Özgün Araştırma / Original Article

Jinekoloji - Obstetrik ve Neonatoloji Tıp Dergisi
The Journal of Gynecology - Obstetrics and Neonatology

DOI:10.38136/jgon.948122

The effect of obstetric features on depression, anxiety and stress levels in pregnant women during the SARS-COV 2 (COVID-19) pandemic period

SARS-COV 2 (COVID-19) Pandemi Dönemindeki Gebelerde Obstetrik Özelliklerin Depresyon, Anksiyete ve Stres Düzeyleri Üzerine Etkisi

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ÖZ

Amaç: Bu çalışma, akrabalarında SARS-COV2 (COVID-19) tanısı almış gebelerin obstetric özelliklerinin depresyon, anksiyete ve stress düzeylerine etkisini belirlemek amacıyla yapılmıştır.

Gereç ve Yöntemler: Tanımlayıcı nitelikteki bu çalışma, 17 Nisan 2020 - 30 Mayıs 2020 tarihleri arasında İstanbul'daki özel bir hastanenin Kadın Hastalıkları ve Doğum Kliniğinde 450 gebe ile gerçekleştirildi. Çalışma verileri Giriş Bilgi Formu, Durumluk Sürekli Kaygı İndeksi (STAI) ve Depresyon Kaygısı Stres Ölçeği (DASS-21) ile yüz-yüze toplanmıştır.

Bulgular:Tüm hamile kadınlar COVID-19 salgınının farkındaydı (% 100.0) ve bunların % 40.0'ına COVID-19 tanısı konmuş bir akraba vardı. Akrabalarında COVID-19 tanısı olmayanların toplam % 64,4'ü depresyon, % 80,4'ü anksiyete ve % 81,5'i stress yaşıyordu. Akrabalarında COVID-19 teşhisi konanların toplam % 100.0' ında depresyon, anksiyete ve stres (DASS) vardı.

Sonuç: Yakınlarında COVID-19 tanısı alan tüm gebelerde DASS-21 puanlarının yüksek olduğu bulundu. Akrabalarında COVID-19 tanısı alan gebelerde, almayanların aksine, kronik hastalık varlığı ve parite sayısı, depresyon ve anksiyete düzeylerinde belirleyiciydi. Klinik değerlendirmeler bu durum gözönünde bulundurularak dikkatli bir şekilde yapılmalıdır.

Anahtar sözcükler: COVID-19 salgını, Depresyon, Anksiyete, Durum-SürekliKaygı, Gebelik.

ABSTRACT

Aim: This study was carried out to determine the effect of obstetric characteristics of pregnant women who had relatives diagnosed with SARS-COV2 (COVID-19) on depression, anxiety and stress levels.

Material and Methods: This descriptive study was conducted between 17 April 2020 and 30 May 2020 with 450 pregnant women in the Obstetrician Clinic of a private hospital in Istanbul. The study data were collected face-to-face with the Introductory Information Form, State-Trait Anxiety Index (STAI), and the Depression Anxiety Stress Scale (DASS-21).

Results: All pregnant women were aware of COVID-19 pandemic (100.0%), and 40.0% of them had a relative diagnosed with COVID-19. A total of 64.4% of those with no relatives diagnosed with COVID-19 had depression, 80.4% had anxiety and 81.5% had stress. A total of 100.0% of those who had relatives diagnosed with COVID-19 had depression, anxiety, and stress (DASS).

Conclusions: It was found that DASS-21 scores were high in all pregnant women who had relatives diagnosed with COVID-19. Presence of chronic diseases and parity count were decisive in depression and anxiety levels in pregnant women who had relatives diagnosed with COVID-19, unlike those who did not. Clinical evaluations should be made carefully with this situation in mind..

Keywords: COVID-19 pandemic, Depression, Anxiety, State-Trait Anxiety, pregnant.

INTRODUCTION

Coronavirus infection, which began in late 2019 in Wuhan in China, and spread around the world, was named COVID-19 virus Se,vere Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) by the World Health Organization (WHO) (1). A total of 80% cases are followed-up with fever and other mild symptoms, and 14% with heavier symptoms like dyspnea, tachypnea, reduced oxygen saturation, and lung infiltration. Shortness of breath, septic shock, and multiple organ failure can develop in 5% of cases, and mortality is between 0.9% and 2.3%. Further age, chronic systemic diseases (i.e. chronic respiratory diseases, cancer, cardiovascular diseases, etc.) increase mortality rates (2).

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Başvuru tarihi : 04.06.2021
Kabul tarihi : 27.08.2021

There is no definite evidence that pregnant women are more susceptible to COVID-19 and showing intrauterine migration of the virus, and generalization cannot be made because the number of cases in the literature is limited(3).Pregnancy is a partial immune suppression status (4).Seasonal viral outbreaks proceed with higher morbidity in pregnant women (5).For this reason, COVID-19 epidemic can cause serious consequences for pregnancy. In pregnant women affected in the last trimester, there are risk factors like fetal maternal tachycardia, early membrane rupture, and premature birth (6). Unfortunately, maternal deaths also occurred in Turkey as well as in other countries (2).Since there is risk of easy infection causing serious mood changes in pregnant women as well as in all humans because there is no definitive treatment and vaccine in today's world (7).

Depression is a common mood disorder seen in all over the world (7).It involves sad feelings with symptoms like slow-down in thoughts, speech and movements, feeling worthless, reluctance, pessimism, slowdown in physiological functions and thoughts like suicide (8).When the literature was reviewed, it was reported that the majority of depression in women included fertility processes like pregnancy, childbirth, and puerperality(9).Anxiety, on the other hand, is a sense of distress and fear perceived as life-threatening and overwhelming(10).Anxiety is often caused by concerns about future, and depression occurs because of past experiences (11).In its plain form, stress is defined as continuously-felt spiritual tension, and occurs as a result of personal experiences caused by pressure, expectation or threats, which negatively affect the ability of the individual to struggle, or at least, the perception of his/her own proficiency. During pregnancy, stress increases the risk of adverse pregnancy outcomes (12).

Pregnancy is a natural life event for women and is also a period of high risk of facing many factors, which might cause anxiety and stress, with important biological and psychosocial changes (12).This study was carried out to determine the effect of obstetric characteristics of pregnant women who had relatives diagnosed with SARS-COV2 (COVID-19) on depression, anxiety and stress levels.

MATERIALS AND METHODS

Study design

The present study,whichwas planned in descriptive design, was conducted between 17 April and 30 May 2020 at the Obstetrics Clinics of Private Nisa Hospital in İstanbul CITY. The universe of the study consisted of all pregnant women between the ages of 20 and 40 admitting to this hospital between the study dates. It was learned that the total number of pregnant women admitting to the Obstetrics Clinic in 2019 was 6000 to calculate the minimum sampling size in the study. The minimum sampling size to be achieved by using the sampling size formula with a known universe was calculated in the study. By using the Raosoft Program, the amount of Type 1 Error was found to be 0.05, and the power of the test was 0.95 (α= 0.05, 1-β= 0.95), and minimum sampling size was 362. Considering the possible data loss, the design effect was taken as 1.2, and the minimum sampling size was found to be 434; and a total of 450 pregnant women who met the inclusion criteria for the study were contacted.

Pregnant women who were between the ages of 20 and 40, who had single pregnancy, who did not have any communication problems, and who agreed to participate voluntarily, were included in the study. Pregnant women with multiple pregnancies, who had any fetal problems in current pregnancy, who had a history of risky pregnancy (placenta previa, ablatio placentae, threat of premature birth, etc.), those who underwent psychiatric treatments (pharmacotherapy or psychotherapy), who had any problems that would prevent communication (those who did not speak Turkish, who had impaired hearing, speech and understanding abilities) were not included in the study.

Data collection and application

All pregnant women participants were informed about the purpose and scope of the study, and they signedtheInformed Voluntary Consent Form, knowing that they could discontinue the study participation at any time. The Introductory Information Form was used in the selection of the pregnant women who met the inclusion criteria of the study. The State-Trait Anxiety Index (STAI), and Depression Anxiety Stress Scale (DASS-21), which were the measurement tools to be filled by participants themselves, were applied to the pregnant women who met these criteria. The forms (Introductory Information Form, STAI, and DASS-21) were completed in approximately 30-35 minutes in face-to-face interviews between the researcher and the participants.

Introductory Information Form:A pre-application was carried out to 50 pregnant women who applied to the Obstetrics Clinics of the hospital to test the understandability of this form which was developed by the researchers in line with the literature data.

After the pre-application, the form was reviewed and the final form was obtained. The form had questions on sociodemographic characteristics, previous and current obstetric history, COVID-19 awareness, and presence of a close relative diagnosed with COVID-19.

State-Trait Anxiety Inventory(STAI): This inventory was developed by Spielberger et al.to measure the level of anxiety of pregnant women(13), and the Turkish reliability and validity study of it was conducted by Öner and Le Compte(14).The scale, which is a kind of self-assessment tool, contains a total of 40 items of short expressions, and has two sections: "State Anxiety Form (STAI)" to determine the situation felt over the past seven days, and "Trait Anxiety Form (STAII)", to determine the previous situation, each of which with 20 questions. Scores from both scales range between 20 and 80, and high scores show increased level of anxiety. The Cronbach's Alpha coefficient of the STA-I and STA-II was reported to be 0.71 and 0.86, respectively. The State Anxiety Form was used in the present study, and the Cronbach's Alpha Coefficient was found to be 0.97.

Depression Anxiety Stress Scale (DASS): This is a 42-item scale that was developed by Lovibond and Lovibond (1995) to evaluate depression, anxiety and stress (15).The Turkish adaptation of the scale, which was abbreviated as 21 items by Henry and Crawford (16), was conducted by Sarıçam(17).The scale has three sub-dimensions, as depression, anxiety and stress, and each sub-dimension scores range between 0 and 21. High scores show increased levels of depression, anxiety and stress. In a clinical sampling by Sarıçam(17), the Cronbach's Alpha Coefficient was reported to be 0.87, 0.85 and 0.81 for depression, anxiety and stress, respectively. In this study, the Cronbach's Alpha Coefficients for depression, anxiety and stress were 0.87, 0.72, 0.78, respectively.

STATISCAL ANALYSIS

The number (n), percentage (%), mean, Standard Deviation (SD), and median values were used in the studyasdescriptive statistics. Before the comparisons according to having relatives diagnosed with Covid-19 status, the entire group was compared with the Pearson Chi-Square Test based on age, educational status, working status, and perceived income status. The normality of the distribution was tested with the Shapiro-Wilk Test. The Mann Whitney-U Test was used in comparing the mean values of two groups in nonparametric tests, and the Kruskal Wallis Test was used in comparing the mean values of three or more groups. Multivariate Linear Regression analysis was made use of in further analyses. The models created with the Enter Strategy were found to be significant in the literature (18, 19), and in univariate analyses, the variables with $p < .20$ were included. The created model categorically used the following variables; chronic disease (0) no, (1) yes; age, number of gestations, miscarriage count, gestational week were taken as numerical variables. Age was used as a confounding variable. The explanatory status of the models was shown with Adjusted R square (Adj. R2). The significance level was taken as $p < .05$. The analysis was performed using the Statistical Package for the Social Sciences, version 22.0 (SPSS Inc., Chicago, IL, USA).

ETHICAL APPROVAL

The Ethical Approval for the study was obtained from Medipol University Non-Interventional Clinical Research Ethics Board (Date 16/04/20, and number 10840098-604.01.01.-e.14178). Institutional permission was obtained from the hospital administration to conduct the study (17/04/2020). All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/ornational research committee and with the 1964 Helsinki Declaration and its lateramendments or comparable ethical standards.

RESULTS

The descriptive features of the participants are shown in Table 1.

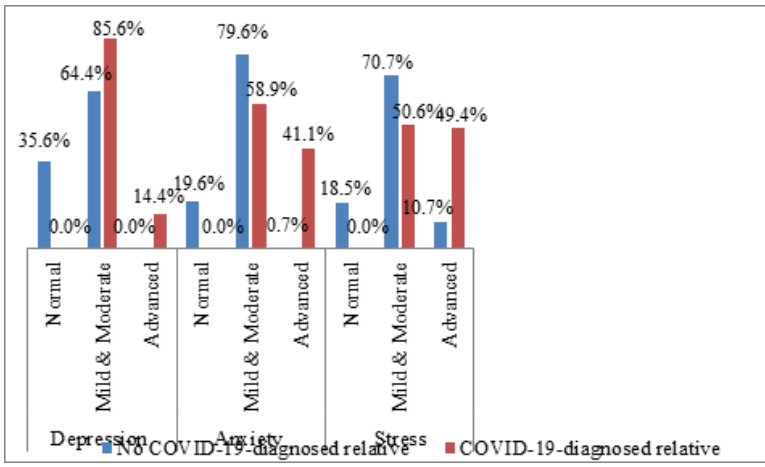
The mean age was 30.29 (±4.94) (range: 20-41, median: 30); and 18.0% of the participants were in the first trimester, 31.3% were in the second trimester, and 50.7% were in the third trimester. All of the participants were aware of Covid-19 pandemics in the study, and 40.0% had relatives who were diagnosed with COVID-19.

Table 1. Distribution of descriptive features of the pregnant women

Variables	Mean (SD)	n (%)
Age	30.29 (4.94)	
< 35	(range: 20- 41, median: 30)	359 (79.8)
≥ 35		91 (20.2)
Education		
Primary school or lower		350 (77.8)
High school or higher		100 (22.2)
Employment		
No		329 (73.1)
Yes		121 (26.9)
Perceived income		
Poor		28 (6.2)
Good or moderate		422 (93.8)
Chronic disease		
No		294 (65.3)
Yes		156 (34.7)
Parity	2.06 (0.96)	
Primipara	(range: 1-4, median: 2)	164 (36.4)
Multipara		286 (63.6)
Having children	0.62 (0.72)	
No	(range:0-3, median: 1)	222 (49.3)
Yes		228 (50.7)
Abortion	0.30 (0.53)	
No	(range:0-2, median: 0)	332 (73.8)
Yes		118 (26.2)
Gestational age	26.04 (9.28)	
First trimester (0-14 weeks)	(range:9-40, median: 28)	81 (18.0)
Second trimester (15-27 weeks)		141 (31.3)
Third trimester (28-40 weeks)		228 (50.7)
Awareness of COVID-19 pandemia		
No		0 (0.0)
Yes		450 (100.0)
Having relatives diagnosed with COVID-19		
No		270 (60.0)
Yes		180 (40.0)

A total of 64.4% of the pregnant women who did not have relatives diagnosed with COVID-19 had mild and moderate depression; 79.6% had mild and moderate anxiety, and 0.7% had severe anxiety; and 70.7% had mild to moderate stress and 10.7% had severe stress. A total of 85.6% of the pregnant women who had relatives diagnosed with COVID-19 had mild and moderate, 14.4% pregnant women had severe depression; 58.9% had mild and moderate, and 41.1% had severe anxiety; and 50.6% had mild and moderate, and 49.4% had severe stress (Figure 1).

Figure 1. Distribution of depression, anxiety and stress frequencies of the participants according to having relative diagnosed with COVID-19



The comparison of the DASS-21 and STAI scale scores of the descriptive characteristics of the participants based on having relatives diagnosed with Covid-19 is given in Table 2.

Table 2. Comparison of the descriptive features and DASS-21 and STA-II Scale Scores of the pregnant women according to having relatives diagnosed previously with COVID-19

Variables	No relative diagnosed with COVID-19					Relative diagnosed with COVID19				
	n	Depres-sion	Anxiety	Stress	STA-I	n	Depres-sion	Anxiety	Stress	STA-I
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Age										
< 35	218 (80.7)	5.19 (2.37)	4.79 (1.61)	9.24 (2.55)	45.38 (11.17)	141 (78.3)	9.26 (1.75)	7.28 (0.94)	12.57 (2.13)	63.70 (8.85)
≥ 35	52 (19.3)	5.87 (2.76)	4.94 (1.74)	9.67 (2.88)	47.06 (12.25)	39 (21.7)	9.44 (2.11)	7.31 (0.92)	12.23 (2.39)	62.72 (11.57)
Z		*-1.546*	*-0.704*	*-0.751*	*-1.158*		*-0.681*	*-0.147*	*-0.907*	*-0.621*
p		*0.122*	*0.482*	*0.453*	*0.247*		*0.496*	*0.883*	*0.364*	*0.535*
Education										
Primary school or lower	206 (76.3)	5.40 (2.45)	4.89 (1.67)	9.44 (2.65)	46.08 (11.44)	144 (80.0)	9.24 (1.80)	7.25 (0.93)	12.45 (2.19)	63.63 (9.55)
High school or higher	64 (23.7)	5.05 (2.49)	4.58 (1.51)	8.95 (2.47)	44.47 (11.18)	36 (20.0)	9.53 (1.93)	7.44 (0.94)	12.67 (2.18)	62.89 (9.30)
Z		*-1.285*	*-1.354*	*-1.138*	*-1.084*		*-0.752*	*-0.985*	*-0.543*	*-1.331*
p		*0.199*	*0.176*	*0.255*	*0.278*		*0.452*	*0.325*	*0.587*	*0.183*
Employment										
No	191 (70.7)	5.32 (2.43)	4.94 (1.59)	9.41 (2.55)	45.99 (11.34)	138 (76.7)	9.30 (1.87)	7.25 (0.93)	12.51 (2.16)	63.46 (8.87)
Yes	79 (29.3)	5.32 (2.54)	4.52 (1.70)	9.11 (2.76)	45.00 (11.53)	42 (23.3)	9.31 (1.70)	7.43 (0.97)	12.45 (2.28)	63.55 (11.39)
Z		*-0.447*	*-1.869*	*-0.852*	*-0.699*		*-0.435*	*-1.081*	*-0.072*	*-0.624*
p		*0.655*	*0.062*	*0.394*	*0.484*		*0.664*	*0.280*	*0.942*	*0.533*
Perceived income										
Poor	17 (6.3)	5.65 (3.10)	5.29 (1.65)	10.06 (2.05)	49.35 (9.94)	11 (6.1)	10.55 (1.63)	7.55 (0.69)	12.64 (2.01)	66.36 (8.50)
Good or moderate	253 (93.7)	5.30 (2.41)	4.79 (1.63)	9.28 (2.64)	45.45 (11.45)	169 (93.9)	9.22 (1.81)	7.27 (0.95)	12.49 (2.20)	63.30 (9.53)
Z		*-0.687*	*-1.036*	*-1.785*	*-1.387*		*-2.125*	*-0.973*	*-0.294*	*-0.540*
p		*0.492*	*0.300*	*0.074*	*0.165*		***0.034***	*0.331*	*0.768*	*0 589*
Chronic disease										
No	234 (86.7)	5.35 (2.61)	4.78 (1.70)	9.41 (2.76)	45.08 (11.91)	60 (33.3)	8.68 (1.47)	6.70 (0.56)	11.12 (2.01)	58.43 (9.70)
Yes	36 (13.3)	5.08 (1.08)	5.06 (1.09)	8.81 (1.19)	49.72 (5.68)	120 (66.7)	9.61 (1.92)	7.58 (0.95)	13.18 (1.93)	66.01 (8.32)
Z		*-1.168*	*-0.683*	*-0.971*	*-1.760*		*-3.200*	*-6.112*	*-5.660*	*-4.356*
p		*0.243*	*0.495*	*0.332*	*0.078*		***0.001***	***<0.001***	***<0.001***	***<0.001***
Parity										
Primipara	152 (56.3)	4.44 (2.25)	4.30 (1.61)	8.16 (1.93)	40.49 (10.36)	12 (6.7)	9.58 (0.51)	6.50 (0.52)	10.00 (0.00)	68.00 (0.00)
Multiparty	118 (43.7)	6.45 (2.24)	5.49 (1.41)	10.83 (2.62)	52.41 (8.87)	168 (93.3)	9.28 (1.89)	7.35 (0.93)	12.67 (2.15)	63.16 (9.73)
Z		*-7.611*	*-5.729*	*-8.134*	*-8.592*		*-0.951*	*-3.100*	*-4.406*	*-2.766*
p		***<0.001***	***<0.001***	***<0.001***	***<0.001***		*0.342*	***0.002***	***<0.001***	***0.006***
Having children										
No	168 (62.2)	4.93 (2.64)	4.31 (1.56)	8.46 (2.07)	41.61 (10.49)	54 (30.0)	9.48 (1.54)	7.59 (1.06)	13.41 (2.14)	70.04 (7.31)
Yes	102 (37.8)	5.95 (1.97)	5.66 (1.40)	10.75 (2.80)	52.43 (9.46)	126 (70.0)	9.22 (1.94)	7.16 (0.85)	12.10 (2.09)	60.67 (8.92)
Z		*-4.792*	*-6.565*	*-6.339*	*-7.432*		*-0.467*	*-2.812*	*-3.413*	*-6.961*
p		***<0.001***	***<0.001***	***<0.001***	***<0.001***		*0.641*	***0.005***	***0.001***	***<0.001***
Abortion										
No	239 (88.5)	5.29 (2.59)	4.59 (1.58)	9.08 (2.48)	44.04 (10.94)	93 (51.7)	8.79 (1.87)	7.17 (0.84)	12.24 (2.07)	63.40 (7.26)
Yes	31 (11.5)	5.55 (0.99)	6.61 (0.62)	11.23 (2.85)	58.52 (4.54)	87 (48.3)	9.77 (1.66)	7.41 (1.02)	12.77 (2.28)	63.57 (11.43)
Z		*-2.237*	*-6.755*	*-3.670*	*-7.248*		*-3.328*	*-1.717*	*-1.779*	*-2.573*
p		***0.025***	***<0.001***	***<0.001***	***<0.001***		***0.001***	*0.086*	*0.075*	***0.010***
Gestational age										
First trimester	71 (26.3)	3.80 (1.55)	4.27 (2.01)	8.18 (2.57)	39.61 (10.92)	10 (5.6)	6.70 (1.64)	7.00 (0.82)	10.20 (3.12)	41.10 (11.44)
Second trimester	138 (51.1)	5.01 (2.16)	4.60 (1.329	8.64 (1.64)	43.83 (9.94)	3 (1.7)	10.67 (2.08)	8.33 (0.58)	14.33 (0.58)	63.67 (9.81)
Third trimester	61 (22.6)	7.79 (2.11)	5.95 (1.24)	12.20 (2.41)	57.02 (5.82)	167 (92.8)	9.43 (1.72)	7.29 (0.94)	12.60 (2.05)	64.82 (7.53)
Chi-Square		*83.628*	*38.174*	*79.061*	*93.026*		*17.535*	*4.619*	*9.798*	*25.295*
p		***<0.001***	***<0.001***	***<0.001***	***<0.001***		***<0.001***	*0.099*	***0.007***	***<0.001***

Although pregnant women who did not have relatives diagnosed with COVID-19 had a statistically significant relation between depression, anxiety, stress (DASS) and STAI mean values and parity, having children, abortion, and gestational age (p<.05); no significant differences were detected between age, educational level, working status, and perceived income status (p >.05). Although the mean STAI scores of pregnant women who did not have relatives diagnosed with COVID-19 did not differ according to presence of chronic disease, these mean values were found to be significantly higher among those who had relatives diagnosed with COVID-19 (p < .01). Statistically significant differences were detected between mean depression levels and perceived income status, abortion, gestational age (p <.05); anxiety levels and parity, having children (p<.01); stress levels and parity, having children and gestational age (p <.01); STAI levels and parity, having children, abortion and gestational age of the pregnant women who had relatives diagnosed with COVID-19 (p <.05). No significant differences were detected between the mean scores of DASS and STAI and age, educational status, working status (p >.05).

The results of the participants' multivariate linear regression analysis adjusted for age is shown in Table 3 (Enter Strategy). Between 22.9% and 43.6% of the change was explained in the variance of the models created for pregnant women who did not have relatives diagnosed with COVID-19 (Adj. R2); and 26.9%-60.0% was explained for pregnant women with relatives diagnosed with COVID-19 (Adj. R2). A negative relation was detected between depression and abortion in pregnant women who had relatives diagnosed with COVID-19, and a positive relation was detected between gestational age (p<.001). A statistically significant and positive relation was detected between the level of anxiety, the number of abortions and gestational age; and between the stress levels and parity count and gestational age in pregnant women (p <.001). Another statistically significant and positive relation was detected between STAI levels, chronic disease, parity count, number of abortions, and gestational age of pregnant women (p<.001).

A statistically significant and positive relation was detected between depression levels and presence of chronic disease (p = .050), the number of parity, and the gestational age; and a statistically significant and negative relation was detected with abortion in pregnant women who had relatives diagnosed with COVID-19 (p < .001). A statistically significant and positive relation was detected between the level of anxiety and chronic disease, parity count and gestational age of pregnant women; and between stress levels, parity count, and gestational age (p <.05). A statistically significant and positive relation was detected between the STAI level, the number of parity, and gestational age of pregnant women (p<.001) (Table 3).

Table 3. Multivariate Linear Regression Analysis adjusted for age

Variables	No COVID-19diagnosed relative			COVID-19diagnosed relative		
	B	95% CI	p	B	95% CI	p
Depression						
Chronic disease (yes)	0.034	(-0.638, 0.707)	0.920	0.713	(-0.001, 1.427)	**0.050**
Parity	0.178	(-0.124, 0.480)	0.246	0.843	(0.481, 1.205)	<0.001
Abortion	-1.671	(-2.457, -0.884)	<0.001	-1.555	(-2.084, -1.026)	<0.001
Gestational age	0.204	(0.174, 0.234)	<0.001	0.094	(0.053, 0.136)	<0.001
Adj.R2	*0.427*			*0.358*		
F	*41.077****			*20.962****		
Anxiety						
Chronic disease (yes)	0.089	(-0.429, 0.608)	0.735	0.421	(0.038, 0.805)	0.032
Parity	0.166	(-0.067, 0.399)	0.162	0.475	(0.281, 0.670)	<0.001
Abortion	1.376	(0.769, 1.983)	<0.001	-0.099	(-0.384, 0.185)	0.491
Gestational age	0.055	(0.032, 0.078)	<0.001	0.036	(0.014, 0.058)	0.002
Adj.R2	*0.229*			*0.294*		
F	*16.962****			*15.878****		
Stress						
Chronic disease (yes)	-0.550	(-1.270, 0.170)	0.134	0.428	(-0.404, 1.260)	0.311
Parity	0.737	(0.414, 1.060)	<0.001	1.189	(0.767, 1.611)	<0.001
Abortion	0.160	(-0.682, 1.001)	0.709	-0.023	(-0.640, 0.593)	0.940
Gestational age	0.170	(0.138, 0.202)	<0.001	0.160	(0.112, 0.208)	<0.001
Adj.R2	*0.420*			*0.389*		
F	*39.959****			*23.797****		
STA-I						
Chronic disease (yes)	4.117	(1.026, 7.208)	0.009	-1.923	(-4.847, 1.000)	0.196
Parity	3.512	(2.125, 4.899)	<0.001	5.277	(3.795, 6.759)	<0.001
Abortion	5.465	(1.850, 9.079)	0.003	-0.361	(-2.527, 1.805)	0.743
Gestational age	0.619	(0.482, 0.756)	<0.001	1.172	(1.003, 1.342)	<0.001
Adj.R2	*0.436*			*0.600*		
F	*42.592****			*54.699****		

DISCUSSION

COVID-19 is a new respiratory system disease, which manifested itself worldwide with a rapid pandemic (1).Although the progression of this disease, which is very high in terms of infection rates, is not known, pregnant women are more likely to be affected by the virus considering the mental and physical changes in this process (20).The fact that the disease has a fast infection rate with human contact, the lack of clear protocols for proven treatment modalities, and the lack of vaccine for the prevention of it cause severe stress and anxiety in pregnant women. When foreign and domestic literature were reviewed, no studies were detected in which depression, stress and anxiety levels were evaluated for pregnant women with Covid-19-diagnosed relatives. The depression, stress and anxiety levels of pregnant women with close relatives diagnosed with COVID-19 were evaluated in this study. The study results were discussed considering the factors that caused stress and anxiety in pregnancy (i.e. socio cultural factors, preterm action, diabetes) together with the results of other studies (10, 18, 21, 22).

The fact that the groups included in the present study were similar in terms of socio-demographic characteristics (i.e. age, height, weight, educational status, working status, income levels, number of gestations, gestational weeks, and miscarriage) was important for the reliability of the study. The results of the study were similar to the results of previous studies conducted in our country and abroad(8, 11, 23).

When domestic and international literature was reviewed, it was reported that many factors (i.e. preterm action, sociocultural characteristics, abortion, diabetes etc.) are effective in the comorbidities of depression and anxiety in pregnancy (8, 10, 18, 21, 22, 23).In a population-based cohort study of Yang et al. (2017), it was found that anxiety and depression were more common in pregnancy in low birth weight and preterm births (21).In the study of AkdağTopal and Terzioğlu (2019), as a result of the 6-month evaluations of 60 pregnant women with 10-20 gestational weeks after the termination of the pregnancy with therapeutic abortion, it was reported that abortion increased anxiety and depression in pregnancy(8).González-Mesa et al. (2020) conducted a multicultural cross-sectional study with 514 pregnant women, and reported that the prevalence of comorbid anxiety and depression was quite high in terms of geographical and cultural characteristics (10).According to the study conducted on 1426 pregnant women by Tang et al. (2020), it was found that DM increased the incidence of anxiety and depression in early pregnancy (18).It was found in this study that increased gestational age increased DASS and STAI levels in patients with relatives who had not been diagnosed with COVID-19, and increased number of parity, stress and STAI scale scores. It was also found that the increase in the number of gestational age and parity increased the level of DASS and STAI in the participants who had relatives diagnosed with COVID-19. It was also found that presence of chronic disease and the number of parity increased depression and anxiety in pregnant women who had relatives diagnosed with COVID-19. It was reported in the literature that people in the risk group (i.e. pregnant women, elderly, children) and people with chronic diseases have higher risks of developing COVID-19 than people without chronic diseases (24, 25, 26).In this respect, we believe that the presence of chronic diseases in pregnant women and the presence of relatives of these women diagnosed with COVID-19 cause increased DASS and STAI levels in pregnant women. According to the results of this study, it is possible to speculate that the factors that affect DASS and STAI levels are parallel to the results of other studies.

Strength of Study

To the best of our knowledge, when the literature was reviewed, no studies were detected conducted to examine the changes of moods like depression, anxiety and stress that COVID-19 disease can cause in pregnant women, and their relations with obstetric features.Thisis the strength of the present study of ours.

Limitations of Study

There were some limitations in the present study. The first one was the fact that pregnant women who were included in the study were not known in terms of having negative or positive COVID-19 test results. For this reason, groups could not be compared in terms of this. The other limitation was that the present study had a small sampling size, and the results could be generalized in its own universe because the data were obtained from one single institution.

All of the pregnant women were aware of COVID-19 pandemic during the study, and two out of each five pregnant women had relatives diagnosed with COVID-19. Approximately two-thirds of those who did not have relatives diagnosed with COVID-19 had depression, four-fifth of them had anxiety, and four-fifth of them had stress. All of the pregnant women who had relatives diagnosed with COVID-19 had depression, anxiety and stress.

The presence of chronic disease and parity count was decisive in depression and anxiety levels in pregnant women who had relatives diagnosed with COVID-19, unlike those who did not. Clinical evaluations should be carefully made in this respect in addition to current condition of patients.

Conflict of interestThe authors declare that they have no conflicts of interest.

InformedconsentInformed consent was obtained from all individual participants included in the study.

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