

Investigating anxiety, depression and obsessive-compulsive disorders among the pregnant women during Covid-19 pandemic

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ABSTRACT

Aim: Our study aimed to investigate anxiety, depression, and obsessive-compulsive disorders (OCDs) among pregnant women during the Covid-19 pandemic.

Material and Method: This cross-sectional study was conducted on 71 pregnant women who referred to Gynecology and Obstetrics Clinic between June and July 2020 for routine pregnancy examination. The Beck anxiety inventory (BAI), the Beck depression inventory (BDI), and the Maudsley obsessive-compulsive inventory (MOCI) were used to assess the rate of depression, anxiety, and OCD. The questionnaire containing information about smoking, working status, gravidity, and education was completed by the subjects.

Results: Mean age of the participants was 30 years and their mean body mass index (BMI) was 24.4. 76.1% of the participants were non-smokers. 71.8% were nulliparous. 62% of pregnant women had a high school degree. 80.3% were working. There was a positive significant relationship between BDI and BAI ($r=0.405$, 0.000) and MOCI scores ($r=0.319$, $sig=0.007$). There was a negative statistically significant relationship between OCD and BMI ($r=-0.268$, $sig=0.024$). Anxiety, depression, and OCDs were not significantly different between smokers and non-smokers. Working pregnant women had significantly higher depression and OCDs than the non-working had. The pregnant women showed mild to severe anxiety and depression levels and also showed moderate to high OCDs under the Covid-19 pandemic. Most of the pregnant women showed mild depression, moderate anxiety, and high OCD. The results showed that the studied pregnant women experienced mental complications under the Covid-19 pandemic.

Conclusion: Since the mental health of pregnant women is highly important, one should pay special attention to the mental health of working pregnant women under the Covid-19 pandemic. The reason is that such women are more vulnerable to infectious diseases such as Covid-19.

Keywords: Anxiety, Covid-19, depression, obsessive-compulsive disorder, pandemic

INTRODUCTION

The history of humanity has been always affected by several fearsome epidemics of infectious disease (1). A distinctive type of coronavirus with an acute respiratory syndrome called Covid-19 appeared in Wuhan, China, and immediately extended to other states in 2020 (2,3). On March 11, 2020, Covid-19 was called pandemic as the World Health Organization (WHO) declared (4). Covid-19 is a beta virus which is transmitted to humans due to close physical contact (4). This pandemic has a fatality rate of 2.3% higher than influenza has and also is more contagious than severe acute respiratory syndrome (SARS) (5,6). Besides the significant increase in mortality rate due to the Covid-19 pandemic, the psychological status of the population was also negatively affected (7,8).

The most common symptoms of Covid-19 are cough, fever, dyspnea, headache, sputum production, rhinorrhea, ageusia, myalgia, anosmia, and diarrhea (9,10). Besides, the patients infected with Covid-19 had shown symptoms of depression, post-traumatic stress disorder, and anxiety (11,12).

Among the vulnerable populations, pregnant women as well as their fetuses are highly exposed to infectious diseases during the outbreaks (13) but there are only 55 pregnant women infected with the 2019 coronavirus, and there has been no mortality among them due to the disease (14).

The focus of several studies and clinical measures is on the treatment and prevention of Covid-19 aiming

at the reduction of the mortality rates, but only two investigations have been done on the health workers (15) and the general population (16) to assess the psychological effects of this pandemic.

Pregnant women who need more protections against the Covid-19 outbreak have been reported to be among the vulnerable population groups exposed to vertical transmission of Covid-19 during pregnancy (17,18). The pregnant women may be impacted by all aspects of the Covid-19 pandemic due to the effects of the related restrictions, the unpredictability of the pandemic, and the feeling of fear (19). There should be a focus on the different aspects of pregnancy during the Covid-19 pandemic and pregnant women should receive psychological support during this outbreak (20).

There is limited research on the psychological effects of a global pandemic such as Covid-19, particularly among pregnant women. Therefore, this study aims to investigate depression, anxiety, and OCDs among pregnant women during the Covid-19 pandemic to see the rate of such psychological impacts among them.

MATERIAL AND METHOD

This cross-sectional study was conducted on 71 pregnant women who referred to Gynecology and Obstetrics Clinic between June and July 2020 for routine pregnancy examination. Those who agreed to participate in the study did not have any psychiatric diagnosis before, and not use any drug that was included in the study. The informed consent was received from all pregnant women. The pregnant women who had previous mental disorders such as depression, anxiety, and obsessive-compulsive disorders were excluded from the study. Local academic committee number 09.06.2020/01 and the Turkish Republic dated 26.06.2020 after approval of the application for work by the Ministry of Health Scientific Research Platform seventy-one pregnant women who referred to Gynecology and Obstetrics Clinic between July and June 2020 for routine pregnancy examination participated in the study. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Pregnant women responded to the BDI, a validated Turkish version of BAI and the MOCI. Beck Depression inventory (BDI) which was originally developed by Beck in 1961 (21), was carried out by Hisli in 1989 (22). The scale consists of 21 subscales with depressive symptoms. Each item is scored between 0 and 3. The cutoffs for normal range are 0–9, for mild to moderate depression 10–18, for moderate to severe depression 19–29, and for severe depression 30–63

(22). Beck Anxiety inventory (BAI) which was developed by Beck et al. in 1988 (23) consists of 21 questions. Each question is evaluated between 0 (none) and 3 (severely). The total score from this scale varies between 0 and 63. A validated Turkish version was carried out by Ulusoy (24). Maudsley obsessive-compulsive inventory (MOCI) was developed by Hodgson and Rachman (1977) to assess obsessive-compulsive symptoms (25). Turkish version of MOCI was applied by Erol et al. (26). The questionnaire containing information about smoking, working status, gravidity, and education was completed by the subjects.

Statistical analysis

The Kolmogorov–Smirnov test has been used to test the normality of the research variables. Considering that the significance level of the test related to all variables is above 0.05, the normality of the research variables has been accepted. To examine the relationship between variables of depression inventory, anxiety inventory score and obsessive-compulsive symptom and age, and BMI, considering the normality and quantitative variables, the Pearson correlation coefficient test was used.

RESULTS

The results show that the mean age of the participants was 30 years and the mean BMI was 24.4. 23.9% of the pregnant women were smokers and 76.1% were non-smokers. 71.8% of the pregnant women were nulliparous and 28.2% were multiparous. 62% of pregnant women had a high school degree, and 38% had a university degree. 80.3% were working and 19.7% were not working. **Table 1** shows the BDI, BAI, and MOCI scores of pregnant women. The mean depression score was 17.25, the mean anxiety score was 20.07, and the mean OCDs score was 16.77.

	N	Min.	Max.	Mean	Std. deviation
Beck depression inventory	71	2	38	17.25	8.768
Beck anxiety inventory score	71	7	42	20.07	8.054
Maudsley obsessive-compulsive symptom scale	71	8	31	16.77	5.394

Table 2 shows that 16.9% of the pregnant women were normal, 46.5% had mild depression, 22.5% had moderate depression and 14.1% had severe depression. The anxiety rate of 31% of the respondents was mild, 45.1% was moderate and 23.9% was severe. The results also show that 25.4% of the respondents had a low probability of detecting OCD, 31% had OCD detection and 43.7% had a high probability of detecting OCD.

Table 2. Percentage and frequency of respondents based on research variables

Demographics		Frequency	Percentage	Accumulated percentage
Depression inventory	Normal level	12	16.9	16.9
	Mild depression	33	46.5	63.4
	Moderate depression	16	22.5	85.9
	Severe depression	10	14.1	100.0
Anxiety inventory score	mild anxiety	22	31.0	31.0
	Moderate anxiety	32	45.1	76.1
	severe anxiety	17	23.9	100.0
Obsessive-compulsive symptom	OCD is likely to be detected but low	18	25.4	25.4
	OCD detection	22	31.0	56.3
	High probability of detecting the obsessive-compulsive disorder	31	43.7	100.0

Table 3 shows that there was a positive significant relationship between BDI and BAI ($r=0.405$, 0.000) and MOCI scores ($r=0.319$, $sig= 0.007$). There was a negative statistically significant relationship between OCD and BMI ($r=-0.268$, $sig=0.024$). However, there was no statistically significant relationship between other variables.

Table 4 shows the relationship between BDI, BAI, and MOCI variables and smoking, working status, gravidity, and education. The mean depression score was 16.94 in the non-smokers and 18.24 in smokers. The mean anxiety score was 20.89 in the non-smokers and 17.47 in smokers. The mean score of obsessive-compulsive disorders was 16.59 in the non-smokers and 17.35 in smokers. Levene’s Test for Equality of Variances has been used. In the Levene’s Test, the significance level in the three variables was above 0.05. Therefore, it can be said with the confidence of 95% that no significant difference

was found between smokers and non-smokers in anxiety, depression, and obsessive-compulsive disorders.

Regarding working status, the results show that the mean depression score was 18.49 in the working participants and 12.21 in the non-working participants. The mean anxiety score was 20.19 in the working participants and 19.57 in the non-working participants. The mean obsessive-compulsive disorder score was 17.53 in the working participants and 13.71 in the non-working participants. The significance level of the t-test in two variables of depression and obsessive-compulsive disorders was below 0.05. Therefore, it can be said with the confidence of 95% that there was a significant difference between the working participants and non-working participants in terms of depression, and obsessive-compulsive disorders while there was no significant difference between the working participants and non-working participants in terms of anxiety.

Regarding the gravidity, the mean depression score was 16.51 in the nulliparous participants and 19.15 in multiparous participants. The mean anxiety score was 19.57 in the nulliparous participants and 21.35 in multiparous participants. The mean OCD was 16.57 in the nulliparous participants and 17.30 in multiparous participants. The significance level of the t-test in three variables was above 0.05. Therefore, it can be said with the confidence of 95% that there was no significant difference between nulliparous and multiparous participants in terms of anxiety, depression, and OCD.

Regarding education, the mean depression score was 18.61 in the participants with high school education and 15.04 in participants with university education. The mean anxiety score was 20.55 in the participants with high school education and 19.30 in participants with university education. The mean OCD was 17.02 in the participants with high school education and 16.37 in participants with university education. The significance level of the t-test in three variables was above 0.05. Therefore, it can be said with the confidence of 95% that there was no significant difference between the participants with high school and university education in terms of anxiety, depression, and OCD.

Table 3. Pearson correlation test

		Depression inventory	Anxiety inventory score	Obsessive-compulsive symptom scale	Age	BMI
Depression inventory	Pearson correlation	1				
	Sig. (2-tailed)					
Anxiety inventory score	Pearson correlation	0.405**	1			
	Sig. (2-tailed)	0.000				
Obsessive-compulsive symptom scale	Pearson correlation	0.319**	0.176	1		
	Sig. (2-tailed)	0.007	0.141			
Age	Pearson correlation	0.131	-0.056	-0.021	1	
	Sig. (2-tailed)	0.276	0.640	0.860		
BMI	Pearson correlation	-0.216	-0.106	-0.268*	-0.048	1
	Sig. (2-tailed)	0.071	0.379	0.024	0.693	

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

Table 4. T-Test results between depression inventory, anxiety inventory score, obsessive-compulsive symptom scale and cigarettes, working status, gravidity, and education

Cigarettes		N	Mean	Std. deviation	Levene's test for equality of variances		t-test for equality of means		
					F	Sig.	t	df	Sig.
Depression inventory	No	54	16.94	8.996	0.206	0.651	-0.527	69	0.600
	Yes	17	18.24	8.182					
Anxiety inventory score	No	54	20.89	8.529	3.609	0.062	1.541	69	0.128
	Yes	17	17.47	5.778					
Obsessive-compulsive symptom scale	No	54	16.59	5.544	0.251	0.618	-0.504	69	0.616
Working		N	Mean	Std. deviation	Levene's test for equality of variances		t-test for equality of means		
					F	Sig.	t	df	Sig.
Depression inventory	Yes	57	18.49	8.919	3.127	.071	2.487	69	0.015
	No	14	12.21	6.104					
Anxiety inventory score	Yes	57	20.19	7.832	1.230	.271	0.257	69	0.798
	No	14	19.57	9.205					
Obsessive-compulsive symptom scale	Yes	57	17.53	5.471	1.643	.204	2.453	69	0.017
Gravidity		N	Mean	Std. deviation	Levene's test for equality of variances		t-test for equality of means		
					F	Sig.	t	df	Sig.
Depression inventory	Nulliparous	51	16.51	8.559	.292	.591	-1.144	69	.257
	Multiparous	20	19.15	9.230					
Anxiety inventory score	Nulliparous	51	19.57	8.050	.104	.748	-.837	69	.406
	Multiparous	20	21.35	8.126					
Obsessive-compulsive symptom scale	Nulliparous	51	16.57	5.438	.058	.810	-.511	69	.611
Education		N	Mean	Std. deviation	Levene's test for equality of variances		t-test for equality of means		
					F	Sig.	t	df	Sig.
Depression inventory	High school	44	18.61	8.890	1.046	.310	1.691	69	.095
	University	27	15.04	8.248					
Anxiety inventory score	High school	44	20.55	8.108	.000	.992	.632	69	.530
	University	27	19.30	8.057					
Obsessive-compulsive symptom scale	High school	44	17.02	5.781	1.783	.186	.492	69	.624

DISCUSSION

The present study investigated the effect of mental disorders such as anxiety, depression, and obsessive-compulsive disorders on pregnant women under the Covid-19 pandemic. The study showed a positive significant relationship between depression and anxiety and obsessive-compulsive disorders. There was a negative statistically significant relationship between obsessive-compulsive disorders and BMI. Anxiety, depression, and OCDs were not significantly different between smokers and non-smokers. Working pregnant women had significantly higher depression and OCDs than the non-working had. The pregnant women showed mild to severe anxiety and depression levels and also showed moderate to high OCDs under the Covid-19 pandemic. Most of the pregnant women showed mild depression, moderate anxiety, and high OCD. The findings show that the studied pregnant women experienced mental complications under the Covid-19 pandemic.

All people all over the world are fighting against the Covid-19 pandemic which is the most threatening power of the twenty-first century. Almost all countries are

affected by all aspects of this outbreak, encouraging the researchers to investigate the treatment and prevention of the disease and deal with the mortality risk caused by the outbreak. Besides, the psychological effect of the outbreak on the susceptible people particularly pregnant women should be taken into account (19). Durankuş F et al. (19) found that pregnant women experienced higher depression and anxiety scores during the pandemic and that most of the case groups reported that the pandemic affected their pregnancy. They also revealed that the BAI and BDI scores, and also the effects of Covid-19 on social isolation and mental health statistically significantly affected the Edinburgh postnatal depression scale (EPDS) scores while our study found that most of the pregnant women showed mild depression rate, moderate anxiety level, and high OCD.

Mirzadeh et al. (20) found prenatal depression, anxiety, and stress to be the prevalent issues of the public health of pregnant women. The Covid-19 outbreak made mothers concerned about their and their babies' health due to stress or anxiety. The nulliparous pregnant women showed the adverse mood symptoms as well as childbirth

fear which may irreversibly affect the health of mother and child, while our study found no significant difference between nulliparous and multiparous participants in anxiety, depression, and OCDs under the pandemic.

Our study is in line with the results of the study by Saccone et al. (27) who found moderate to the severe psychological impact of the Covid-19 outbreak on pregnant women and showed higher than normal anxiety levels of more than two-thirds of the women.

Spiniello et al. found that pregnant women experienced high levels of anxiety and stress due to the adverse obstetrical outcomes including fetal abnormalities and intrauterine fetal death and also due to infectious disease outbreaks (28).

Our study supports the results of the study by Grigoriadis et al. (29) who found the relationship between increased anxiety during pregnancy and postpartum depression or other mood disorders and suggested continual monitoring of the depression as well as other mood disturbances (30).

Corbett et al. (31) found that the pregnant population showed rising anxiety during the Covid-19 pandemic and were almost concerned about their children, unborn children and their relatives and were at least worried about their health, while more than half of women showed significant health anxiety, which is consistent with our study results.

Wu Y et al. (32) found the increased risk of anxiety and depression symptoms during the outbreak among the pregnant women who were underweight before becoming pregnant, had only one child and below the age of 35, working on a full-time basis, earning middle income, and those who have suitable appropriate living space, while our study found that working pregnant women had higher depression, anxiety and OCD scores than the non-working.

Brooks et al. (33) stated that some extensive public health measures which are taken to reduce the speed of SARS-CoV-2 infections, such as travel restrictions, and physical distancing can reduce the pressure on health-care systems but such measures may lead to some unintended consequences for women and families, including family and gender-based violence, increased depression after childbirth and the worsening other mental health issues, which is in line with our study which found the increasing depression levels among the pregnant women.

Wu et al. (32) found that the pregnant women who were primiparous, working on a full-time basis and were underweight before pregnancy were at higher risk of depressive and anxiety symptoms during the outbreak, which is in line with our study results which found a

negative association between the low BMI and obsessive-compulsive disorders and that the working pregnant women were more mentally affected by the pandemic than the non-working ones were.

CONCLUSION

Pregnancy is a period that is known for its deep changes. Pregnant women should have adequate physical and mental health to protect them against mood disorders since some of the women may increase their vulnerability to psychiatric diseases such as anxiety, OCD, and depression. As a result, it is highly important to assess the psychological effect of the Covid-19 outbreak on pregnant women. Our study concluded that most of the pregnant women showed a mild to severe depression, mild to severe anxiety level, and moderate to high OCD level. A positive significant relationship was found between depression and anxiety and obsessive-compulsive disorders and A negative statistically significant relationship was found between obsessive-compulsive disorders and BMI. The working pregnant women had significantly higher depression and OCDs than the non-working pregnant women had.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of the Research Ethics Committee of Beykoz University (Permission granted /CAAE number: 2020/9.6, Decision no: 1).

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

Referee Evaluation Process: Externally peer-reviewed.

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

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