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Research article

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Impact of knowledge, attitude and anxiety levels about COVID-19 on the quality of life in pregnant women

Sefik Gökce, Dilsad Herkiloğlu

Department of Obstetrics and Gynecology, Istanbul Yeni Yüzyıl University Private Gaziosmanpaşa Hospital, İstanbul, Turkey

ORCID ID of the author(s)
SG: 0000-0003-0939-4539
DH: 0000-0001-9915-3469

Corresponding Author
Şefik Gökçe
Yeni Yüzyıl University Private Gaziosmanpaşa Hospital, Obstetrics and Gynecology Department, Gaziosmanpaşa, Istanbul, Turkey
E-mail: sefgokce@gmail.com

Ethics Committee Approval
This study was approved by the local ethics committee of Yeni Yüzyıl University Private Gaziosmanpaşa Hospital (Date: 31.03.2021 Number: 08.04.2021).
All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

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No conflict of interest was declared by the authors.

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Abstract

Background/Aim: Depression and anxiety during pregnancy can lead to pregnancy-related maternal or fetal complications if they are severe or persistent. Therefore, it is important to identify pregnant women who are significantly affected by the COVID-19 pandemic, take the necessary measures or implement rehabilitation programs. This study aimed to determine the feelings, thoughts, attitudes, beliefs, concerns and levels of general depression and anxiety in pregnant women caused by the COVID-19 pandemic and examine the factors that cause mental health disorders.

Methods: A total of 85 pregnant women who were followed up in the Gynecology and Obstetrics clinics of our hospital and who were never infected with COVID-19 were included in this cross-sectional study. Pregnant women were asked to fill out a questionnaire about the COVID-19 pandemic, and the Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI) and the Short Form 12-Item Health Survey (SF-12) questionnaires.

Results: According to the BDI, 9.4% of the pregnant women had moderate depression, while none had severe depression. According to BAI, 12.9% had moderate anxiety, and 4.7% had severe anxiety. BDI (P=0.001) and BAI (P=0.022) scores were significantly higher, and SF-12 physical role (P=0.004) and SF-12 social functioning (P=0.02) scores were significantly lower in those with a high level of anxiety for their unborn baby.

Conclusion: Our findings show that depression and anxiety levels in pregnant women have been high during the COVID-19 pandemic, and that pregnant women are concerned about their own and their babies' health. Anxiety and depression levels affect the attitude and belief of pregnant women, and all these mental health deteriorations decrease their quality of life.

Keywords: Pregnant, COVID-19, Beck Depression Inventory, Beck Anxiety Inventory, Short Form-12 Health Scale

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Introduction

In addition to the clinical picture, clinical course, prognosis and complications caused by the Coronavirus Disease-2019 (COVID-19), the effects of the pandemic process itself are of great importance in terms of socioeconomic and public health. News about the disease precautions and restrictions regarding the pandemic, difficulties in accessing health facilities, uncertainties and doubts about vaccines affect the mental health of people negatively [1, 2].

Numerous factors such as physiological, hormonal and social changes that occur during pregnancy affect the psychology of a pregnant woman in many ways. The events and restrictions experienced during the COVID-19 pandemic may negatively affect the psychology of pregnant women who have already become more psychologically sensitive [3, 4]. Studies have shown that both the concerns of pregnant women about COVID-19 and their general depression and anxiety levels can significantly change during the pandemic process [5-7].

Depression and anxiety during pregnancy can lead to pregnancy-related, maternal or fetal complications if they are severe or persistent [8]. Therefore, it is important to identify those who are significantly affected by the COVID-19 pandemic, take the necessary measures or implement rehabilitation programs [3, 5, 8]. This study aimed to determine the feelings, thoughts, attitudes, beliefs, concerns and the levels of general depression and anxiety in pregnant women caused by the COVID-19 pandemic and examine the factors that cause mental health disorders.

Materials and methods

This cross-sectional study was conducted in a private university hospital between January-March 2021.

Participants

A total of 85 pregnant women who were followed up in the Gynecology and Obstetrics clinics of our hospital, who were never infected with COVID-19 were included in the study with randomization. Those who did not want to participate, those with a history of psychiatric disease, and those with additional serious pathologies were excluded from the study, considering that they might cause bias in the analysis. Based on our power analysis, a minimum of 84 subjects provided a power of 0.95.

Questionnaires

Four separate questionnaires were filled out by the participants:

COVID-19 pandemic questionnaire

This questionnaire, prepared by us, consists of 24 questions that can be answered with "yes-no" or "no/never-a little/sometimes-a lot", and inquires the changes in attitudes, emotions, concerns and habits during the COVID-19 pandemic, and the participants' thoughts and beliefs about COVID-19. Responses were not scored, each question was evaluated and analyzed separately.

Beck Depression Inventory (BDI)

This scale is a questionnaire consisting of 21 questions whose responses are gradually scored as "none" (0 points), "some" (1 point), "moderate" (2 points) and "severe" (3 points). The total score ranges between 0-63 and accordingly, the levels of depression are determined as follows: 0–9: Minimal, 10-18: Mild, 19-29: Moderate, and 30-63: Severe [9, 10].

Beck Anxiety Inventory (BAI)

This scale is a questionnaire consisting of 21 questions whose responses are gradually scored as "none" (0 points), "some" (1 point), "moderate" (2 points) and "severe" (3 points). The total score ranges between 0-63 and accordingly, the anxiety levels are determined as follows: 0–7: Minimal, 8-15: Mild, 16-25: Moderate, and 26-63: High (severe) [11, 12].

Short Form 12-Item Health Survey (SF-12)

This scale is a questionnaire consisting of 12 questions measuring the quality of life of the individual in the last four weeks. The questionnaire consists of general health, physical functionality, physical role, emotional role, bodily pain, mental health and social functionality subcomponents. Each subcomponent is interpreted by evaluating the graded responses given within itself by calculating the percentage of the possible total score [13, 14].

Statistical analysis

All statistical analyses in the study were performed with the SPSS 25.0 software (IBM SPSS, Chicago, IL, USA). Descriptive data were given as numbers and percentages. In terms of categorical variables, comparisons between the groups were made with the Pearson's Chi Square test and the Fisher's Exact Test. Whether continuous variables are suitable for normal distribution was confirmed by the Kolmogorov-Smirnov Test. The differences between the groups in terms of continuous variables were analyzed using Mann-Whitney U test. The results were evaluated within a 95% confidence interval, and $P<0.05$ values were considered significant. Bonferroni correction was performed where appropriate.

Ethic

This study was approved by the local ethics committee of Yeni Yüzyıl University Private Gaziosmanpaşa Hospital (Date: 31.03.2021 Number: 08.04.2021).

Results

Among all, 67.1% of the pregnant women were 30 years old and younger, 88.2% were in their first pregnancy. According to the BDI, 55.3% of the pregnant women had minimal depression, 35.3% had mild depression, 9.4% had moderate depression, and none had severe depression. According to BAI, 52.9% of pregnant women had minimal anxiety, 29.4% had mild anxiety, 12.9% had moderate anxiety, and 4.7% had severe anxiety (Table 1).

The mean age of the pregnant women was 29.1 (5.0) years (median: 29; min-max: 18-42). The mean week of gestation was 22.6 (10.8) weeks (median: 24; min-max: 5-39) (Table 2).

The median BDI score was 9 (min-max: 0-25), and the median BAI score was 7 (min-max: 0-44). The median values of SF-12 subcomponents varied between 40-75% (Table 2).

In the COVID-19 questionnaire, the questions that pregnant women most frequently answered as "a lot" were wearing a mask outside (95.3%), washing hands frequently (91.8%) and paying attention to social distance (83.5%). This questionnaire revealed that general anxiety increased by 97.6%, anxiety about the baby increased by 95.3%, anxiety about the

pregnancy increased by 82.4%, and anxiety about being admitted to a hospital increased by 90.6%. A total of 10.6% of the pregnant women did not believe that the pandemic would end, and 22.4% did not believe in the news about coronavirus vaccines (Table 3).

Table 1: General distributions

	n	%
Age groups (year)		
≤30	57	67.1
>30	28	32.9
Age groups (year)		
≤35	76	89.4
>35	9	10.6
Parity		
1	75	88.2
≥2	10	11.8
Trimester		
1st trimester	26	30.6
2nd trimester	28	32.9
3rd trimester	31	36.5
Beck Depression Inventory level		
Minimal depression	47	55.3
Mild depression	30	35.3
Moderate depression	8	9.4
Beck Anxiety Inventory level		
Minimal anxiety	45	52.9
Mild anxiety	25	29.4
Moderate anxiety	11	12.9
Severe anxiety	4	4.7

Table 2: The mean and median values of some variables

	Mean	SD	Median	Minimum	Maximum
Age (years)	29.1	5.0	29.0	18	42
Parity	1.5	0.9	1.0	1	4
Gestational week	22.6	10.8	24.0	5	39
Beck Depression Inventory score	9.5	5.7	9.0	0	25
Beck Anxiety Inventory score	9.0	8.0	7.0	0	44
SF-12 general health score (%)	52.7	18.0	60.0	20.0	100
SF-12 physical functioning score (%)	72.6	22.4	75.0	50.0	100
SF-12 role emotional score (%)	80.3	21.2	75.0	50.0	100
SF-12 bodily pain score (%)	42.8	19.8	40.0	20.0	100
SF-12 mental health score (%)	57.9	15.4	61.1	16.7	88.9
SF-12 social functioning score (%)	70.4	24.6	60.0	20.0	100

SD: Standard Deviation

Table 3: Responses to the questions of the COVID-19 questionnaire

No		No		Yes			
		n	%	n	%		
1	Are there people in your close environment diagnosed with COVID-19?	60	70.6	25	29.4		
2	Have you admitted to a hospital with COVID-19 - like symptoms?	74	87.1	11	12.9		
3	Have you been laid off due to COVID-19?	82	96.5	3	3.5		
		No / Never		A little / sometimes		Much	
		n	%	n	%	n	%
4	Has there been any change in socializing with your friends during the pandemic?	9	10.6	37	43.5	39	45.9
5	Have you quarantined yourself?	30	35.3	22	25.9	33	38.8
6	Are you paying attention to social distance?	1	1.2	13	15.3	71	83.5
7	Do you wash your hands more often?	0	0.0	7	8.2	78	91.8
8	Are you using hand sanitizer?	2	2.4	25	29.4	58	68.2
9	Do you always wear a mask outside?	0	0.0	4	4.7	81	95.3
10	Has there been any change in your smoking?	67	78.8	5	5.9	13	15.3
11	Have you received extra vitamin supplements for the epidemic?	54	63.6	24	28.2	7	8.2
12	Have you stocked up food?	40	47.1	39	45.9	6	7.1
13	Did your general anxiety increase in the pandemic?	2	2.4	54	63.5	29	34.1
14	Are you worried about going to a hospital?	8	9.4	53	62.4	24	28.2
15	Have your anxiety about yourself increased in the pandemic?	15	17.6	53	62.4	17	20.0
16	Have you worried about your unborn baby?	4	4.7	34	40.0	47	55.3
17	Do you have any concerns about your current children?	8	27.6	7	24.1	14	48.3
18	Do you have concerns about your relatives over the age of 65?	6	7.1	32	37.6	47	55.3
19	Are you considering breastfeeding without a mask?	40	47.1	35	41.2	10	11.8
20	Do you have any concerns about your baby after birth?	9	10.6	38	44.7	38	44.7
21	Does COVID-19 cause congenital anomalies?	38	44.7	39	45.9	8	9.4
22	Does COVID-19 cause preterm birth?	41	48.2	40	47.1	4	4.7
23	Do you believe this epidemic will end?	9	10.6	61	71.8	15	17.6
24	Do you believe the news about the coronavirus vaccine?	19	22.4	60	70.6	6	7.1

The minimal depression rate, according to BDI, was significantly higher in those who had no relatives who contracted the COVID-19 disease (P=0.032). The moderate depression rate was significantly higher in those who wore a mask outside with low/moderate frequency (P=0.012). The rate of receiving extra vitamin support was significantly lower in pregnant women in the third trimester (P=0.009). The rate of those who were worried about their elderly relatives was significantly lower among those with multiparity (P=0.008). The rate of concern about the baby after birth was significantly lower in those over the age of 30 years (P=0.026). SF-12 emotional score was significantly higher in those whose relatives did not contract COVID-19 (P=0.009). BAI score was significantly higher among those who quarantined themselves (P=0.049). SF-12 mental health score was significantly higher in patients who washed their hands more frequently during the pandemic (P=0.04). SF-12 general health score was significantly lower among those who always wore masks outside (P=0.049). BDI (P=0.001) and BAI (P=0.022) scores were significantly higher, and SF-12 physical role (P=0.004) and SF-12 social functioning (P=0.02) scores were significantly lower among those with heightened anxiety about the baby after birth. The BDI score was significantly lower in those who had concerns about their current child (P=0.048). The BDI score was significantly higher in those who did not find the measures of the Ministry of Health sufficient (P=0.002), and the SF-12 general health score was significantly lower in those who found the measures sufficient (P=0.034).

SF-12 general health (P=0.006) and SF-12 bodily pain scores (P=0.011) were significantly higher, and SF-12 emotional role (P=0.014), SF-12 mental health (P=0.003) and SF-12 social functioning (P=0.01) scores were significantly lower in those with moderate or high-level depression according to the BDI score. SF-12 general health (P=0.028) and SF-12 bodily pain scores (P=0.004) were significantly higher, and SF-12 physical role (P=0.015), SF-12 emotional role (P=0.039), SF-12 mental health (P=0.004), and SF-12 social functioning (P=0.011) scores were significantly lower in those with moderate or high-level anxiety according to their BAI scores (Table 4).

SF-12 social functionality score was significantly lower in the second trimester (P=0.043). Apart from that, age groups, number of pregnancies, and trimester groups were similar in terms of the median BDI, BAI, and SF-12 subcomponents scores (P>0.05 for each) (Table 4).

The rate of those with moderate/high level anxiety according to the BAI score was significantly higher among the pregnant women aged 30 years and younger (P=0.017). The rate of pregnant women in the third trimester with moderate depression was significantly lower, according to the BDI score (P=0.044) (Table 5).

Table 4: Comparisons between BDI levels, BAI levels, age, parity and trimester groups in terms of median BDI, BAI and SF-12 scores

	BDI score	BAI score	SF-12 General health	SF-12 Physical functioning score	SF-12 Role physical score	SF-12 Role emotional score	SF-12 Bodily pain score	SF-12 Mental health score	SF-Social functioning score
BDI levels	-	<0.001*	0.006*	NS	NS	0.014**	0.011*	0.003**	0.01**
BAI levels	0.001*	-	0.028*	NS	0.015**	0.039**	0.004*	0.004**	0.011**
Age (≤30 years vs. >30)	NS	NS	NS	NS	NS	NS	NS	NS	NS
Parity (1 vs. >1)	NS	NS	NS	NS	NS	NS	NS	NS	NS
Trimester (1 vs. 2 vs. 3)	NS	NS	NS	NS	NS	NS	NS	NS	0.043***

* Significantly high in the moderate/severe group, ** Significantly low in the moderate/severe group, *** Significantly lower in the 2nd trimester. BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory, SF-12: Short Form 12-Item Health Survey, NS: Not significant.

Table 5: Comparisons between age, parity and trimester groups in terms of BDI and BAI level distributions

	BDI levels (Mild vs. moderate vs. severe)	BDI levels (Mild/moderate vs. severe)	BAI levels (Minimal vs. mild vs. moderate vs. severe)	BAI levels (Minimal/mild vs. moderate/severe)
Age (≤30 years vs. >30)	NS	NS	NS	0.017*
Parity (1 vs. >1)	NS	NS	NS	NS
Trimester (1 vs. 2 vs. 3)	0.044**	NS	NS	NS

*At the age of 30 years and under, the ratio of moderate/severe is significantly high, ** The moderate rate is significantly low in the 3rd trimester. BDI: Beck Depression Inventory, BAI: Beck Anxiety Inventory, NS: Not significant

Discussion

The COVID-19 pandemic causes fear and anxiety about transmission, severe clinical picture and poor prognosis in individuals who have not yet contracted the disease. In addition, social isolation and various related measures negatively affect people's mental health. Wearing masks and hygiene measures also reduce the quality of life of people [1, 2]. These adverse situations may affect the psychological status of pregnant women who are going through more physiological and hormonal changes compared to the normal population [3, 4]. It has been reported that stress and anxiety can lead to complications in pregnant women such as preeclampsia, depression, nausea, preterm birth, low-birth weighted baby and low APGAR score [8]. Therefore, for the pregnancies to progress more healthily during the pandemic, it is necessary to monitor the psychological status of pregnant women more closely, diagnose depression or anxiety, and take the necessary measures against possible negative effects [3, 5, 8].

It has been shown that depression levels of the pregnant women increased during the COVID-19 pandemic compared to before [5-7, 15]. Durankus et al. [16] reported that the pandemic had a significant effect on the psychology of pregnant women. Farrell et al. [17] found the depression rate in pregnant women to be 39% during the pandemic process. In our study, 55.3% of the pregnant women had minimal depression, 35.3% had mild depression, and 9.4% had moderate depression, while none had severe depression. The median BDI score was 9 (14.3%; according to the possible maximum score of 63), and the maximum BDI score was 25 (39.7% according to the possible maximum score). These findings show that, in general, depression levels in pregnant women are not very high during the pandemic process, but the presence of depression is significant.

The anxiety levels of pregnant women also increased during the COVID-19 pandemic process compared to before [4-7, 15]. Dagklis et al. [18] reported a high/very high anxiety rate of 17% during the pandemic. Farrell et al. [17] found the rate of anxiety in pregnant women to be 34% during the pandemic process. Salehi et al. [19] found that general mental health is associated with fear and anxiety levels against COVID-19. In the present study, 52.9% of pregnant women had minimal anxiety, 29.4% had mild anxiety, 12.9% had moderate anxiety, and 4.7% had severe anxiety. The median BAI score was 7 (11.1% according to the possible maximum score of 63), and the maximum BAI score was 44 (69.8% according to the possible maximum score). These findings show that anxiety is at significant rates during the pandemic in pregnant women, the level of anxiety in pregnant women is not high in general, the rate anxiety in pregnant women varies greatly, and that the rate of pregnant women with moderate/high level anxiety is not very low.

The level of anxiety about themselves and their babies increased among the pregnant women during the pandemic [5-7, 20, 21]. Yassa et al. [22] reported the rate of pregnant women who think they are weaker and more susceptible to COVID-19 due to pregnancy as 52%. Lebel et al. [7] and Kajdy et al. [20] found that pregnant women were particularly worried about their and their babies' health, which increased their general anxiety levels. In the COVID-19 questionnaire conducted in the present study, the general anxiety increased by 97.6%, the anxiety about the baby increased by 95.3%, the anxiety about the pregnant women increased by 82.4%, and the anxiety about being admitted to a hospital increased by 90.6%. These findings show that the pandemic makes pregnant women more concerned about themselves and their babies.

Young pregnant women have higher levels of maternal anxiety [5]. In our study, the rate of concerns about the baby after birth was significantly lower in pregnant women over 30 years of age. Corbett et al. [23] showed that the rate of concern about themselves increased from 17% before the pandemic to 51% during the pandemic among pregnant women. These researchers also reported the rate of pregnant women with anxiety about their babies regarding the pandemic as 64%. Durankus et al. [16] reported that there is a relationship between social isolation and the psychology of pregnant women in the pandemic. In our study, BDI and BAI scores were significantly higher, and SF-12 physical role and SF-12 social functioning scores were significantly lower in those with high levels of anxiety about the baby after birth. These findings, on one side, show that pregnant women whose concerns about themselves and their babies have increased due to COVID-19 have higher levels of overall depression and anxiety. They may also indicate that the pregnant women with high overall depression and/or anxiety levels are becoming more sensitive to anxiety about themselves and their babies due to COVID-19.

In this study, minimal depression rate and SF-12 emotional score were significantly higher in those with COVID-19 in their relatives. These findings show that the overall depression level increases and the emotional quality of life significantly decreases in pregnant women with relatives who contracted the disease.

Among all our patients, 10.6% did not believe that the pandemic would end, and 22.4% did not believe in the news about the coronavirus vaccines. These findings show that the rate of hopelessness about the end of the pandemic and belief in vaccines are not low in pregnant women, and that these beliefs increase with overall depression and anxiety. Pregnant women with high overall depression and anxiety levels are more sensitive to hopelessness about the ending of the pandemic and the effectiveness of vaccines.

Regarding the COVID-19 questionnaire formed in this study, the questions that pregnant women most frequently answered as "a lot" were wearing a mask outside (95.3%), washing hands frequently (91.8%) and paying attention to social distance (83.5%). These findings show that pregnant apply personal measures on COVID-19 in a high rate. The moderate depression rate was significantly higher in those who wore a

mask outside with low/moderate frequency. SF-12 general health score was significantly lower in those who always wore masks outside. The tendency to wearing a mask decreases in pregnant women who have a high level of depression and increases in those with low levels of general health scores.

Corbett et al. [23] reported the rate of self-isolation as 35% among pregnant women during the pandemic. We found this rate to be 38.8%. In addition, we found that the BAI score was significantly higher in those that were quarantining themselves. These findings show that the level of anxiety against COVID-19 is higher in pregnant women with high levels of overall anxiety, and that they therefore protect themselves more. However, with the increase in age, this concern and self-protection decreases.

Yassa et al. [22] reported the additional vitamin receiving rate in late-term pregnant women as 31%, while we found this rate to be 36.4%. We also found that the rate of extra vitamin support was significantly low among pregnant women in their third trimester. This finding may show that the pregnant women in advanced weeks, in the early-term of the pandemic, do not feel the need to take extra vitamins because of COVID-19.

The BDI score was significantly low in those with concerns about their current children. The more depressed pregnant women are more concerned about their children contracting COVID-19.

The BDI score was significantly higher in those who did not find the measures of the Ministry of Health sufficient, and the SF-12 general health score was significantly lower in those who found the measures sufficient. The level of belief in the measures taken among the pregnant women who are more depressed is lower, but pregnant women with poor overall health status believe in these measures.

The anxiety levels of pregnant women are independent of age, parity and trimester during the pandemic [18]. However, some studies reported that primipara or younger women were more sensitive to anxiety [6, 24]. In this study, age groups, number of pregnancies, and trimester groups were similar in terms of the median BDI, BAI, and SF-12 subcomponents scores. The levels of overall depression, anxiety, and the quality of life in the last period are not directly related to the age, parity and trimester in pregnant women.

SF-12 general health and SF-12 bodily pain scores were significantly higher, and SF-12 emotional role, SF-12 mental health and SF-12 social functioning scores were significantly lower in our patients with moderate or high-level depression according to the BDI score. In addition, SF-12 general health and SF-12 bodily pain scores were significantly higher, and SF-12 physical role, SF-12 emotional role, SF-12 mental health, and SF-12 social functioning scores were significantly lower in those with moderate or high-level anxiety according to their BAI scores. The three general scale findings used in our study have overlapped each other, which show that our analyses made about the pregnant women are healthy.

Limitations

There are some limitations to our study. We could not compare our results with the pre-pandemic period, thus, could not analyze the changes in the levels of pandemic-related anxiety and depression.

Conclusion

Our findings show that depression and anxiety levels in pregnant women are high during the COVID-19 pandemic, and that pregnant women are concerned about health of themselves and their babies. Anxiety and depression levels affect the attitude and belief of pregnant women, and all these mental health deteriorations decrease the quality of life of pregnant women.

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