

# Evaluation of Anxiety and Depression Levels in High-Risk Pregnancies During the COVID-19 Pandemic and Their Approaches to Vaccination: A Case-Control Study

Seval YILMAZ ERGANI<sup>1</sup>, Huriye GUVENC SACINTI<sup>1</sup>, Mujde CAN IBANOGLU<sup>1</sup>, Kadriye YAKUT YUCEL<sup>1</sup>, Caner KOSE<sup>1</sup>, Nazan VANLI TONYALI<sup>1</sup>, Elif Gulsah DIKTAS<sup>1</sup>, Rahmi Sinan KARADENIZ<sup>1</sup>, Can Tekin ISKENDER<sup>1</sup>, Yaprak USTUN<sup>1</sup>

Ankara, Türkiye

## ABSTRACT

**OBJECTIVE:** Anxiety and depression are associated with the interaction of many social factors, but pregnancy and puerperium are periods when patients are particularly sensitive to depression and anxiety. Assessing the level of anxiety and depression in high-risk pregnancies during the pandemic process and their attitudes toward vaccination.

**STUDY DESIGN:** In a case-control study, the Beck Depression and Beck Anxiety Scales were administered to 62 high-risk pregnant women and 296 normal pregnant women who registered at our hospital. At the end of the entire quarantine period and the use of the vaccine in our country, all patients were called and asked whether they had been vaccinated.

**RESULTS:** Anxiety and depression scores of normal patients were higher than those of patients in the risk group ( $p=0.002$  and  $p<0.001$ , respectively). The anxiety and depression scores of the normal pregnant patients who were treated as outpatients were higher than those of the patients who were treated as inpatients ( $p=0.003$  and  $p<0.001$ , respectively). Depression scores of patients in the last trimester of pregnancy were higher than those of patients at a smaller gestational age ( $p=0.009$ ). Looking back to the pandemic period after vaccine discovery, depression scores of high-risk pregnant women were found to be higher and those who had a normal pregnancy had higher anxiety and depression scores ( $p=0.002$ ,  $p<0.001$ ,  $p<0.001$ ).

**CONCLUSIONS** Hospitalization had different effects on high-risk and normal pregnant women; while hospitalization increased anxiety in high-risk pregnancies, outpatient follow-up increased anxiety and depression in the normal group.

**Keywords:** Anxiety, COVID-19, Depression, High-risk pregnancy

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<sup>1</sup> Etlik Zubeyde Hanım Women's Health Training and Research Hospital, Ankara, Türkiye

**Address of Correspondence:** Seval Yılmaz Ergani,  
Department of Perinatology, Etlik Zubeyde Hanım Women's Health Training and Research Hospital, 06010 Ankara, Türkiye  
dr.svl7@gmail.com


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CID IDs of the authors: SYE:0000-0002-7017-8854  
HGS:0000-0003-1886-7529 MCI: 0000-0002-8413-2064  
KYY:0000-0003-3182-4312 CK: 0000-0002-3044-4804  
NVT: 0000-0002-7284-6887 EGD: 0000-0002-2869-6914  
RSK:0000-0003-4994-9658 CTI: 0000-0003-1376-5734  
YU: 0000-0002-1011-3848

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## Introduction

The coronavirus infection emerged in China on December 31, 2019, and has spread worldwide. The World Health Organization (WHO) defined the disease as The Coronavirus Disease 2019 (COVID-19) and declared it a pandemic. This virus, which mainly causes respiratory infections, not only threatens the physical health of individuals but can also have acute and long-term effects on mental health (1). People were observed to experience increased levels of fear, anxiety, and stress, especially during the outbreak of the epidemic and the increase in the number of cases (2). Due to the forced isolation, social relationships decreased and feelings of loneliness increased (3).

A high-risk pregnancy is a physiological and psychosocial condition that threatens the life and health of the mother, fetus, or newborn (4, 5). High-risk pregnant women often experience stress and anxiety as a typical consequence of risk factors during pregnancy and hospitalization (6-8). It has been re-

ported that uncertainty about fetal health, fears of childbirth, planned/unplanned pregnancy, relationship problems and economic problems in marriage, inadequate social support, and absence from home and family cause anxiety and stress in these pregnant women (7,9,10). Studies have shown that high levels of anxiety and stress during pregnancy have negative effects, such as acute labor, low birth weight, and delays in acute and behavioral development (11-13).

In this study, the effect of high-risk pregnant women's attitudes toward COVID-19 on socioeconomic and clinical outcomes was investigated; the correlation with anxiety and depression scores was also examined.

## Material and Method

The study protocol was approved by the Ethics Committee of the Hospital (04/21/2020, #2020/06), and the principles of the Declaration of Helsinki were followed. This case-control study was conducted by distributing questionnaires to randomly selected 62 high-risk pregnant women and 296 normal pregnant women who were scheduled for outpatient and inpatient follow-up and presented to the hospital between May 2020 and November 2020 during the pandemic. During this period, the first 3 patients with high-risk pregnancies who presented to the hospital on the first day of each month and the first 5 patients who presented to the outpatient clinic on the first day of the month and had a healthy pregnancy were randomly selected (Figure 1). The Beck Depression Scale and the Beck Anxiety Scale were used to determine the level of depression and anxiety.

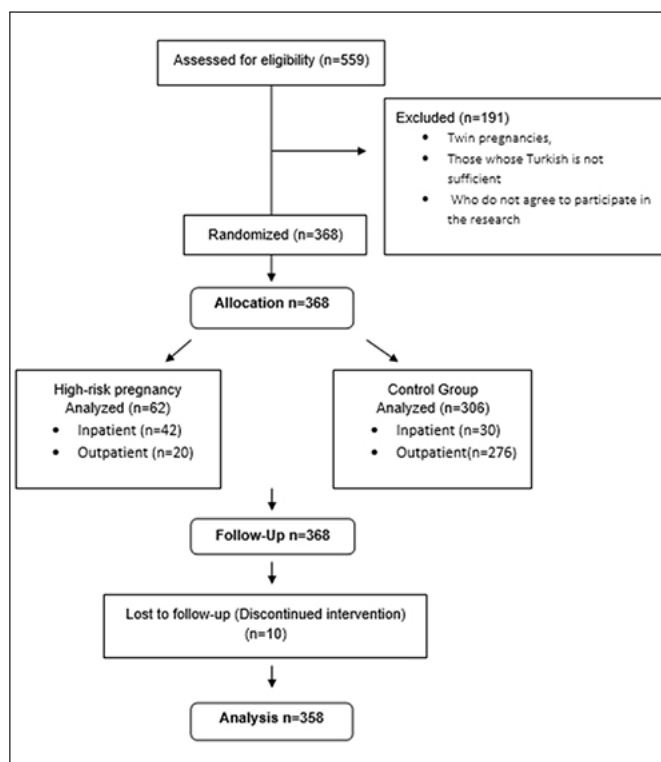


Figure 1: Flowchart of patient inclusion.

All participants signed a written informed consent before participating in the study. Inpatients and outpatients aged 18-40 years who were proficient in Turkish agreed to participate in the study at their first admission to the hospital. The control group consisted of patients with a single, healthy pregnancy who presented to an outpatient clinic for screening or had an inpatient delivery. Patients with a single, healthy pregnancy served as the control group. This control group consisted of patients who presented to an outpatient clinic for screening and were hospitalized for delivery. The questionnaire was used to determine marital status, age, body mass index (BMI), comorbidities (maternal systemic diseases such as hypertension, diabetes mellitus, thyroid disease, asthma, preterm delivery, placental adhesion disorders), and number of previous pregnancies. Sociodemographic and socioeconomic data such as a week of pregnancy, smoking status, education level, occupation, current hospitalization, reason for follow-up in high-risk pregnancies, type of previous birth, level of knowledge about COVID-19, and existing diseases in the family were evaluated. Individuals with psychiatric disorders and patients with multiple pregnancies were not included in the study. After the entire quarantine period had elapsed and the vaccine had been used in our country, all patients were called and asked whether they had been vaccinated.

## Statistical analysis

For the statistical analysis, Statistical Package for the Social Sciences-SPSS 22 (SPSS Inc. Chicago, IL) was used. Descriptive statistics for numerical variables are mean, standard deviation, median, and min-max. expressed as values. In the analysis of normality, non-parametric test procedures were used because the measured values "age, height, weight, BMI, number of pregnancies, week of pregnancy" did not have a normal distribution in the Shapiro-Wilk test. In this context, the Mann-Whitney U test, which is a nonparametric alternative to the independent two-sample T-test, was used to determine the relationships between the parameters. In the analysis of categorical data, the Fisher-Freeman-Halton Exact Test and the chi-square test were used to compare categorical data. The results were evaluated within the 95% confidence interval, and the value of  $p < 0.05$  was considered significant.

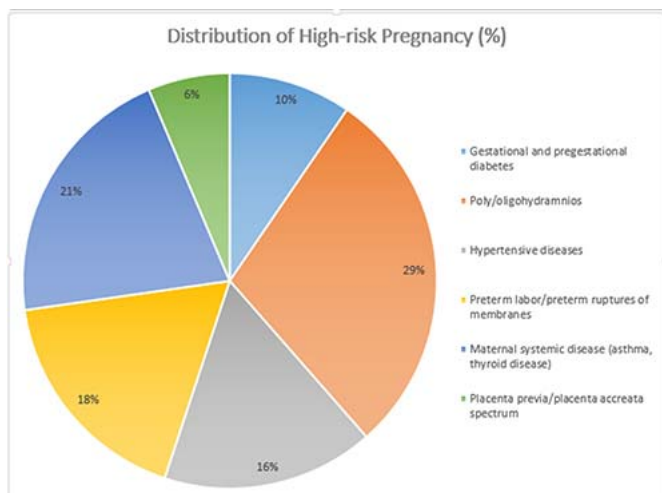
## Results

The mean age of patients with high-risk pregnancies was  $30.5 \pm 6.6$  years. The average BMI of these patients was  $29.1 \pm 4.6$  kg/m<sup>2</sup>. When these data were compared with the control group, the values of the high-risk group were higher than those of the control group ( $p < 0.001$ ,  $p = 0.015$ , Table I). The disease distribution of high-risk pregnancies is shown in Figure 2. The hospitalization rate was higher in the risk group than in the normal group ( $p < 0.001$ ). When comparing high-risk and normal pregnancies, no statistically significant difference was found between smoking, maternal employment, previous cesarean section, and educational status (Table I).

**Table I: Characteristics of patients and control group**

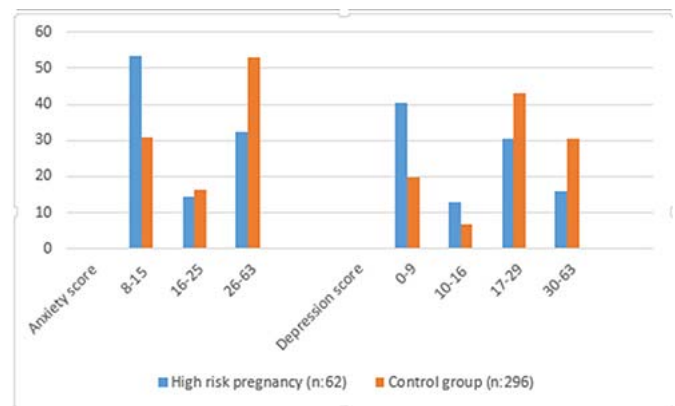
	High-Risk Pregnancies (n=62)	Low-Risk pregnancies (n=296)	p
Age <sup>a</sup>	30.5 ± 6.6	26.8 ± 5.5	<b>&lt;0.001</b>
Pre-pregnancy BMI <sup>a</sup>	29.1 ± 4.6	27.2 ± 3.5	<b>0.015</b>
Parity		<0.001	
0	17 (27.4%)	126 (42.6%)	
1	21 (33.9%)	87 (29.4%)	
≥ 2	24 (38.7%)	83 (28%)	
Trimester at study			<b>0.021</b>
1 <sup>st</sup>	9 (14.5%)	66 (22.3%)	
2 <sup>nd</sup>	14 (22.6%)	101 (34.1%)	
3 <sup>rd</sup>	39 (62.9%)	129 (43.6%)	
Smoking	14 (22.6%)	55 (18.6%)	0.468
Hospitalized during study	42 (67.7%)	20 (6.8%)	<b>&lt;0.001</b>
Occupation			0.875
Yes	18 (29%)	83 (28)	
No	44 (71%)	213 (72%)	
Previous cesarean delivery	21 (45.7%)	56 (34.4%)	0.161
Years of education			0.348
Illiterate	0	1 (0.3%)	
1-8 years	17 (27.4%)	71 (24%)	
8 - 12 years	28 (45.2%)	167 (56.4%)	
> 12 years	17 (27.4%)	57 (19.3%)	

<sup>a</sup>: Data is given as mean ± Standard deviation. BMI: body mass index, p-value <0.05 was considered statistically significant.



**Figure 2: Distribution of high-risk pregnancy.**

During the pandemic period, the anxiety and depression scores of patients in the control group were significantly higher than those in the risk group (p=0.002 and p<0.001, respectively, Figure 3). The depression and anxiety scores of the normal outpatients were significantly higher than those of the normal hospitalized patients (p=0.003 and p<0.001, respectively). Conversely, patients in the high-risk pregnancy category who were hospitalized had higher depression scores than those who were not hospitalized (p=0.046). Depression scores of patients



**Figure 3: The depression and anxiety scores of the patients.**

in the last trimester of pregnancy were higher than those of patients at a smaller gestational age (p=0.009). (Table II).

When patients were called and interviewed after full isolation and vaccine use, vaccinated patients with normal pregnancies during the pandemic had higher depression and anxiety scores (p<0.001, p<0.001). Among patients with high-risk pregnancies, those who had been vaccinated had higher depression scores during the pandemic (p=0.002, Table II).

Anxiety and depression scores of workers were higher than those of housewives (p=0.006, p=0.003). Anxiety scores of those with high school diplomas or higher educa-

tion were higher than those of those with elementary school diplomas ( $p=0.003$ ). Anxiety and depression scores of smokers were significantly higher than those of nonsmokers ( $p=0.003$ ,  $p=0.001$ ). Depression scores of third-trimester patients were higher than those of lower gestational age patients ( $p=0.009$ , Table II). Anxiety and depression scores of patients whose mother was deceased and anxiety scores of patients whose father was deceased were higher than those of patients whose parents were alive ( $p=0.003$ ,  $p=0.012$ ,  $p=0.001$ ). Anxiety and depression scores were higher in those who had contact with their family members over the age of 65 ( $p=0.003$ ,  $p<0.001$ ). Anxiety and depression scores were higher among those who did not own the home in which they lived ( $p=0.012$ ,  $p=0.005$ , Table II).

**Table II:** Anxiety and depression score results in all patients.

	Anxiety score			<i>p</i>	Depression score				<i>p</i>
<b>Pregnancy type</b>	8-15	16-25	26-63	<b>0.002</b>	0-9	10-16	17-29	30-63	<b>&lt;0.001</b>
High-risk pregnancy	33 (53.2%)	9 (14.5%)	20 (32.3%)		25 (40.3%)	8 (12.9%)	19 (30.6%)	10 (16.1%)	
Normal pregnancy	91 (30.7%)	48 (16.2%)	157 (53%)		59 (19.9%)	20 (6.8%)	127 (42.9%)	90 (30.4%)	
<b>High-risk pregnancy hospitalization status</b>				<b>0.117</b>					<b>0.046</b>
Yes	19 (45.2%)	6 (14.3%)	17 (40.5%)		13 (31%)	5 (11.9%)	14 (33.3%)	10 (23.8%)	
No	14 (70%)	3 (15%)	3 (15%)		12 (60%)	3 (15%)	5 (25%)	0	
<b>High-risk pregnancy vaccination status</b>				<b>0.029</b>					<b>0.002</b>
Vaccinated	27 (65.9%)	4 (9.8%)	9 (22%)		23 (56.1%)	3 (7.3%)	8 (19.5%)	7 (17.1%)	
Unvaccinated	6 (28.6%)	5 (23.8%)	10 (47.6%)		2 (9.5%)	5 (23.8%)	11 (52.4%)	3 (14.3%)	
<b>Normal pregnancy hospitalization status</b>				<b>0.003</b>					<b>&lt;0.001</b>
Yes	13 (65%)	2 (10%)	5 (25%)		14 (70%)	0	4 (20%)	2 (10%)	
No	78 (28.3%)	46 (16.7%)	152 (55.1%)		45 (16.3%)	20 (7.2%)	127 (42.9%)	88 (31.9%)	
<b>Normal pregnancy vaccination status</b>				<b>&lt;0.001</b>					<b>&lt;0.001</b>
Vaccinated	91 (42.3%)	48 (22.3%)	76 (35.3%)		58 (27%)	19 (8.8%)	83 (38.6%)	55 (25.6%)	
Unvaccinated	0	0	78 (96.3%)		1 (1.2%)	1 (1.2%)	44 (54.3%)	35 (43.2%)	
<b>Trimester at study</b>				<b>0.076</b>					<b>0.009</b>
1 <sup>st</sup>	21 (28%)	14 (18.7%)	40 (53.3%)		12 (16%)	6 (8%)	35 (46.6%)	22 (29.4%)	
2 <sup>nd</sup>	34 (29.6%)	22 (19.1%)	59 (51.3%)		20 (17.4%)	8 (7%)	51 (44.3%)	36 (31.3%)	
3 <sup>rd</sup>	69 (41.1%)	21 (12.5%)	78 (46.4%)		52 (31%)	14 (8.3%)	60 (35.7%)	42 (25%)	
<b>Smoking</b>				<b>0.003</b>					<b>&lt;0.001</b>
Yes	12 (17.5%)	15 (21.7%)	42 (60.8%)		4 (5.7%)	9 (13.1%)	28 (40.6%)	28 (40.6%)	
No	112 (38.8%)	42 (14.5%)	135 (46.7%)		80 (42.3%)	19 (10%)	18 (9.6%)	72 (38.1%)	
<b>Occupation</b>				<b>0.006</b>					<b>0.033</b>
Yes	23 (22.8%)	19 (18.8%)	59 (58.4%)		16 (15.8%)	9 (8.9%)	42 (41.6%)	34 (33.7%)	
No	101 (39.3%)	38 (14.8%)	118 (45.9%)		68 (26.5%)	19 (7.4%)	104 (40.5%)	66 (66.0%)	

Responses to the questionnaire questions showed that the belief that one could catch COVID-19 was significantly higher in the normal group than in the at-risk group ( $p=0.001$ ). Also, the belief that she would die if she caught COVID-19 was higher in the normal group than the belief that she would have problems with her pregnancy, compared with the risk group ( $p=0.014$ ). The belief that equipment such as masks would protect the person was higher in the normal group than in the at-risk group ( $p=0.016$ ). The percentage of renters who owned the house they lived in was higher in the at-risk group than in the normal group ( $p=0.001$ ). There was no statistical significance between the responses to the other questions (Table III).

<b>Preexisting disease</b>				<b>0.055</b>				<b>0.061</b>
Yes	25 (50%)	4 (8%)	21 (42%)	19 (38%)	2 (4%)	16 (32%)	13 (26%)	
No	99 (32.1%)	53 (17.2%)	156 (50.6%)	65 (21.1%)	26 (84.5%)	130 (42.2%)	87 (28.2%)	
<b>Years of education</b>				<b>0.003</b>				<b>0.212</b>
1-8 years	44 (50%)	13 (14.7%)	32 (35.2%)	30 (34%)	8 (9.5%)	32 (36.9%)	19 (22.6%)	
8 – 12 years	59 (30.2%)	30 (15.3%)	106 (54.3%)	37 (19%)	14 (7.2%)	82 (42.1%)	62 (31.8%)	
> 12 years	21 (28.3%)	14 (18.9%)	39 (52.7%)	17 (22.9%)	6 (8.1%)	32 (43.3%)	19 (25.7%)	
<b>Mother</b>				<b>0.003</b>				<b>0.012</b>
Alive	117 (37.9%)	47 (15.2%)	145 (46.9%)	80 (25.9%)	25 (8.1%)	120 (38.8%)	84 (27.2%)	
Dead	7 (14.3%)	10 (20.4%)	32 (65.3%)	4 (8.2%)	3 (6.1%)	26 (53.1%)	16 (32.7%)	
<b>Father</b>				<b>0.001</b>				<b>0.057</b>
Alive	106 (39%)	44 (16.2%)	122 (44.9%)	73 (26.8%)	19 (67.9%)	105 (71.9%)	75 (75%)	
Dead	18 (20.9%)	13 (15.1%)	55 (64%)	11 (12.8%)	9 (10.5%)	41 (47.7%)	25 (29.1%)	
<b>Do you meet with individuals over the age of 65 in your family?</b>				<b>0.003</b>				<b>&lt;0.001</b>
Yes	29 (27.6%)	24 (22.9%)	52 (49.5%)	14 (13.3%)	9 (8.6%)	46 (43.8%)	36 (34.3%)	
No	18 (60%)	4 (%13.3)	8 (26.7%)	14 (46.7%)	2 (6.7%)	9 (30%)	5 (16.7%)	
<b>Residence</b>				<b>0.012</b>				<b>0.005</b>
Own	44 (51.2%)	10 (11.6%)	32 (37.2%)	35 (40.7%)	9 (10.5%)	19 (22.1%)	23 (26.7%)	
Belongs to family	15 (23.1%)	12 (18.5%)	38 (58.5%)	10 (15.4%)	1 (1.5%)	34 (52.3%)	20 (30.8%)	
Rent	65 (31.4%)	35 (16.9%)	107 (51.7%)	39 (18.8%)	18 (8.7%)	93 (44.9%)	27 (27.5%)	
No	92 (72.4 %)	59 (83.1 %)	112 (74.7 %)	53 (72 %)	30 (76.9%)	130 (78.8%)	60 (75%)	

p-value <0.05 was considered statistically significant.

**Table III:** The responses to survey questions.

	High-risk pregnancies (n=62)	Low-risk pregnancies (n=296)	p
Do you know enough about COVID-19?			0.358
Yes	53 (85.5%)	265 (89.5%)	
No	9 (14.5%)	31 (10.5%)	
How risky do you think it is to come to the hospital to be examined and admitted?			0.448
No risk	5 (8.1%)	32 (10.8%)	
Low risk	16 (25.8%)	59 (19.9%)	
Medium risk	25 (40.3%)	99 (33.4%)	
High risk	16 (25.8%)	106 (35.8%)	
Where do you get the information about COVID-19?			0.307
Social media	27 (43.5%)	103 (34.8%)	
TV	22 (35.5%)	139 (47%)	
Health personnel	13 (21%)	50 (16.9%)	
Other	0	4 (1.4%)	
What should you be most concerned about if you caught COVID-19?			0.087
Death or serious illness.	24 (38.7%)	99 (33.4%)	
Experiencing economic hardship.	14 (22.6%)	120 (40.5%)	
The infection of my baby in the womb.	11 (17.7%)	25 (8.4%)	
Being isolated from family and friends.	3 (4.8%)	10 (3.4%)	



Infecting family members.	7 (11.3%)	28 (9.5%)	
How does it affect you if you get COVID-19?			<b>0.014</b>
Nothing happens to me.	7 (11.3%)	35 (11.8%)	
I get off lightly	25 (40.3%)	139 (47%)	
I am hospitalized	13 (21%)	61 (20.6%)	
I die	0	23 (7.8%)	
I have problems with my pregnancy	17 (27.4%)	38 (12.8%)	
If you get COVID-19 do you think you would infect your family?			0.616
Yes	36 (58.1%)	114 (38.5%)	
No	26 (41.9%)	182 (61.5%)	
Do you have first-degree relatives in your family who are over 65 years old?			0.913
Yes	23 (37.1%)	112 (37.8%)	
No	39 (62.9%)	184 (62.2%)	
Do you believe you will catch COVID-19?			<b>0.001</b>
Yes	30 (48.4%)	206 (69.6%)	
No	32 (51.6%)	90 (30.4%)	
If yes, do you meet?			0.625
Yes	17 (73.9%)	88 (78.6%)	
No	6 (26.1%)	24 (21.4%)	
Do you use masks or other precautions for protection?			0.738
Yes	55 (88.7%)	258 (87.2%)	
No	7 (11.3%)	38 (12.8%)	
If you use them, do you think they will protect you?			<b>0.016</b>
Yes	43 (78.2%)	232 (89.9%)	
No	12 (21.8%)	26 (10.1%)	
Residence			<b>0.001</b>
Own	26 (41.9%)	60 (20.3%)	
Belongs to family	11 (17.7%)	54 (18.2%)	
Rent	25 (40.3%)	182 (61.5%)	

*p-value <0.05 was considered statistically significant.*

## Discussion

Our study aimed to measure anxiety and depression scores in high-risk pregnant women during the pandemic COVID-19 and compare them with normal pregnant women. Our study found that anxiety and depression scores were higher in normal pregnant women than in high-risk pregnant women. Hospitalization, working women, high education levels, and smoking increased anxiety scores. On the other hand, we found that advanced weeks of pregnancy increased depression scores.

From studies conducted during the pandemic period, anxiety disorders increased significantly in high-risk pregnant women. However, because most of these studies were retrospectively evaluated, it is difficult to say that only the pandemic influenced this process. Pregnancy itself carries the risk of anxiety and depression in women (14-20). In our study, it was found that the anxiety scores of normal pregnant women were higher than those of high-risk pregnant women. The fact that people were more anxious during the pandemic period may have increased the anxiety scores of normal pregnant women more than those of high-risk pregnant women. Because high-risk pregnant women inevitably visit the hospital more often, these pregnant women may be better informed

about the risks and possible consequences of the disease, and their worries about pregnancy may have replaced their worries about COVID-19.

In addition, patients with low educational levels, low social support (parents deceased), and low socioeconomic status (renters) had higher anxiety and depression scores. Since this epidemic process takes place in total isolation in Turkey, as in many other countries, it is believed that this situation increasingly leads to pessimism, anxiety, and depression (21,22). Fear of loss, lack of help with child care, loss of familiar routines, and disturbing information about the epidemic affect the mental health of pregnant women during the epidemic (23). What is interesting about our study is that the belief that patients in the normal group COVID-19 will die and have problems during pregnancy if infected with COVID-19 was significantly higher than in the high-risk pregnant women. This could be because the high-risk group has a better understanding of the diseases and risks associated with COVID than the normal group.

The fact that anxiety and depression scores of those who interviewed individuals over 65 years of age were significantly higher than those who did not suggest that patients are

more concerned about their environment during the pandemic period, similar to the literature. High-risk patients may have received more psychosocial support from their environment than healthy pregnant women. As with our results, events that decrease social support, such as the loss of a parent, have been shown to increase scores for anxiety and depression. In this context, the fact that patients diagnosed with a high-risk pregnancy received more support from their environment may have had a reducing effect on their anxiety.

It was found that the level of anxiety during pregnancy increased with increasing educational levels (20). In our study, patients with high educational status had higher anxiety scores than patients with low educational status. This could be related to the fact that people with higher educational status are more active professionally and have more contact with COVID-19. Another study found that the anxiety scores of patients who had been hospitalized before were higher than those of patients who had never been hospitalized (24). In contrast to this study, our study found that anxiety and depression scores in patients with high-risk pregnancy and hospitalization were higher than anxiety and depression scores in patients with normal pregnancy and outpatient care. The risk of hospitalization and its effects on anxiety and depression scores are different in normal pregnant women. While hospitalization increases anxiety and depression scores in high-risk pregnant women, it decreases them in normal pregnant women. What could be the reason for this? Normal pregnancies are hospitalized for delivery. Expecting a healthy pregnancy outcome logically reduces anxiety in these patients. In high-risk pregnancies, hospitalization is usually associated with a high-risk pregnancy outcome, and hospitalization would be expected to increase anxiety in these patients.

In a study examining the magnitude of pandemic-related anxiety as a function of trimester, it was reported that the magnitude of anxiety increased in pregnant women in the third trimester (25). In a meta-analysis by Yan et al, we found that during the COVID-19 pandemic, the prevalence of anxiety in pregnant women decreased throughout pregnancy, whereas the prevalence of depression followed a U pattern, being high in the first and third trimesters and lowest in the second trimester (26). In our study, the depression scores of patients who were close to delivery were higher than those who were pregnant in the first week. This suggests that anxiety increases as pregnancy progresses, especially due to hormonal changes and impending delivery.

In a systematic review and meta-analysis by Shorey et al, the prevalence of anxiety was higher than that of depression in both the prenatal and postnatal periods, and the prevalence of depression was higher in the prenatal period than in the postnatal period (27). Our study differs from these studies; the anxiety and depression scores of the high-risk group and the normal group were evaluated separately, but because only the

prenatal period was recorded, the anxiety and depression scores of these patients after birth are unknown. As noted in Shorey's study, however, no pooled prevalence can be determined for the postpartum period, so it is not possible to compare whether women experience more anxiety symptoms before or after delivery.

In a meta-analysis by Luo et al., decreased general support indicated that financial difficulties had a devastating effect on anxiety; It has been revealed that being undereducated, unemployed during pregnancy, having chronic physical illness before pregnancy, noncompliance with isolation rules, and smoking during pregnancy have been shown to increase the risk of depression (28). In our study, pregnant women who smoked and pregnant women whose mothers had died, i.e., women with lower support, had higher anxiety and depression scores, but in contrast to the present study, housewives had lower scores than employed women.

After complete isolation and the discovery of the vaccine, that is, after the period of uncertainty at the beginning of the pandemic, patients were called and interviewed. We found that the retrospective depression and anxiety scores of patients who complied with the request for vaccination were statistically significantly higher than those of patients who had a normal pregnancy. Similarly, we retrospectively found that patients with high-risk pregnancies had higher depression scores. Thus, we concluded that patients with higher anxiety and depression scores were more likely to be vaccinated regardless of whether they had a high-risk pregnancy or a normal pregnancy.

Our study has several limitations. The most important limitation is the low number of inpatient and outpatient follow-up visits during the pandemic because patients considered hospitalization or admission to the outpatient clinic to be a risk factor for COVID-19, so the findings are limited. Another important limitation is that the number of high-risk pregnancies participating in the study is less than normal pregnancies. In addition, patient refusal to participate in the study is one of our major limitations, and we do not have sufficient data on the impact of the length of hospital stay on this mood disorder.

As expected, anxiety and depression are associated with the interaction of many social factors. Anxiety is lower in high-risk pregnancies than in normal pregnancies. In our study, higher educational status, parental absence, and advanced gestational age increased anxiety. Hospitalization has different effects on high-risk and normal pregnant women. These effects reduce anxiety and depression in parallel with the expectation that the process will end normally in normal pregnant women. Hospitalization in high-risk pregnancies increases anxiety. These are the three main findings of our study. Importantly, adequate patient information, interaction with the health care system, and social support appear to reduce anxiety and depression. Further work on this topic is needed.

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*Availability of data and materials: The data supporting this study is available through the corresponding author upon reasonable request.*

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