ORIGINAL ARTICLE

Perception of COVID-19, distress, depression, and anxiety among pregnant women during the COVID-19 pandemic

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ABSTRACT

Objective: The objective of the study was to examine the relationship between the mental health of pregnant women and their perception of COVID-19 pandemic.

Material and Methods: In this cross-sectional study, from December to January 2021, stress, anxiety, depression, and perception of causes of COVID-19 were measured using the Depression, Anxiety, and Stress Scale (DASS-21) and Perception of Causes of COVID-19 Scales.

Results: A total of 300 pregnant women with a median age of 29 years (range: 19–39) were included. Anxiety, depression, and stress and age were mildly correlated (r=0.117, p=0.043). With regard to the development of mental problems in babies due to the COVID-19 pandemic, 43.8% of pregnant women had severe anxiety levels, while 31.3% had no anxiety (p=0.011). Pregnant women who had anxiety about development of anomaly in babies due to COVID-19 pandemic had significantly severe depression levels (p=0.011). Severe stress was found to be higher in pregnant women who had anxiety about miscarriage due to COVID-19 pandemic (p=0.016). No significant correlation was found between the DASS-21 subscales and the perception of causes of COVID-19 subscales.

Conclusion: The present study found that a majority of women experienced elevated levels of stress, anxiety, and depression caused by COVID-19 pandemic. Pregnant women experienced high levels of depressive symptoms about the development of their baby will be adversely affected by the pandemic. We also found higher levels of stress in pregnant women who were worried about miscarriage due to COVID-19 pandemic. Our research did not find a relationship between the mental well-being of pregnant women and COVID-19 perception.

Keywords: Anxiety, conspiracy theory, covid-19, depression, mental health, pregnancy.

Cite this article as: Kaya L, Keleş E, Kaya Z, Yakşi N. Perception of COVID-19, distress, depression, and anxiety among pregnant women during the COVID-19 pandemic. Zeynep Kamil Med J 2022;53(4):213–217.
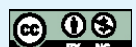
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INTRODUCTION

The COVID-19 pandemic caused by the severe acute respiratory syndrome coronavirus 2 infected approximately 500 million people worldwide and caused more than 6 million deaths as of May 12, 2022.[1] Extensive research has shown that the measures in response to COVID-19 pandemic have effect all aspect of human life.[2] The devastating effects of COVID-19 infection on mental health have been reported, including fear, health anxiety, stress, and depression.[3–6]

The prenatal period is a vulnerable timeframe in which a number of psychological and physiological changes occur in both mother and fetus. Psychological distress caused by the COVID-19 pandemic places an additional burden on pregnant women and significantly increases the level of anxiety and depression symptoms already predisposed during pregnancy.[7–10] There has been accumulating evidence suggest that the COVID-19 pandemic and its uncertainty bring detrimental effect both on the course of pregnancy, mother, and birth outcomes, including preterm delivery, low birth weight, lower APGAR score, pre-eclampsia, nausea, and vomiting and has higher level of anxiety and depression symptoms.[11,12]

The perception of the COVID-19 pandemic might affect the mental health of pregnant women.[13] It is of great importance to understand this association to improve the mental health of this vulnerable group and offer useful guidance for them. Therefore, we aimed to examine the relationship between the mental health of pregnant women and their perception of the COVID-19 pandemic.

MATERIAL AND METHODS

This cross-sectional study was conducted during the COVID-19 pandemic at Zeynep Kamil Women's and Children's Disease Training and Research Hospital, Istanbul, Türkiye, between January and March 2021. The institution is one of the largest Women's and Children's Hospital, providing tertiary referral health care in Türkiye. All pregnant women attending antenatal care clinics were informed about the purpose of the study and were invited to participate in the study. After obtaining a written informed consent form, a questionnaire was distributed to the participant. Database management complies with privacy legislation and this research was carried out in accordance with the 1964 Declaration of Helsinki and its subsequent amendments or comparable ethical standards. Approval for this study was obtained from the Research Ethics Committee of the same hospital (approval number: 5, January 6, 2021).

We performed a sample size calculation based on a previously published study by Kahyaoglu Sut et al.,[14] 2020. Considering the frequency of 75%, with 95% as the confidence level and a margin error of 0.05, the total sample size was calculated as minimum 289. The target sample size was exceeded by 11 for a total of 300 participants instead of 289. Since our study was performed during the Delta wave, the frequency was taken higher than the reference study.

Pregnant women aged between 18 and 45, with minimum reading and writing literacy, in all trimesters of gestation, attending antenatal care clinics between January and March 2021 were included in the study. Those with a history of psychological or physical illnesses, who had an addiction, had COVID-19 infection, or had stressful experiences such as the death of a relative within the past 6 months were excluded from the study.

Outcome Measures

The tool used to gather the study data had three components: Sociodemographic, a short form of the Depression, Anxiety, and Stress Scale (DASS-21), and Perception of Causes of COVID-19 Scales. The sociodemographic data included age, gravida, educational level, gestational week, economic status, and occupation.

The DASS-21 is a 21-item self-report questionnaire, which assesses the mental health of participants in three dimensions: Anxiety, depression, and stress. Each question is rated on a 4-point Likert scale ranging from 0 (never) to 3 (always). Each subscale score ranges from 0 to 21, with higher scores indicating more severe symptoms of depression, anxiety, and stress. This scale was developed by Lovibond and Lovibond in 1995 and was adapted to Turkish by Yılmaz et al.[15] in 2017. The Cronbach alpha for depression, anxiety, and stress scales was 0.819, 0.808, and 0.755, respectively.

Perception of causes of COVID-19 scale was developed by Çırakoğlu and Turkish validity and reliability were carried out by Geniş et al.[16] The questionnaire has 14 items in three sub-dimensions: Conspiracy theories, environmental factors, and faith factors. Each item scored on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with higher scores representing a higher level of belief in that sub-dimension. The "Conspiracy" dimension includes conspiracy beliefs (biological weapons, vaccine sales, political games, etc.) commonly seen in media regarding possible causes of the pandemic. The "Environmental" dimension includes beliefs that unhealthy lifestyles, global planetary warming, and pollution of natural resources are suggested as possible causes of the COVID-19 pandemic. The "Faith" dimension includes beliefs that an epidemic is the punishment of God's wrath due to religion or social degradation. The Cronbach alpha for conspiracy theories, environmental factors, and faith factors sub-dimensions was 0.96, 0.85, and 0.90, respectively.

Data were analyzed using the Epi Info software version 7.2. Descriptive data were presented using frequency and percentages for categorical variables, and median (minimum-maximum) values for continuous variables. The normality of the distribution was checked by the Kolmogorov–Smirnov test. Spearman correlation test was used to compare two continuous variables, Chi-square test was used to compare two categorical variables, and Mann–Whitney U-test and Kruskal–Wallis tests were used to compare categorical variables with continuous variables. $P<0.05$ was accepted as statistically significant.

RESULTS

A total of 300 pregnant women with a median age of 29 years (range: 19–39) were included in the study. A majority of pregnant women were in the first trimester of gestation (40.0%), had received secondary education (56.7%), and were unemployed (92.0%). Demographic characteristics of pregnant women are presented in Table 1.

Cronbach's alpha coefficients for anxiety, depression, and stress subscales were calculated as 0.72, 0.72, and 0.65, respectively. DASS-21 anxiety, depression, and stress subscale scores were 7 (0–20), 8 (0–19), and 10 (0–19), respectively. As shown in Figure 1, 77% of the pregnant women had anxiety symptoms, 78% had depression, and 71% had stress.

Table 1: Baseline characteristics of study participants (n=300)

	n	%
Age (years)*	29	19–39
Gestational age (weeks)		
<14	120	40.0
14–28	111	37.0
>28	69	23.0
Education status		
Primary school	10	3.3
Secondary school	170	56.7
High school	89	29.7
University and higher	31	10.3
Occupation		
Government employee	16	5.3
Laborer	8	2.7
Unemployed	276	92.0
Economic level		
More than expense	0	0.0
Balanced	141	47.0
Less than expense	159	53.0
Gravida*	2	1–7

*: Continuous variables are presented as median (min–max).

Table 2: Participants' anxiety and fears related to COVID-19 pandemic (n=300)

	n	%
Anxiety over		
Being pregnant	300	100.0
Finding out you are pregnant		
Little worried	137	45.7
Extremely worried	163	54.3
Fear of death	173	57.7
Health of own health	144	48.0
Health of fetus	300	100.0
Unable to breastfeed safely	291	97.0
Miscarriage	71	23.7
Development of metal problems in the baby	48	16.0
Development of an anomaly in the baby	46	15.3
Preterm delivery	72	24.0
Stillbirth	55	18.3
Transferal of the baby to the neonatal ICU	189	63.0
Loss of baby after birth	169	56.3
Fear over		
Economic burden	271	90.3
World will be affected for a long time		
by the pandemic	300	100.0
Unknowns about the virus	300	100.0
Lockdown measures	210	70.0

ICU: Intensive care unit.

During the COVID-19 pandemic, all pregnant women had anxiety of being pregnant and that the health of their babies will be adversely affected. In addition, all pregnant women feared that the world would be affected for a long time by the pandemic and the unknowns about the coronavirus. The anxiety and fears of pregnant women related to the COVID-19 pandemic are shown in Table 2.
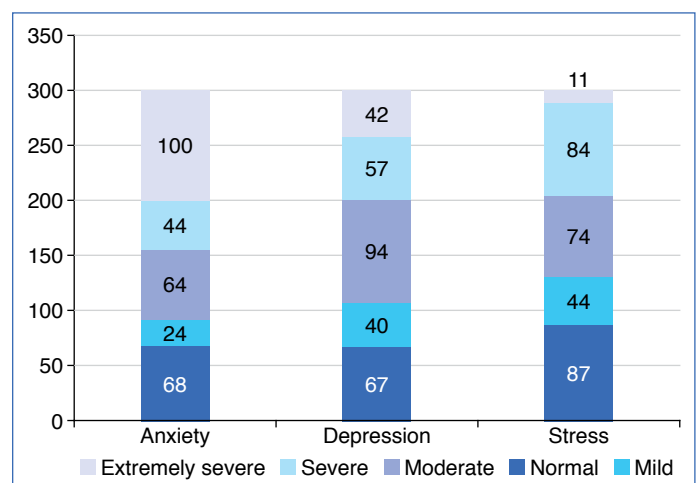
Comparison of DASS anxiety, depression, and stress subscales and sociodemographic characteristics showed that the prevalence of depression in the government employees (100%) was found to be higher than their counterparts (p=0.017). DASS anxiety scale and age were mildly correlated (r=0.117, p=0.043). With regard to the development of mental problems in babies due to the COVID-19 pandemic, 43.8% of pregnant women were found to have severe anxiety levels, while 31.3% had no anxiety (p=0.011). Pregnant women who had anxiety about development of anomaly in babies due to the COVID-19 pandemic had significantly severe depression levels (p=0.011). Severe stress was found to be higher in pregnant women who had anxiety about miscarriage due to the COVID-19 pandemic (p=0.016).

Cronbach's alpha coefficients for the conspiracy, environment, and belief subscales of the perception of COVID-19 causes were calculated as 0.93, 0.89, and 0.93, respectively. Perception of causes of COVID-19, conspiracy, environment, and belief subscale scores were 3 (1–5), 3 (1–5), and 2 (1–5), respectively. No significant correlation was found between the DASS-21 subscales and the per-

Figure 1: Levels of anxiety, depression, and stress during the COVID-19 pandemic among participants.

ception of causes of COVID-19 subscales (Table 3). There was no statistical difference between the DASS-21 depression, stress, and anxiety and perception of causes of COVID-19 subscales (p>0.05).

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Table 3: The correlation between sub-dimensions of the perception of causes of COVID-19 and sub-dimensions of the, anxiety, and stress scale

	DASS-depression	DASS-anxiety	DASS-stress
Conspiracy theories			
r	0.039	0.052	0.033
p*	0.503	0.373	0.574
Environmental factors			
r	-0.071	0.004	-0.045
p*	0.219	0.950	0.434
Faith factors			
r	-0.047	-0.037	-0.081
p*	0.414	0.527	0.160

DASS: Depression Anxiety Stress Scales; *: Spearman correlation test.

DISCUSSION

The present study found that a great majority of women experienced elevated levels of stress, anxiety, and depression caused by the COVID-19 pandemic, especially those who work as government employees and those who were older. Pregnant women who experienced high levels of depressive symptoms about the development of their baby will be adversely affected by the pandemic. We also found higher levels of stress in pregnant women who were worried about miscarriage due to the COVID-19 pandemic. Our research did not find a relationship between the mental well-being of pregnant women and COVID-19 perception.

In accordance with the previous findings, the present study found that a significant proportion of pregnant women had stress, depression, and anxiety symptoms during COVID-19 pandemic. Similar findings were reported by Nwafor et al.[17] in Nigeria where over one-third of pregnant women experienced symptoms of depression, anxiety, and stress during COVID-19 pandemic lockdown. Luo et al.[18] found that the prevalence of stress, anxiety, and depression has increased significantly among pregnant women amid the COVID-19 pandemic. It can be concluded that the COVID-19 pandemic has a great impact on mental health among pregnant women.

Anxiety caused by coronavirus and fear of COVID-19 were related to the mental health of pregnant women.[19] While joy, happiness, and serenity were closely associated with childbirth expectations before COVID-19; fear, anxiety, danger, worry, sadness, loneliness, constriction, and inability were dominant during the pandemic.[20] Our research found that pregnant women are worried about their own health and that the health of their unborn child will be adversely affected by COVID-19.

Women aged 38–45 were three times more likely to develop depression compared to those aged 18–27 during COVID-19 pandemic lockdown.[17] However, a study comparing mental health status of pregnant women before and during the COVID-19 pandemic is that of Mei et al.[21] (2021), in which no significant difference was found between maternal age and depression, anxiety, and stress rates. Our research found that there was a close correlation between maternal age and anxiety levels.

In our study, the depression level of those working as government employees was higher than the unemployees and laborers. This outcome is contrary to that of Luo et al.[18] (2022) who found that the risk of depression is higher in pregnant women who are unemployed or housewives during the COVID-19 pandemic. This can be explained by the fact that government employees across all sectors continued to work and in physical contact with people throughout the pandemic and had more awareness of the consequences of the pandemic.

COVID-19 pandemic has caused increased depression, anxiety, and stress among pregnant women.[19] Prior studies showed that high levels of anxiety in these women negatively affect their unborn child and their own health condition.[22,23] In a recent systematic literature review, Downe et al.[24] reported that pregnant women expressed more concerns about the health of their families and babies than their own health. Another study revealed that a majority of pregnant women were worried that the COVID-19 pandemic might cause fetal development constraints, abortion, or preterm delivery.[25] In another study, about one-third of pregnant women had high levels of stress related to feeling unprepared for childbirth due to the pandemic and fears about perinatal COVID-19 infection.[26] In the same vein, our study found high levels of depression among pregnant women who were worried about the development of anomalies in their babies due to the pandemic. In addition, stress levels were found to be higher in pregnant women who were worried about miscarriage due to the COVID-19 pandemic.

The previous studies found that there was a strong relationship between depression and conspiracy theories and misinformation, while anxiety was not associated with conspiracy and misinformation beliefs.[27] Our study found no relationship between the mental well-being of pregnant women and COVID-19 perception.

The study performed during the COVID-19 delta variant period could be considered one of the strengths of the study. Therefore, it offers some important insights into the psychological impact of the pandemic on pregnant women. Notwithstanding the relatively limited sample, this work represents one of the largest women and children's hospital and tertiary referral centers in Türkiye. Since the study was conducted in a single center, caution must be applied, as the findings might not be generalizable to a wider population.

CONCLUSION

This paper contributes to our understanding of the impact of the COVID-19 pandemic on the mental health of pregnant women. Therefore, it is critical to provide respectful, quality care, and consideration to vulnerable populations, such as pregnant women and newborns, to prevent adverse health consequences that may arise from the pandemic. It is recommended to conduct psychosocial evaluations and provide antenatal counseling to reduce anxiety caused by the COVID-19 pandemic.

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Statement

Ethics Committee Approval: The Zeynep Kamil Maternity and Children's Training and Research Hospital Clinical Research Ethics Committee granted approval for this study (date: 06.01.2021, number: 5).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – LK, EK, ZK, NY; Design – LK, EK, ZK, NY; Supervision – LK, EK, ZK, NY; Resource – LK; Materials – LK; Data Collection and/or Processing – LK, ZK; Analysis and/or Interpretation – EK, NY; Literature Search – LK, EK, ZK, NY; Writing – LK, EK, ZK, NY; Critical Reviews – LK, EK, ZK, NY.

Conflict of Interest: The authors have no conflict of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

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