
Number of birth	Absent	155.79±25.42	7.58 <sup>a</sup>	0.00
	1 birth	157.72±23.93		
	2 or more births	168.49±30.91		
Having living children	Absent	155.62±24.83	10.54 <sup>a</sup>	0.00
	1 child	157.64±24.17		
	2 and more children	170.66±31.93		
Planned pregnancies	Planned	154.07±22.69	16205.50/-5.69 <sup>b</sup>	0.00
	Unplanned	171.88±31.93		
Pregnancy week	1-12 weeks	175.31±30.78	12.57 <sup>a</sup>	0.00
	13-24weeks	159.79±27.76		
	25-40 weeks	157.43±25.72		

<sup>a</sup>Kruskal Wallis variance analysis; <sup>b</sup>Mann Whitney U analysis

Fiskin et al. (2017) stated that pregnant women who had eight years or more education showed a greater tendency to receive health care. According to the literature, as the educational level of pregnant women increases, they benefit more from prenatal care services. The fact that working pregnant women have health insurance and economic freedom increases their social status (Daş 2016). Pregnant women benefit more from prenatal care services and their adaptation to pregnancy

is better when they have high educational levels and economic independence. Considering the costs of hospital admission, pregnancy and giving birth, and how the lives of pregnant women change, it can be stated that income level affects adaptation to pregnancy.

Altfeld et al. (1998) expressed that wanted pregnancies positive influenced health behaviors as well as sociodemographic characteristics. Yılmaz and Pasinoğlu (2014) found that there was a significant difference

between accepting pregnancy and role of being a mother, the educational status of spouses, number of pregnancies, number of births, whether the pregnancy was planned and the week of pregnancy. Demirbaş and Kadioğlu (2014) stated that pregnant women who had planned or wanted their pregnancies, who were in the late weeks of their pregnancy and who had received information about pregnancy adapted better to the process. Studies by Chou et al. (2008) and Kou et al. (2007) reported that women with high-risk pregnancies with high level of social support were very well adapted to pregnancy. Alhusen et al. (2012) and Kuljanić et al. (2016) stated that partner support was affected women's mental health and contributed to a more fulfilled pregnancy and, therefore promotion of healthy prenatal behavior. Öçal (2011) found that as the gestational weeks of pregnant adolescent women increased, their relationship with their spouses was positively affected and adaptation to pregnancy was better for those who had support. Weis et al. (2008) found that pregnant women who received emotional support from their social network accepted their pregnancy at high levels in all trimesters of pregnancy.

It was seen that primigravidae were better adapted to pregnancy in the study. Aba and Kömürücü (2017), Öçal (2011) Demirbaş and Kadioğlu (2014) did not find any difference between the number of pregnancies and adaptation. Bulut (2016) found that those who experiencing their first gestation had a better adaptation to pregnancy in hyperemesis pregnancies. Lin and Chou (2008) found that multigravida had better maternal psychosocial adaptation than primigravida. The difference in the literature may be attributed to the fact that the study groups were different and that there were cultural differences between them.

It was found that as the number of living children increased, adaptation to pregnancy decreased. It can also be stated that staying in hospital causes pregnant women to worry about the health and care of children at home and negatively affects their adaptation to pregnancy. As the weeks of pregnancy increase, the level of readiness to give birth and adaptation to pregnancy also increase. According to the literature, adaptation increases with weeks of pregnancy (Bulut 2016, Daş 2016, Weis et al. 2008, Gürkan 2010).

Mother-baby attachment begins in the prenatal period. Therefore, factors occurring in the prenatal period affect prenatal attachment (Muller 1993). In Arguz Cildir et al. (2019) prospective study, prenatal attachment rate were found to be the predictors of both behavioral and emotional capacity and development at early childhood. It was determined that the prenatal attachment level of the high-risk pregnant women was high. In studies which were conducted with high-risk pregnant women in Turkey, the mean scores of the PAI were found to be high (Bakır et al. 2014, Aksoy, Yılmaz, & Aslantekin 2016). Studies have reported that age,

pregnants and spouse's educational level, employment status, the number of pregnancies, living children, weeks of pregnancy, planned to pregnancy and partner support affect prenatal attachment (Alhusen et al. 2012, Bakır et al. 2014, Yılmaz & Beji 2013, Özorhan et al. 2015, Camarneiro & de Miranda Justo 2017, Karakoç & Ozkan 2017). Özorhan et al. (2015) found that the prenatal attachment of women with high-risk pregnancies was better than those of women whose pregnancies were not high risk. Özkahraman-Koç et al. (2019) determined that pregnant women were diagnosed with gestational diabetes mellitus after becoming pregnant, had high prenatal attachment scores. Karakoç and Ozkan (2017) stated that psychosocial health status affected prenatal attachment in pregnant women. The literature indicates that socio-demographic and obstetric characteristics affect adaptation to pregnancy and indirectly affect prenatal attachment. Pregnant women's adaptation to pregnancy is affected by many variables, and the care given in the prenatal period has great importance in terms of ensuring this adaptation. All the health professionals who care for pregnant women should place importance on the psychosocial care of pregnant women as well as on their physical care (Demirbaş & Kadioğlu 2014).

This study found that pregnant women whose adaptation to pregnancy was good had higher levels of prenatal attachment. Adaptation to pregnancy and prenatal attachment processes are characterized by their strong emotional component. They motivate pregnant women to become competent in their role and provide satisfaction to them as they enter motherhood.

## CONCLUSION

The results of this study show that prenatal attachment increases in high risk pregnant as prenatal adaptation increases, and that some social and obstetric factors affect adaptation in high-risk pregnancies. In high-risk pregnancies, health workers should consider how a woman adapts to pregnancy and the level of prenatal attachment as well physical care. Health workers should be aware of the factors that affect adaptation to pregnancy and prenatal attachment and provide nursing services to support the women involved. Future studies are needed to determine the essential causes of adaptation to pregnancy.

## Limitations

This study has some limitations. Primarily, because this is a descriptive and analytic study, the results do not explain the essential causes of the factors affecting adaptation. The study cannot be generalized to Turkey as it was conducted in two hospitals in one region. The study population contains only high risk pregnancies, and there is no control group.

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## Contribution of individual authors:

Fatma Pehlivanoğlu Çelik has designed of the research, collected and analyzed data and drafted the article.

Sezer Er Güneri has designed of the research, analyzed data, revised the article and has given final approval of the version to be published.

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