



# Comparison of Stress Levels in Risky and Non-Risky Pregnancies

## Riskli ve Riskli Olmayan Gebeliklerde Stres Düzeyinin Karşılaştırılması

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### ABSTRACT

**Objective:** In this descriptive and comparative study, it was aimed to compare the stress levels between risky and non-risky pregnancies.

**Method:** Four hundred pregnant women participated in this study. Half of these women consisted of 200 women who spontaneously conceived and had no risk of pregnancy. The other half of the women constituted of 200 women who became pregnant with assisted reproductive techniques and who did not have any pregnancy related risk or who had spontaneous pregnancy and who had a pregnancy related risk. Women were asked to fill out Personal Information Form and Prenatal Distress Questionnaire. The risky and non-risky pregnancy groups were evaluated for homogeneity of variances with a one-way analysis of variance (ANOVA) test. Independent t test was used to evaluate the mean difference between the Prenatal Distress Questionnaire and the sub-scale for the risky and non-risky pregnancy groups. The one-way ANOVA was used to determine the mean difference between risky (risky pregnancy) and non-risky pregnancy groups.

**Results:** Stress levels and financial concerns related to health care quality and health status were found to be higher in women with risky pregnancy. When stress levels were compared between risky and non-risky pregnant women, it was determined that pregnant women with hypertension experienced significantly more stress than other pregnant women.

**Conclusion:** In risky pregnant women, especially in women with hypertension problem, it is necessary to determine the stress level. While giving nursing care to women with risky pregnancies, determining the stress levels and causes may have a positive impact on the process of pregnancy.

**Keywords:** Assisted reproductive therapy, gestational diabetes mellitus, hypertensive disorders, preterm labor diagnosis, stress level

### ÖZ

**Amaç:** Bu tanımlayıcı ve karşılaştırmalı çalışmada, riskli ve riskli olmayan gebelikler arasındaki stres düzeylerinin karşılaştırılması amaçlanmıştır.

**Yöntem:** Bu çalışmaya dört yüz gebe kadın katılmıştır. Bu kadınların yarısını spontan yolla gebe kalan ve gebeliğe bağlı riski bulunmayan 200 kadın oluşturmuştur. Kadınların diğer yarısını yardımcı üreme teknikleri ile gebe kalmış ve gebeliğe bağlı riski olmayan ya da spontan gebe kalmış ve gebeliğe bağlı riski bulunan 200 kadın oluşturmuştur. Kadınlara Kişisel Bilgi Formu ve Prenatal Distres Ölçeği doldurulmuştur. Riskli ve riskli olmayan gebelik grupları, tek yönlü varyans analizi (ANOVA) testi ile varyansların homojenliği açısından değerlendirilmiştir. Riskli ve riskli olmayan gebelik gruplarında Prenatal Distres Ölçeği ve alt boyutları değerlendirmek için Bağımsız Gruplarda T Testi kullanılmıştır. Riskli gruplar (riskli gebelik) ve riskli olmayan gebelik grupları arasındaki ortalama farkın belirlenmesinde tek yönlü ANOVA kullanılmıştır.

**Bulgular:** Riskli gebeliği olan kadınlarda, sağlık bakım kalitesi ve sağlık durumu ile ilgili stres düzeyleri ve finansal kaygılar daha yüksek bulunmuştur. Riskli ve riskli olmayan gebeler arasında stres düzeylerini karşılaştırıldığında hipertansiyonlu gebe kadınların diğer gebe kadınlardan anlamlı derecede daha fazla stres yaşadıklarını tespit edilmiştir.

**Sonuç:** Riskli gebe kadınlarda, özellikle hipertansiyon sorunu olan kadınlarda, stres seviyesinin belirlenmesi gereklidir. Riskli gebeliği olan kadınlara hemşirelik bakımı verilirken stres seviyelerinin ve nedenlerinin belirlenmesi gebelik sürecini olumlu etkileyebilir.

**Anahtar kelimeler:** Yardımcı üreme tedavisi, gestasyonel diyabet, hipertansif bozukluklar, erken doğum tanısı, stres düzeyi

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## INTRODUCTION

Pregnancy and having children are often cheerful and exciting events for parents. But today's living conditions can make pregnancy stressful. Capik <sup>(1)</sup> found that 11.9% of healthy spontaneous pregnancies are stressful due to pregnancy. Other studies have shown that pregnancy with assisted reproductive therapy (ART) <sup>(2-6)</sup>, gestational diabetes mellitus (GDM) <sup>(7-9)</sup>, preterm labor diagnosis (PLD) <sup>(10,11)</sup> and hypertensive disorders <sup>(12)</sup> cause stress for pregnant women. In addition, systemic (such as anemia and hypertension) and pregnancy-related disorders (such as Rh incompatibility, placental abnormalities, intra-uterine growth retardation, hyperemesis gravidarum (HEG), infection, oligohydramnios, and cholestasis) can increase stress <sup>(13,14)</sup>.

Social norms can also cause stress in pregnancies. In Turkish culture, especially in the eastern regions, women are highly valued when they conceive. Pregnant women do not lift heavy goods, do not do housework, and if they are hungry, they are immediately provided with food. Fetuses are generally called "precious babies." Women who are diagnosed with potential preterm labor or premature births (called preterm labor diagnosis, or PLD women) are especially subject to stress, because there is a belief that babies born at eight gestational months will not survive, but babies born at six, seven, or nine gestational months will survive. Turkish people also believe that women who are pregnant with ART can lose their babies at any moment, and that GDM becomes chronic after pregnancy. The diagnosis of preeclampsia, commonly called "pregnancy poisoning," is a health concern for both mother and baby. Moreover, it is believed that some disorders associated with pregnancy will cause the baby to feel grumpy or be mentally retarded.

Nurses working with risky pregnancies need to be more acutely aware of the stress levels being experienced by these mothers compared to the stress being experienced by women with non-risky pregnancies. Knowing these risk levels and the stressors experienced by pregnant women means that nurses can plan proper intervention and care routines to help reduce stress levels for these women. They can also coach pregnant women in stress-reducing and

coping mechanisms. For these reasons, nurses should know how stress levels differ between higher and lower risk groups, and which groups experience higher stress levels. The aim of this study was to compare stress levels related to risky and non-risky pregnancies so that nurses can better anticipate their patients' needs.

## METHODS

### Study Design

This was a descriptive and comparative study. Research data were collected between March and August 2016, in Izmir, from two hospitals. The first hospital is a Training and Research Hospital and the second hospital is a University Hospital. Izmir is divided into north and south regions. The Training and Research Hospital is in the northern region, and women with middle and lower socioeconomic status are referred to this hospital. Women of middle and upper socioeconomic status attend the University Hospital in the southern region.

### Setting and sample

A total of 400 pregnant women participated in this study. Two hundred of these women had non-risky pregnancies and the remaining two hundred were diagnosed with risky pregnancies. Healthy women who had spontaneous pregnancies were placed in the non-risky group, while healthy women who had become pregnant either through ART, or who had become pregnant through spontaneous delivery but with a pregnancy-related diagnosis, were placed in the risky group. The risky pregnancy group contained healthy women with ART (n=40), women diagnosed as PLD (n=40), those with hypertensive problems (n=40), GDM (n=40) and another disease related to pregnancy (n=40). At the end of the study, 400 pregnant women were reached, and the post hoc statistical power analysis was performed. The analysis indicated 93% sufficient statistical power.

### Measurements

Participants completed both a Personal Information Form and a Prenatal Distress Questionnaire. The Personal Information Form was composed of seven questions related to sociodemographic features and ten questions related to fertility status. The Prenatal Distress Questionnaire was originally developed by

Yali and Lobel in 1999 <sup>(15)</sup>. The first version of this questionnaire contained 12 items applied to each of the early gestation period (10-20 weeks), middle gestation period (20-30 weeks) and late gestation period (after 30 weeks). The questionnaire was then revised by Lobel in 2008 to contain 17 items and was known as the Revised Prenatal Distress Questionnaire <sup>(16)</sup>, or the revised PDQ. Yuksel, Akin and Durna <sup>(17)</sup> adapted the questionnaire for Turkish requirements and performed a factor analysis. Their study found that the Content Validity Index was 0.96 and that factor loads for all the items were between 0.37 and 0.80. However, it was suggested that a single dimension of the questionnaire should be used because none of the Cronbach alpha values in the subdimensions were at the desired values. According to the study results, Yuksel et al. <sup>(17)</sup> determined that this one dimension of the questionnaire was a valid and reliable measurement tool for pregnant Turkish women.

We applied the PDQ of Yuksel et al. <sup>(17)</sup>. This questionnaire contains 17 items and is a Likert-type questionnaire. Participants were asked to indicate their level of distress about each item on the questionnaire by selecting one of the options as “None” (0), “Some” (1) or “Too many” (2). The choices were then totaled so that each participant had a final score between 0, and 34 points. A higher total score was interpreted as a higher level of prenatal distress for that participant.

### Data collection

Pregnants were included in the study when they were examined at the outpatient clinics. The data were collected after the examinations were finished.

### Ethical consideration

This study was approved by an ethical committee (Decision No: 2016/10-07) and written permits were received from the institutions on April 14, 2016. All participants completed consent forms before their data were collected. This study was conducted in accordance with the principles of the Helsinki Declaration.

### Data analysis

In evaluating the data, we used the numbers, percentages and averages. The risky and non-risky preg-

nancy groups were evaluated for homogeneity of variances with a one-way analysis of variance (ANOVA) test. We observed that the two groups were homogeneously distributed in terms of all sociodemographic characteristics, except for education. For this reason, an independent t test was used to evaluate the mean difference between the PDQ and the subdimensions for the risky and non-risky pregnancy groups. The one-way ANOVA was used to determine the mean difference between PLD, GDM, hypertension, other risky pregnancies, ART pregnancies and non-risky pregnancy groups.

## RESULTS

Our sample participant group was comprised of 50% risky pregnancies and 50% non-risky pregnancies. We distributed our risky pregnancies with 40 women

**Table 1. Summary Data of Pregnant Women By Risk Category (N=400)**

Risk of pregnancy	n (%)
Risky	200 (50)
Non-risky	200 (50)
Total	400 (100)

**Table 2. Sociodemographic Characteristics of the Pregnant Women (N=400)**

Characteristics	Risky pregnancies (n=200) n (%)	Non-risky pregnancies (n=200) n (%)	Levene's Test p
<b>Age</b>			
Less than 19	10 (5.0)	12 (6.0)	0.368
20-29	97 (48.5)	123 (61.5)	
30-39	79 (39.5)	60 (30.0)	
More than 40	14 (7.0)	5 (2.5)	
<b>Settlement</b>			
Center	75 (37.5)	88 (44.0)	0.175
Town	117 (58.5)	100 (50.0)	
Village	8 (4.0)	12 (6.0)	
<b>Income level</b>			
Less than income	56 (28.0)	56 (28.0)	0.594
Equal to expense	120 (60.0)	125 (62.5)	
More than income	24 (12.0)	19 (9.5)	
<b>Education level</b>			
Illiterate	9 (4.5)	6 (3.0)	0.038
Primary school	105 (52.5)	113 (56.5)	
Secondary school	58 (29.0)	56 (28.0)	
Postgraduate	28 (14.0)	25 (12.5)	
<b>Working status</b>			
Employed	32 (16.0)	39 (19.5)	0.431
Unemployed	168 (84.0)	161 (80.5)	
<b>Family Type</b>			
Nuclear family	165 (82.5)	160 (80.0)	0.212
Extended family	35 (17.5)	40 (20.0)	
Total	200 (100.0)	200 (100.0)	

per condition: GDM, PLD, ART, hypertensive, and other. The “other” group consisted of participants who had hyperemesis gravidarum (n=8), an infection (n=1), oligohydramnios (n=6), intrauterine growth retardation (n=5), Rh incompatibility (n=3), anemia (n=10), cholestasis (n=4) and placental abnormalities (n=3) (Table 1).

Table 2 shows the sociodemographic characteristics of the pregnant women. The mean age of the women with risky pregnancies was 29.23±6.66 years. Almost half of the women with risky pregnancies were in the age range of 20-29 years, more than half of them lived in the town, and 52.5% had graduated from primary school. All the women were married, the majority were unemployed, and they lived in nuclear families. The average age of the women with non-risky pregnancies was 27.25±5.71 years. Half of the non-risky pregnancies were over 20-29 years of age, half of them lived in the town, had income that equaled their expenses, and had graduated from primary school. All the non-risk pregnant women were married, most were unemployed, and they lived in nuclear families.

Table 3 shows the distribution of pregnant women

according to their obstetric traits. The average numbers of gravidity, and parity of risky pregnant women were 22.5, and 1.62, respectively, while the average gestational weeks was 28.38 at birth, and most of the pregnancies were planned. Among the non-risky pregnant women, the average numbers of gravidity, and parity were 2.11, and 1.54, respectively, while the average gestational week at birth was 28.51, and 4 in 5 pregnancies were planned.

Prenatal distress levels related to health care quality and health status, and financial concerns, were found to be higher in risky pregnancies than in non-risky pregnancies (Table 4).

**Table 5. Comparison of Stress Levels in Prenatal Distress Questionnaire Total of Pregnant Women (N=400)**

Pregnancy risks	n	Prenatal Distress Questionnaire Score M±SD	F	p	Significant difference
No risk	200	9.45±5.71	2.381	0.037	Hypertension
GDM	50	10.77±5.48			
PLD	50	11.01±5.97			
ART pregnancies	50	9.94±5.16			
Hypertension	50	11.81±5.02			
Other	50	8.39±4.34			

**Table 3. Obstetric Characteristics of Pregnant Women (N=400)**

Obstetric characteristics	Risky pregnancies (n=200)		Non-risky pregnancies (n=200)		Levene's test
	Mean (M) ±Standard Deviation (SD)	Min-Max	M±SD	Min-Max	p
Age of marriage	22.5±5.58	14-46	22.04±5.04	14-50	0.278
Marriage duration	6.91±6.43	0.3-26	5.35±4.98	0.4-23	0.147
Number of pregnancies	2.20±1.27	1-6	2.11±1.14	1-7	0.150
Number of children	1.62±0.99	1-5	1.54±0.78	1-6	0.246
Pregnancy Week	28.38±8.17	6-40	28.51±9.48	4-41	0.108
Planning of pregnancy	n (%)		n (%)		
Planned	165(82.5)		158(79.0)		
Unplanned	35(17.5)		42(21.0)		0.123

**Table 4. Comparison of Stress Levels in Prenatal Distress Questionnaire Total and Subdimensions of Risky and Non-Risky Pregnancies (N=400)**

Prenatal Distress Questionnaire and Subdimensions	Min-Max	Risky Pregnancies M±SD	Non-Risky Pregnancies M±SD	t	p
Physical and social changes due to pregnancy, concerns about baby and birth	0.00-17	6.46±3.36	5.87±33.38	11.74	0.08
Concerns regarding health care quality and health status	00.00-66	11.06±0.95	0.62±0.85	44.86	0.00
Baby care and postnatal life concerns	0.00-6	0.81±1.05	0.79±1.05	0.18	0.85
Financial concerns	0.00-4	0.33±0.06	0.46±0.65	2.01	0.04
Total	0.00-28	10.38±5.30	9.45±5.71	1.68	0.09



We compared stress levels between the patients with non-risky, GDM, PLD, ART pregnancies, hypertension, and other risky pregnancies, and found a significant difference between groups. In the advanced Tukey analysis, we found that pregnant women with hypertension had suffered from significantly more intense stress than other pregnant women (Table 5).

## DISCUSSION

There was no difference between risky and non-risky pregnant women as for the total score of Prenatal Distress Questionnaire. The education and economic level of the majority of the women in both groups was low. Individuals with lower socioeconomic status had a poorer health and a lower risk perception<sup>(18)</sup>. For this reason, there may not be a significant difference between the stress levels of both groups. The stress score of women with risky pregnancies was higher in the “Health Care Quality and Health Concerns” subdimension than in women with non-risky pregnancies. In risky pregnancies, the risks of illness and death are higher due to the health problems experienced. For this reason, more frequent follow-ups and treatments are required<sup>(19)</sup>, but follow-ups and treatments can create a perception in the patients that there is a problem. In these cases, the pregnant women’s concerns about their babies’ health can aggravate. Many pregnancy problems negatively affect the health of the mother as well as the baby. Increase in the stress levels of mothers who have no knowledge about their own health is an expected outcome. It is also normal that mothers who are concerned about their own health and the health of their baby want qualified health care. For this reason, mothers may be worried about the care and the quality of care they receive.

The stress score of women with risky pregnancies is higher in the “Financial Concerns” subdimension than in women with non-risky pregnancies. The financial costs of pregnant women who have health problems related to themselves and their babies are higher than those without risk. As they visit the hospital more frequently, their travel and food expenses may increase, or they may have other unexpected expenses that arise during the waiting periods. This increased expenditure may increase the anxieties of the mothers about the maintenance of health during

the postpartum period. The inadequacy of social security to meet the costs of treatment of the mother and the baby after childbirth can impact the costs that families must bear. In addition, the special care needs of newborns can lead to increased expenses. Mothers in our study had generally low and middle income levels. The economic impact on this group would therefore be high. Nurses working in the environment of low socioeconomic status need to determine the stress levels of their patients. As financial concerns are among sources of stress, nurses must communicate with social welfare units to solve these problems.

Different conditions in the risky pregnancy group were assessed in terms of their impact on stress levels. The stress level of pregnant women who were diagnosed with hypertension was higher than the other women with risky pregnancies. Other studies have determined that women who conceived with ART experienced stress about the continuation of their pregnancies. Stress levels in the first trimester were found to be higher due to miscarriages<sup>(3,6)</sup>. Toblli, Cao, Oliveri and Angerosa<sup>(20)</sup> found that the stress level in pregnant women with iron deficiency anemia was higher than in other women. Sulistyowati, Soesanto and Purwanti<sup>(21)</sup> found that the stress level in pregnant women with hyperemesis gravidarum (HEG) was also higher than in others. Health problems such as anemia due to pregnancy, risk of abortion due to ART pregnancy, and HEG were also frequently encountered in the first trimester<sup>(19)</sup>.

Various studies have found that stress levels of pregnant women with GDM, PLD and hypertensive disorders were relatively higher<sup>(7,8,21)</sup>. PLD does not require follow-up after birth, and GDM is specific to the duration of pregnancy only. Hypertensive disorders occur chronically before pregnancy or as preeclampsia in pregnancy and require prenatal, antenatal, and postnatal follow-up.

As noted by Woods et al.<sup>(18)</sup>, the stress level of pregnant women with chronic illnesses and taking regular medication is higher than that of other pregnant women. Women with risky pregnancies who are in their last trimester and need to use regular medicines are also more stressed. Furthermore, preeclampsia is known as “pregnancy poisoning” among

Turkish people. So, pregnant women, who are worried about their own and their baby's health, live in fear of death. This may explain why hypertensive Turkish pregnant women experience more stress than other pregnant women. Nurses should consider that the stress level of this hypertensive group is higher than that of other mothers and carefully consider the needs of these patients. Hypertension increases stress and stress causes hypertension in turn. Nurses should address stress reduction across this vicious circle.

### CONCLUSION and RECOMMENDATIONS

The results of this study show that there was no significant difference in the overall level of stress between risky and non-risky pregnancies, but that stress levels related to health care quality and health status, and financial concerns were higher in women with risky pregnancies. The stress level of pregnant women with hypertensive problems was also higher than that of the other risk groups. In risky pregnancies, especially those with higher stress levels, it is necessary to frequently determine the stress level and the causes of stress. Determining stress levels and its causes will guide nursing interventions to reduce that stress. Nurses can improve the peaceful and enjoyable period that pregnancy should be by teaching stress-coping methods and implementing initiatives to reduce stress. These measures could reduce the physiological effects of stress, and positively affect mother and baby's health.

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