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The effect of Covid-19 anxiety on prenatal distress and prenatal attachment in pregnant women

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Abstract

Objective: In this study, we aimed to investigate the effect of Coronavirus Disease 2019 (COVID-19) anxiety on pregnant women, whether it causes prenatal distress and may be changes on mother-infant attachment.
Method: The research population consists of pregnant women in all trimesters. Exclusion criteria from the study; anomaly risk in the fetus, abnormal examination findings, systemic chronic disease and drug use, presence of diagnosed psychiatric disease, consanguineous marriage between the pregnant woman and her spouse. 323 pregnant women who did not meet these exclusion criteria and agreed to participate in the study were included in this study. In the study data form: Income status, education level, age, gravidity, parity, presence and number of miscarriages, gestational week, smoking status, history of COVID-19 infection, if yes, in which week of pregnancy she had, history of COVID-19 infection in her close family, planned pregnancy, in vitro fertilization-intrauterine insemination (IVF-IUI) or a spontaneous pregnancy status were questionnaired. The patients included in the study were administered the Coronavirus Anxiety Scale (CAS), Revised Prenatal Distress Questionnaire (NuPDQ), Prenatal Attachment Scale (PAS).
Results: COVID-19 anxiety increases more if close relatives have coronavirus rather than participants themselves. We detected that high coronavirus anxiety also caused an increase in the sub-dimensions of prenatal distress. We also found that high COVID-19 anxiety negatively affects prenatal attachment.
Conclusion: Pregnant women should be given information and education about the possible effects of coronavirus on their pregnancy during their routine follow-up during the pandemic period. Otherwise, both psychologically and physically unhealthy generations await the whole world.
Keywords: Anxiety, Coronavirus Disease 2019, COVID-19, Pregnancy

INTRODUCTION

In December 2019, a new coronavirus isolated from the lower respiratory tract, called the new coronavirus, emerged in the city of Wuhan, Hubei province of China, and began to spread all over the world (1). In many countries, workplaces and schools were closed, people had to live in isolation from social life (2). Studies have shown that in addition to affecting physical health, the pandemic also has a profound psychological impact on society, leading to an increase in the number and severity of psychological diseases (3–5). It would not be wrong to think that pregnant women will also be more affected by this situation since there are studies proving that the symptoms of psychological diseases that occur during epidemic periods are more common in women (3–6). Anxiety, despair, suicidal ideation may develop in people due to both their own experiences and the news about the new coronavirus in the media. It has been determined that people with anxiety due to new coronavirus are more likely to not evaluate events correctly and develop reaction disorders. In this case, early detection of Coronavirus Disease 2019 (COVID-19) induced anxiety is important in order to protect personal health and improve health policies (4).

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Conditions such as prenatal anxiety and depression may cause lack of self-care, malnutrition and other psychological diseases in the mother, as well as adversely affect the pregnancy process. Newborns of mothers who have severe anxiety and psychiatric illness during pregnancy are more likely to develop psychological illnesses and cognitive disorders in later life (7–10). In addition, in women who had distress and severe psychiatric illness during pregnancy, this condition may cause miscarriage, premature birth, and low birth weight newborns (11–13).

Prenatal attachment is defined as the emotional attachment that has emotional, cognitive and behavioral consequences between the mother and her baby during pregnancy. The mother plays an important role in the attachment relationship (14,15). This bonding between the mother and the baby is important in terms of the formation of maternal identity in the mother, adaptation to pregnancy, and more conscious action during pregnancy (16,17). Attachment, which starts in the prenatal period and continues after birth, supports infant care positively, but also affects the child's psychological development and plays an important role in the child's future social, emotional and cognitive development (16–18). There are studies that found that mother-infant attachment is negatively affected in pregnant women with psychological problems accompanied by anxiety, stress and depressive symptoms (19,20).

For this reason, especially during the pandemic period we are in, it is very important to investigate all kinds of situations that may cause psychological stress in pregnant women and to take early precautions, in terms of world health and a healthier growth of new generations. In this study, our aim is to investigate the effect of COVID-19 anxiety on pregnant women, whether it causes distress in pregnant women and the effect of the situation on mother-infant attachment.

METHOD

This study is a descriptive cross-sectional study. The research population consists of pregnant women in all trimesters who applied to Sivas Cumhuriyet University Hospital Department of Obstetrics and Gynecology. Among the pregnant women who applied to the outpatient clinic between May and August 2021, 323 people who agreed to participate in the study were included. All pregnant women who did not meet the exclusion criteria and agreed to participate in the study were included. Exclusion criterias were; anomaly risk in the fetus, abnormal examination findings, systemic chronic disease and drug use, presence of diagnosed psychiatric disease, consanguineous marriage between the pregnant woman and her spouse. It was determined that approximately 2000 different pregnant women applied to the center in three months to calculate the sample size of the study. It was calculated that 320 participants should be reached with a 95% CI and a margin of error of 5%, according to the sample calculation of known population and unknown prevalence. The data collection form was applied to the participants by face-to-face interview method by one of the researchers (DK). Before the interview, the participants were informed about the research and informed consent was obtained.

Data Collection Tool

The data form contained a total of 70 questions. The first 15 questions were socio-demographic data, 5 questions were CAS, 17 questions were NuPDQ, 33 questions were PAS inventories (1,15,21,22).

The first 15 questions were about the descriptive features (e.g. age, occupation, education level, living place, income status, smoking status) of the pregnant women, their obstetric history (number of pregnancies, gestational week, previous pregnancy situations, planned pregnancy, in vitro fertilization-intrauterine insemination (IVF-IUI) or a spontaneous pregnancy status) and history of COVID-19 infection (if yes, in which week of pregnancy she had, in her close family). These questions were prepared by the researchers by scanning similar studies in the literature.

The patients included in the study were administered the Coronavirus Anxiety Scale (CAS), Revised Prenatal Distress Questionnaire (NuPDQ), Prenatal Attachment Scale (PAS) (1,15,21). The permission to use the CAS was obtained from Evren, the permission to use the PAS from Çevik Türkmen, and the permission to use the NuPDQ from Akın S were obtained via e-mail.

Coronavirus Anxiety Scale is a 5-item scale measuring anxiety caused by coronavirus. The scale was developed by Lee et al. in 2020 (23). The Turkish validity study of the scale was carried out by Evren et al (1). The Cronbach alpha coefficient of the scale, which was adapted into Turkish, was found to be 0.80. In this scale, there are questions to determine the ongoing coronavirus anxiety of the participants in the last two weeks. The scale is a 5-point Likert type scored from 0 to 4 (Not at all=0, Rare, less than a day or two=1, several days=2, more than seven days=3, nearly every day over the last two weeks=4). As the score obtained from the scale increases, coronavirus anxiety increases.

Revised Prenatal Distress Questionnaire was first created by Yali and Lobel as 12 items in 1999, and it was revised by Lobel et al. in 2008 and increased to 17 items (24). The Turkish validity and reliability study of the revised form was conducted by Yüksel et al. in 2011 (22). The Cronbach Alpha coefficient of the Turkish scale was calculated as 0.85. The scale consists of 17 items and 4 sub-dimensions. Sub dimensions; (1) physical and social changes due to pregnancy, concerns about the baby and childbirth, (2) concerns about the healthcare quality and health status, (3) concerns about

baby care and postpartum life, and (4) financial concerns. Scale items are scaled as "Not at all" (0), "Somewhat" (1) and "Very much" (2). There is no reverse-scored items in the scale. A minimum of 0 and a maximum of 34 points can be obtained from the scale. High scores obtained are interpreted as an increase in the level of distress perceived by pregnant women.

Prenatal Attachment Scale was developed by Çevik and Kurnaz in 2019 (15), but the first idea about the prenatal attachment scale was put forward by Muller (25). The Cronbach's alpha coefficient of the scale, which consists of three sub-dimensions and 33 items, ranges from 0.88 to 0.94. For each item, the total score is obtained by multiplying the "strongly agree" answer by three, the "partially agree" answer by two, and the "strongly disagree" answer by one point. There is no reverse-scored item in the scale. The scores of the curiosity and excitement factor vary between 13-39, the scores of the acceptance and enthusiasm factor vary between 9-27, and the scores of the hope factor vary between 11-33. A score between 33 to 99 can be obtained from the scale. High total scale scores are related to high prenatal attachment levels.

Statistical Analysis

The collected data were analyzed by using the SPSS program (Statistical Package for Social Sciences) for the Windows Version 25 package. Normality analysis of numerical data was performed using Shapiro-Wilk test. Firstly, descriptive statistical analysis of the data was carried out. Next, frequencies for categorical data and measures of central distribution (Mean ± Standard Deviation) for numerical data were calculated. Whether the means of normally distributed numerical data differed significantly between two independent groups and more than two independent groups was analyzed using the independent samples t-test or the one-way ANOVA test. The chi-square test was used to compare categorical data. Pearson Correlation test was conducted to analyze the relationship between scale and sub-dimension scores and different numerical data. Binary logistic regression analysis was used to investigate the factors affecting prenatal attachment and prenatal distress. The scores of the prenatal attachment and prenatal distress scales were outcome variables and were analyzed in two categories (Above-mean/Mean and below-mean scores). Wald chi-square test was used to determine the significance of the variables in the model. Continuous variables in the Prenatal Distress Model; age, gravidity, gestational week, coronavirus anxiety scale score. Categorical variables in this model are presence of miscarriages (Compared to absence), smoking (Compared to non-smoker), university and above education level (Compared to high school and below), planned pregnancy (Compared to unplanned pregnancy), natural conception (Compared to conception with the help of assisted reproductive technologies), history of COVID-19 infection in pregnancy (Compared to not) and history of COVID-19 infection in her close family (Compared to not). Continuous variables in the Prenatal Attachment Model are age, gravidity, gestational week, coronavirus anxiety scale score and prenatal distress scale score. Categorical variables in this model are presence of miscarriages (Compared to absence), university and above education level (Compared to high school and below), planned pregnancy (Compared to unplanned pregnancy), natural conception (Compared to conception with the help of assisted reproductive technologies) and history of COVID-19 infection in pregnancy (Compared to not). A p-value of less than 0.05 was considered statistical significance, with a 95% CI.

RESULTS

323 pregnant women volunteered to participate in the study. The descriptive features of the pregnant women are shown in Table 1.

Table 1. The descriptive features of the pregnant women

Age †	28.1±5.4 (18-43)	
Gravidity †	2.3±1.3 (1-8)	
Parity †	0.9±1.0 (0-5)	
Living †	0.9±1.0 (0-5)	
Presence of miscarriages *	90 (27.9)	
Number of miscarriages †	1.4±0.7 (1-4)	
Smoking status *	**n**	**%**
Still smoking	22	6.8
Cessation during pregnancy	3	0.9
Never smoked	298	92.3
Income level *	**n**	**%**
Low	33	10.2
Middle	242	74.9
High	48	14.9
Education level *	**n**	**%**
High school and below	220	68.1
University and above	103	31.9

† Continuous variables expressed as Mean ± Standard deviation (minimum - maximum).
* Categorical variables were expressed as frequency (percentage) values.

The mean week of gestation of the participants was 27.4±10.2 (min=5- max=41). Woman's 6.2% (n=20) had COVID-19 infection during pregnancy. The mean week of gestation, when they had COVID-19 infection, was 15.7±8.3 (min:5-max:28). This pregnancy of 85.1% (n=275) woman was planned. Participants' became pregnant with natural conception (94.1%; n=304), ovulation induction (3.4%; n=11), and assisted reproductive techniques (2.5%; n=8).

The CAS mean score of the pregnant women was 1.1±1.9 (min=0-max=11). There was no significant difference between the status of having COVID-19 infection and the mean CAS

score (p=0.298). The mean CAS score of pregnant women who had a close relative with COVID-19 infection (1.8±2.6) was found to be significantly higher than the others (0.9±1.6) (p=0.007). There was no significant difference between continuing smoking during pregnancy, the type of pregnancy (natural/help of assisted reproductive technologies), whether the pregnancy was planned or not, and the CAS score (respectively; p=0.057, p=0.959, p=0.128).

The mean scores of NuPDQ, PAS and their sub-dimensions are given in Table 2.

Table 2. The mean scores of NuPDQ, PAS and their sub-dimensions

	Mean ± SD	Min – Max
Revised Prenatal Distress Questionnaire	27.9 ± 5.7	17 – 47
Physical and social changes due to pregnancy, concerns about the baby and childbirth	16.2 ± 3.6	9 – 25
Concerns about the healthcare quality and health status	4.3 ± 1.2	3 – 9
Concerns about baby care and postpartum life	4.2 ± 1.4	3 – 13
Financial concerns	3.1 ± 1.2	2 – 12
Prenatal Attachment Scale	90.6 ± 10.8	33 – 129
Curiosity and excitement	34.5 ± 4.5	13 – 39
Acceptance and enthusiasm	25.0 ± 3.4	9 – 27
Hope	31.0 ± 4.1	11 – 63

Low-level significant correlations were found between coronavirus anxiety and NuPDQ and its sub-dimensions (p<0.05). The data for this analysis are shown in Table 3.

Table 3. The relationship between coronavirus anxiety and prenatal distress

n=323		NuPDQ	Factor 1	Factor 2	Factor 3	Factor 4
Coronavirus Anxiety Scale	r	0.172**	0.108	0.177**	0.135*	0.138*
	p	0.002	0.053	0.001	0.015	0.013

** The correlation is significant at the 0.01 level.
* The correlation is significant at the 0.05 level.
NuPDQ. Revised Prenatal Distress Questionnaire
Factor 1. Physical and social changes due to pregnancy, concerns about the baby and childbirth
Factor 2. Concerns about the healthcare quality and health status
Factor 3. Concerns about baby care and postpartum life
Factor 4. Financial concerns

Low-level significant correlations were found between coronavirus anxiety and PAS and its sub-dimensions (p<0.05). The data for this analysis are shown in Table 4.

Table 4. The relationship between coronavirus anxiety and prenatal attachment

n=323		PAS	Curiosity and excitement	Acceptance and enthusiasm	Hope
Coronavirus Anxiety Scale	r	-0.144**	-0.127*	-0.131*	-0.131*
	p	0.009	0.022	0.019	0.018

** The correlation is significant at the 0.01 level.
* The correlation is significant at the 0.05 level.
PAS. Prenatal Attachment Scale

They were divided into two groups as 28 points and below (n=182; 56.3%) and above 28 points (n=141; 43.7%) according to the mean score (27.9±5.7) of NuPDQ. Increasing coronavirus anxiety had a positive effect by 0.2 times (p<0.001) on high prenatal distress score. While having a coronavirus infection during pregnancy had a negative effect 1.2 times (p=0.049) and increased maternal age had a negative effect 0.05 times (p=0.031); increasing coronavirus anxiety had a positive effect by 0.2 times (p<0.001) on high prenatal distress scores. Binary logistic regression analysis results are shown in Table 5. The sensitivity of the binary logistic regression model was 81.3%, and the specificity was 41.1%. The Nagelkerke R2 of the model was 0.108. The Omnibus significance value of the model is p=0.004.

Table 5. Analysis of factors affecting high scores on the prenatal distress scale with Binary Logistic Regression Model (Compared with below-average score)

						95% CI	
	Coefficient β)	SE (β)	W	p	OR	Lower	Upper
Age	-0.059	0.028	4.659	0.031	0.942	0.893	0.995
Gravidity	0.127	0.142	0.799	0.371	1.135	0.860	1.498
Gestational week	0.007	0.012	0.374	0.541	1.007	0.984	1.031
Presence of miscarriages (compared to absence)	0.411	0.348	1.400	0.237	1.509	0.763	2.982
Smoking (compared to non-smoker)	0.178	0.475	0.141	0.707	1.195	0.471	3.032
University and above education level (compared to high school and below)	-0.062	0.267	0.055	0.815	0.939	0.557	1.585
Planned pregnancy (compared to unplanned pregnancy)	-0.072	0.354	0.041	0.840	1.074	0.537	2.149
Natural conception (compared to conception with the help of assisted reproductive technologies)	-0.251	0.518	0.234	0.629	0.778	0.282	2.149
History of coronavirus infection in pregnancy (compared to not)	-1.210	0.614	3.887	0.049	3.353	1.007	11.162
History of coronavirus infection in her close family (compared to not)	-0.010	0.297	0.001	0.973	1.010	0.564	1.807
Coronavirus anxiety scale score	0.227	0.068	11.144	0.001	1.255	1.098	1.434

n = 323, Nagelkerke R^2 = 0,108, SE, standard error; W, Wald chi-square; OR, odds ratio; CI, confidence interval

They were divided into two groups as 91 points and below (n=119; 36.8%) and above 91 points (n=204; 63.2%) according to the mean score (90.6 ± 10.8) of PAS. While an increase in gravidity had a negative effect of 0.3 times (p=0.039), and the increase in the coronavirus anxiety had a negative effect of 0.2 times (p=0.002); having planned pregnancy had a positive effect of 1.1 times (p=0.002) on high prenatal attachment.

Binary logistic regression analysis results are shown in Table 6. The sensitivity and specificity of the binary logistic regression model were found to be 33.6% and 89.2%. The Nagelkerke R2 of the model was 0.141. The Omnibus significance value of the model is p<0.001.

Table 6. Analysis of factors influencing high prenatal attachment with Binary Logistic Regression Model (compared with below-average scores)

						95% CI	
	Coefficient (β)	SE (β)	W	p	OR	Lower	Upper
Age	0.031	0.028	1.163	0.281	1.031	0.975	1.090
Gravidity	-0.308	0.149	4.253	0.039	0.735	0.548	0.985
Gestational week	-0.009	0.013	0.553	0.457	0.991	0.967	1.015
Presence of miscarriages (compared to absence)	0.383	0.363	1.114	0.291	1.467	0.720	2.987
University and above education level (compared to high school and below)	-0.050	0.280	0.031	0.859	1.051	0.607	1.818
Planned pregnancy (compared to unplanned pregnancy)	1.061	0.348	9.290	0.002	0.346	0.175	0.685
Natural conception (compared to conception with the help of assisted reproductive technologies)	-0.507	0.614	0.683	0.409	0.602	0.181	2.005
History of coronavirus infection in pregnancy (compared to not)	0.260	0.508	0.263	0.608	0.771	0.285	2.084
Coronavirus anxiety scale score	-0.207	0.067	9.667	0.002	0.813	0.714	0.926
Revised prenatal distress questionnaire score	-0.038	0.022	3.052	0.081	0.963	0.922	1.005

n = 323, Nagelkerke R^2 = 0.141, SE, standard error; W, Wald chi-square; OR, odds ratio; CI, confidence interval

DISCUSSION

The COVID-19 infection has not only caused physical illness but also had serious social and psychological effects on communities. It seems impossible not to be affected by the psychological and social destruction of the pandemic in a period such as pregnancy, when the person is more sensitive both mentally and physically. In our study, we determined the anxiety caused by the COVID-19 in pregnant women of all gestational weeks and examined the effect of this situation on the occurrence of distress in pregnancy and mother-baby attachment.

Among the participants, the coronavirus anxiety scale score of the pregnant women who had a close relative who caught the COVID-19 infection was higher than the pregnant women who caught the COVID-19 infection and uncaught. The rapid spread of COVID-19 infection, exposure to false information from the media and the immediate environment cause more fear and anxiety in people (3,23). In a study conducted by Vally and Alowais in 2021 (26), it was shown that the diagnosis of COVID-19 to a loved one or relative increases coronavirus anxiety more than individuals who were not exposed to these experiences. There are also studies showing that when social support decreases, psychological distress increases during pregnancy (17). In the literature, it has been shown that the uniqueness of the disease, its unexpected global impact, the uncertainty of physical outcomes (for both mothers and babies), the risk of transmission, and social contact restrictions are effective on this anxiety in pregnant women (27). This effect can be seen more in societies like Turkey where communication with family and relatives is important. During the pandemic period, when social isolation and restriction increased, pregnant women were able to communicate only with their close relatives. Learning that their close relatives also got the COVID-19 infection may have led to a narrowing of their social circle and an increase in the fear of infecting their baby and themselves.

Pregnant women are at high risk for distress. Especially not knowing what kind of consequences having a COVID-19 infection during pregnancy will cause for the baby and herself, and the lack of sufficient information in the literature on this subject, increases the fear of catching COVID-19 even more. This situation causes more anxiety and anxiety in pregnant women (28,29). In our study, prenatal distress was less in those who had a history of COVID-19 during pregnancy compared to those who did not. We also observed that prenatal distress increased significantly in pregnant women with high coronavirus anxiety. Among the sub-dimensions of prenatal distress, 'Concerns about health care quality and health status','Concerns about baby's care and postpartum life' and 'Financial concerns' increased significantly. The distress score of pregnant women who had COVID-19 infection during pregnancy was lower. We think that this is due to the disappearance of the fear that her baby will be harzzmed and the uncertainty of the effects of COVID-19 infection. However, there are many studies stating that the transmission of COVID-19 infection from mother to baby during pregnancy cannot be proven (30,31). As Nwafor (32) et al.said in their study, curfews taken, removal of elective patient care in hospitals, dismissal of many pregnant women and their husbands may cause concerns about transportation to health care providers, pregnancy follow-up, postpartum baby care and increased costs in pregnant women. There are studies showing that women who have anxiety during pregnancy have miscarriage, low birth weight in their babies, growth restriction and preterm delivery (11,13). Therefore, we would like to underline the necessity of providing information and psychological support to pregnant women during the COVID-19 pandemic.

In addition, experiencing anxiety during pregnancy may affect the fetus in the intrauterine period and lead to negativities in the psychosocial development of the baby in the future. Anxiety, feelings of depression, and lack of social support also hinder the development of prenatal attachment. Prenatal attachment can be defined as the feelings, perceptions and behaviors of the parents about the fetus (17). When the stress caused by coronavirus turns into anxiety during pregnancy, the mother cannot spare enough time to establish a healthy bond with her baby (33). If an adequate prenatal attachment is not provided, neonatal care may be adversely affected, and as the newborn grows up, it may lag behind its peers

in terms of physical, mental, emotional, social and language development (18). Many studies have found that women with low-quality fetal attachment have significantly higher levels of anxiety and depression during their pregnancy (17,34,35). There are studies showing that the lack of social support also negatively affects prenatal attachment (17). Therefore, it would not be wrong to think that the isolation measures taken due to the coronavirus pandemic may affect mother-baby bonding in pregnant women. In our study, we found that prenatal attachment of pregnant women with high coronavirus anxiety was significantly lower. In the only similar study in the literature, Craig et al. found that prenatal attachment in Italian pregnant women was negatively affected in those with anxiety and depression, and it was positively related to the risk perception of COVID-19. For this reason, they also underlined that prenatal attachment may be negatively affected when the risk perception of COVID-19 becomes psychological distress (33). In our study, the effect of coronavirus anxiety on prenatal attachment was investigated. Our research is the first known study in the literature that looks at the subject from this perspective.

In our study, 85.1% of pregnant women had this pregnancy voluntarily and planned. We found that while voluntary pregnancy had a positive effect on prenatal attachment, increasing the number of pregnancies had a negative effect on it. This situation is compatible with the literature. In a large-scale study conducted by Damato et al. (36), they found that psychiatric problems of the mother affected attachment negatively, but voluntary pregnancy had a positive effect Malm et al. (16) reported that younger women expecting their first baby had more prenatal attachment than multiparous women (36,16). They attributed this to the fact that as the number of pregnancies decreased, they had more free time to focus on their relationships with the baby (16). Multiparous pregnant women may not be able to spare enough time for their babies in the womb because they have experienced situations such as the development and movement of their babies before and they need to spend time in the care of previous children. At this point, it is necessary to underline the importance of social support.

As a result of our research, we found that COVID-19 anxiety increases more if close relatives have coronavirus rather than participants themselves. High coronavirus anxiety also caused an increase in the sub-dimensions of prenatal distress, ' Concerns about the quality of health care and health status', ' Concerns about the care of the baby and postpartum life' and ' Financial concerns '. We also found that high COVID-19 anxiety negatively affects prenatal attachment.

CONCLUSION

We think that the results found are due to the lack of information about the effect of coronavirus on pregnancy and to focus only on the physical results. It is obvious that psychiatric disorders that increase during pandemic periods can be seen more in a sensitive period such as pregnancy. Pregnant women should be given information and education about the possible effects of coronavirus on their pregnancy during their routine follow-up during the pandemic period. Screening tests should be performed to determine pregnant women with high COVID-19 anxiety in advance. Necessary psychological support should be started before prenatal distress develops and prenatal attachment is negatively affected in pregnant women with high COVID-19 anxiety. Otherwise, both psychologically and physically unhealthy generations await the whole world.

Limitations of the Study

The most important limitation of our research is that it was carried out in a single center and in a tertiary hospital. Multicenter and large-participant studies are needed. The results of our research evaluate the effects of coronavirus on pregnant women both before and after delivery from different perspectives. In this context, it is expected to shed light on the special psychological support policies to be developed for pregnant women during the pandemic period.

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Conflict of Interest

The authors declare that they have no conflict of interests regarding content of this article.

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Ethical Declaration

Ethical permission was obtained from the Sivas Cumhuriyet University, Medical Faculty noninvasive clinical Ethics Committee for this study with date 2021 and number 04/27 and Helsinki Declaration rules were followed to conduct this study. An application has been made to the Turkish Republic Ministry of Health COVID-19 Scientific Research Evaluation Commission.

Authorship Contributions

Concept: DK, EA, SK Design: DK, SK, Supervising: DK, EA, SK, Financing and equipment: DK, Data collection and entry: DK, EA, SK, Analysis and interpretation: EA, SK, Literature search: DK, Writing: DK, Critical review: DK, EA, SK.

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