Özgün Araştırma / Original Article

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

DOI: 10.38136/jgon.818400

Anxiety Levels of Pregnant women Hospitalized for Labor During the SARS-CoV-2 Pandemic

SARS-CoV-2 Pandemisi Sırasında Doğum Yapmak Üzere Hastaneye Yatan Hastaların Anksiyete Düzeyleri

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ÖZ

Amaç: Bu çalışmanın amacı, Türkiye'de SARS-CoV-2 (COVID-19) pandemisi sırasında doğum için hastaneye yatırılan düşük riskli, term gebelerin anksiyete durumlarını araştırmaktır.

Gereçler ve Yöntemler: Bu kesitsel anket çalışması, doğum için hastaneye yatırılan 200 düşük riskli, term gebe kadını içermektedir. Sosyodemografik ve obstetrik veriler toplandı. Başvuruda kadınların anksiyetesi Spielberger Durumluk-Sürekli Kaygı Envanteri anket formu ile incelendi. Toplam 50'den büyük puanlar patolojik anksiyete düzeyi olarak sınıflandırıldı.

Bulgular: Ortalama sürekli kaygı ölçek puanı 36,99 ± 10,08 ve ortalama durumluk kaygı ölçek puanı 41,03 ± 8,89 idi ve bu iki puan arasındaki fark istatiksel olarak anlamlı bulundu. Durumluk ve sürekli kaygı ölçek puanları, COVID-19 ile enfekte kişilerle teması olan gebelerde, olmayanlara göre daha yüksek bulundu. Durumluk ve sürekli kaygı ölçek puanları arasında anlamlı bir pozitif korelasyon tespit edildi. COVID-19 enfekte kişi ile temas öyküsü ve patolojik sürekli kaygı varlığı, COVID-19 pandemisine bağlı patolojik durumluk kaygısının varlığı için önemli faktörler olarak belirlendi.

Sonuç: COVID-19 ile enfekte kişi ile temas öyküsü olan veya patolojik sürekli kaygısı olan gebe kadınlaer, COVID-19 salgını sırasında daha yüksek durumluk kaygısına sahiptir. Anksiyete geliştirme riski taşıyan gebeleri belirlemek, psikolojik olarak erken müdahale edebilme imkanı sağladığı için önemlidir.

Anahtar Kelimeler: anksiyete, COVID-19, gebelik, pandemi

ABSTRACT

Aim: The aim of this study is to investigate the anxiety levels of low-risk term pregnant women hospitalized for labor during the SARS-CoV-2 (COVID-19) pandemic.

Materials and Methods: This cross-sectional survey study includes 200 low-risk term pregnant women hospitalized for delivery. Sociodemographic and obstetric data were collected. Anxiety levels of pregnant women were examined using Spielberger State-Trait Anxiety Inventory questionnaire form on admission. Total scores greater than 50 were classified as pathological levels of anxiety.

Results: The mean trait score was 36.99±10.08 and the mean state score was 41.03±8.89, and the difference between these two scores was statistically significant. State and trait scores were higher in pregnant women who had contact with COVID-19 infected people than those who had not. There was a significant positive correlation between state and trait scores. The history of contact with COVID-19 infected person and the presence of pathological trait anxity were determined as significant factors for the presence of pathological state anxiety related to COVID-19 pandemic.

Conclusion: Pregnant women with history of contact with COVID-19 infected person or with pathological trait anxiety have higher state anxiety during COVID-19 outbreak. It is important to identify women with high risk of developing anxiety in order to provide early psychological interventions.

Key words: anxiety, COVID-19, pregnancy, pandemic

INTRODUCTION

The disease due to coronavirus infection spread around the world by emerging in Wuhan, China in late 2019. In February 2020, the World Health Organization (WHO) defined the disease as COVID-19, the causative virus "Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) (1). As a result of this pandemic, more than 20 million people have been infected so far, and approximately 750 thousand of them have died. Anxiety can be described as the possibility of a danger from the internal or external world, or the mood experienced against any situation that is perceived as dangerous by the person (2). Infectious outbreak is a major source of anxiety for people and can cause deep fear and panic in the society (3). Pregnant women may be more psychologically affected by such an outbreak than the general population, as they are concerned about the safety of their fetuses. Many pregnant women may not even admitr for the antenatal follow-up that should be done due to the concern that they may be exposed to coronavirus in the hospital environment or on the way to the hospital. Mental health disorders are common during pregnancy and high anxiety in late pregnancy can be seen in 22% of pregnant women (4). An infectious outbreak that affects the whole world and can cause mortality may adversely affect the mental health of pregnant women. In this study, we aimed to evaluate the anxiety conditions of low-risk term pregnant women hospitalized for labor during the COVID-19 pandemic period.

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Başvuru tarihi : 30.10.2020
Kabul tarihi : 17.01.2021

MATERIALS AND METHOD

This cross-sectional survey study includes 200 low-risk term pregnant women hospitalized for delivery at Ankara City Hospital between April and May 2020, when the spread of COVID-19 infection was the fastest in Turkey. The criteria used for inclusion were single term pregnancy, without any maternal (systemic disorder such as hypertension, diabetes, neurological, psychological) and perinatal (such as growth retardation, amniotic fluid abnormality) pathology. The study was approved by the institutional review board E1-20-600 and informed consent has been obtained from all the patients .

For all pregnant women, sociodemographic data were collected including maternal age, body mass index (BMI), level of education, family income, presence of current smoking and COVID-19 contact. Also obstetric data were collected including number of gravida parity, presence of abortion and alive child, gestational week and antenatal follow-up frequency.

Women's anxiety levels were analyzed using the Spielberger State-Trait Anxiety Inventory (STAI) questionnaire form, which was developed by Spielberger et al. in 1970 and adapted to Turkish Society by Oner et al. (5). Each woman filled out this form by reading it herself at admission to delivery room. The women who did not complete or did not want to fill out the form were excluded. STAI consists of two subscales. State anxiety (STAI-S) is a measure of situational anxiety that participants are asked to respond based on "how you are feeling right now". Trait anxiety (STAI-T) is a measure of a general tendency to be anxious that participants are asked to respond based on "how you generally feel". Each subscale consists of 20 items scored on Likert-type scale of 4 points: 1- Absolutely not; 2- A little; 3- Much; 4- Very much; thus the range of possible scores on each subscale is from 20 (low anxiety) to 80 (high anxiety) (6). Total STAI scores greater than 50 were classified as pathological levels of anxiety (7). The median alpha reliability coefficients for STAI-S and STAI-T have been reported to be 0.92 and 0.90, respectively (8).

Statistical analyses

The data collected were analyzed by using IBM SPSS statistics for Windows, Version 17.0 (SPSS Inc., Chicago, IL, USA). Kolmogorov Smirnov test was used to evaluate data distribution. Continuous and normally distributed variables were expressed as mean±standard deviation and and intra-group differences were investigated using the independent t test.. Categorical variables are expressed as number (%) and differences between categorical data were evaluated using the chi-square test. Correlation between anxiety scores and characteristics and clinical factors were analysed with Pearson's or Spearman's correlation test where appropriate. Logistic regression model was performed to analyze the role of confounding factors the presence of pathological trait anxiety. The p value less than 0.05 was considered statistically significant.

RESULTS

A total of 200 patients were enrolled into this study. The demographic and clinical characteristics of the patients were shown in Table 1. The mean age of the women was 27.59 ± 5.09 years and almost half of them (48.0%) were obese. Most of them had at least one parity (74.0%) and had a live child (60.5%). More than half of them (63.5%) had high school and college education, but most (79.0%) had low income. Approximately one-fourth of them continued their regular antenatal follow-up. Most (62.5%) were hospitalized for vaginal delivery. Only 7 (3.5%) of them had contact history with COVID-19 infected person. The mean STAI-T score was 36.99±10.08 and the STAI-S score was 41.03±8.89, and the difference between these two scores was significant (p = 0.018).

Table1: Demographic and clinical characteristics of the patients.

Variables	N=200
Maternal age (years)	27.59±5.09
BMI (kg/m^2)	29.56±4.27
Obesity (BMI≥30kg/m^2)	96 (48.0)
Gravida	2 (1-6)
Primigravida	75 (37.5)
Multigravida	125 (62.5)
Parity	1 (0-4)
Primiparous	148 (74.0)
Multiparous	52 (26.0)
History of abortion	30 (15.0)
Alive child	121 (60.5)
Education level	
Secondary school or less,	73 (36.5)
High school	81 (40.5)
University	46 (23.0)
Family income	
Low income	158 (79.0)
Normal income	42 (21.0)
Gestational age (weeks)	39.00±1.36
37-41 week	169 (84.5)
>41 week	31 (15.5)
Regular antenatal follow up	46 (23.0)
COVID-19 contact	7 (3.5)
Current smoking	15 (7.5)
Hospitalized for scheduled CS (previous CS, malpresentation…)	75 (37.5)
STAI-T score	36.99±10.08
STAI-S score	41.03±8.89

Variables were presented as mean±standard deviation, median (minimum-maximum) or number (%).

BMI: Body mass index, CS: Cesarean section

When STAI-S and STAI-T scores of the patients were compared according to characteristics (Table 2) the STAI-T score was higher in women graduated from university (39.58±9.26) than those lower educational level (36.21±10.22, p=0.046), and those with low income levels (36.15±9.73) were lower than those with normal income (40.12±10.86, p=0.023). In addition, STAI-T and STAI-S scores were higher in women who had contact with COVID-19 infected people (44.29±9.16 and 50.14±7.47, respectively) than those who did not (36.72±10.04 and 39.67±8.74, respectively) (p=0.031 and p= 0.002, respectively).

Table 2: The STAI-S and STAI-T scores of the patients according to the demographic and clinical characteristics

obesity	Present (n=96)	Absent (n=104)	p
STAI-T score	38.45±9.92	35.63±10.10	0.048
STAI-S score	41.19±8.14	38.96±9.45	0.077
Gravida	Primigravida (n=75)	Multigravida (n=125)	p
STAI-T score	37.57±10.17	36.63±10.06	0.524
STAI-S score	39.20±8.56	40.53±9.09	0.308
Parity	Primiparous (n=148)	Multiparous (n=52)	p
STAI-T score	37.11±10.21	36.63±9.80	0.772
STAI-S score	40.01±9.14	40.10±8.25	0.950
Abortion history	Present (n=30)	Absent (n=170)	p
STAI-T score	35.57±10.10	37.24±10.09	0.405
STAI-S score	40.07±9.13	40.02±8.88	0.981
Alive child	Present (n=121)	Absent (n=79)	p
STAI-T score	36.88±9.96	37.14±10.33	0.862
STAI-S score	40.72±8.88	38.97±8.87	0.176
Graduated from Universty	Present (n=46)	Absent (n=154)	p
STAI-T score	39.58±9.26	36.21±10.22	**0.046**
STAI-S score	41.28±7.51	39.66±9.26	0.277
Low income	Present (n=158)	Absent (n=42)	p
STAI-T score	36.15±9.73	40.12±10.86	**0.023**
STAI-S score	39.89±9.09	40.55±8.21	0.672
Gestational age	37-41 weeks	>41 weeks	p
STAI-T score	36.97±10.15	37.06±9.91	0.962
STAI-S score	39.83±8.89	41.10±8.96	0.469
Regular antenatal follow up	Present (n=46)	Absent (n=154)	p
STAI-T score	36.12±9.92	41.20±9.29	0.098
STAI-S score	39.11±8.50	38.09±10.24	0.170
COVID-19 contact	Present (n=7)	Absent (n=193)	p
STAI-T score	44.29±9.16	36.72±10.04	**0.031**
STAI-S score	50.14±7.47	39.67±8.74	**0.002**
Current Smoking	Present (n=15)	Absent (n=185)	p
STAI-T score	37.80±10.49	36.92±10.08	0.746
STAI-S score	42.73±8.87	39.65±8.81	0.053
Hospitalized for	Vajinal delivery (n=125)	Scheduled CS (n=75)	p
STAI-T score	36.93±10.27	37.08±9.83	0.918
STAI-S score	39.80±8.88	40.41±8.97	0.638

Variables were presented as mean±standard deviation.

CS: Cesarean section

p<0.05 was considered as statistically significant.

Correlation analysis was performed between anxiety scores and characteristics and clinical factors. (Table 3). A significant positive correlation was found between STAI-T and STAI-S scores (r=0.529, p<0.001). In addition, the STAI-S score was weakly correlated with education level (r=0.140, p=0.048) and income level (r=0.208, p=0.003).

Table 3: Correlation between anxiety scores and characteristics and clinical factors

	STAI-S score		STAI-T score	
	r	p	r	p
Age	0.083	0.242	0.032	0.654
BMI	0.123	0.082	0.086	0.224
Gravida*	-0.005	0.947	0.081	0.254
Parity*	-0.011	0.877	0.074	0.296
Alive children number *	0.006	0.932	0.065	0.359
Number of abortion*	-0.046	0.516	0.021	0.769
Education degree*	0.140	**0.048**	0.003	0.964
Family income*	0.208	**0.003**	0.043	0.548
Gestational week	0.020	0.777	0.109	0.125
STAI-T score	0.529	**<0.001**	---	---

*Spearman correlation analysis; r:correlation coefficient

BMI: Body mass index

p<0.05 was considered as statistically significant.

Pathological STAI-S scores were present in 31(15.5%) pregnant women. In these women, the history of contact with COVID-19 infected person (12.9%) and the pathological level of STAI-T score (29.0%) were significantly higher than in women without pathological STAI-S score (6.5%, 1.8%, 9.5%, respectively) (Table 4). On the other hand, 25 women (12.5%) had pathological STAI-T score and no significant difference was found between women with and without pathological STAI-T scores regarding any variable listed in Table 4.

Table 4: Characteristics of the women with and without pathological anxiety scores

	Pathological trait anxiety			Pathological state anxiety		
	Absent (n=175)	Present (n=25)	p	Absent (n=169)	Present (n=31)	p
Maternal age (years)	27.43±4.93	28.64±6.12	0.269	27.86±5.23	26.06±3.99	0.070
BMI (kg/m²)	29.42±4.23	30.50±4.42	0.237	29.54±4.34	29.62±3.81	0.922
Obesity	81 (46.3)	15 (60.0)	0.199	80 (47.3)	16 (51.6)	0.661
Primigravida	64 (36.6)	11 (44.0)	0.473	64 (37.9)	11 (35.5)	0.801
Primiparous	131 (74.9)	17 (68.0)	0.465	124 (73.4)	24 (77.4)	0.637
Alive child	107 (61.1)	14 (56.0)	0.623	102 (60.4)	19 (61.3)	0.922
Abortion history	27 (15.4)	3 (12.0)	0.653	24 (14.2)	6 (19.4)	0.424
Current smoking	11 (6.3)	4 (16.0)	0.100	11 (6.5)	4 (12.9)	0.102
Gestational age (week)	38.95±1.37	39.32±1.25	0.203	38.96±1.33	39.16±1.53	0.461
Gest age >41weeks	26 (14.9)	5 (20.0)	0.554	24 (14.2)	7 (22.6)	0.236
Low income	142 (81.1)	16 (64.0)	0.055	133 (85.8)	25 (80.6)	0.807
Graduated from university	39 (22.3)	7 (28.0)	0.525	40 (23.7)	6 (19.4)	0.600
Regular antenatal follow-up	100 (57.1)	12 (48.0)	0.389	99 (58.6)	13 (41.9)	0.086
Contact with COVID-19 infected person	5 (2.9)	2 (8.0)	0.213	3 (1.8)	4 (12.9)	**0.012**
Hospitalized for scheduled CS	65 (37.1)	10 (40.0)	0.783	67 (39.6)	8 (25.8)	0.143
Trait score>50	----	----	----	16 (9.5)	9 (29.0)	**0.002**

Variables were presented as mean±standard deviation or number (%).

BMI: Body mass index, CS: Cesarean section

p<0.05 was considered as statistically significant

In logistic regression analysis, the history of contact with COVİD-19 infected person [Wald(W)= 5.92, Standard Error (SE)=0.82, odds Ratio (OR)=0.14, 95% Confidence Interval (CI)=0.03-0.68, p=0.015] and the presence of pathological STAI-T [W=7.08, SE=0.49, OR=3.68, 95% CI=1.41-9.61, p=0.008] were found to be independent factors for the presence of pathological STAI-T (Table 5).

Table 5. Logistic regrerssion model of the confounders for the presence of pathological state anxiety

	Wald	S.E.	p	OR (95% CI)
Contact with COVID-19 infected person	5.92	0.82	0.015	0.14 (0.03-0.68)
STAI-T score >50	7.08	0.49	0.008	3.68 (1.41-9.61)
S.E: Standard error, OR:Odds ratio CI: Confidence interval p<0.05 was considered as statistically significant.				

DISCUSSION

The first COVID-19 case in our country was detected on March 11, 2020, and the number of infected patients has gradually increased to date, and deaths have followed. Our country has tried to prevent this pandemic with the precautionary strategies it has developed, and the number of patients recovering with the applied treatment approaches has increased day by day. However, this pandemic inevitably caused concerns in our society as well as in all people of the world with the fear it created. Pregnancy is a period in which some anxieties occur and these concerns increase especially in the third trimester. Therefore, it can be speculated that mental health of a pregnant woman close to her delivery will be negatively affected during this pandemic period. Therefore, the anxiety felt by pregnant women may increase. In our study, we determined the state and trait anxiety scores as 41.03±8.89 and 36.99±10.08 in term pregnant women who were hospitalized for birth and did not have any maternal or fetal pathology during their pregnancy follow-up. Grant et al found the STAI-S and STAI-T anxiety scores in the last trimester of pregnant women as 35.99±11.60 and 37.46±12.67, respectively, and determined over 40 as the threshold value for the presence of postnatal anxiety and mood disorders for both scores (9). Considering this result, we think that we can choose the STAI-S score above 50 as the increased state anxiety score in our study.

There are studies in the literature evaluating the anxiety levels of pregnant women in previous pandemics. In their study conducted by Lee et al in Taiwan, it was shown that during the 2003 SARS epidemic, pregnant women experienced high levels of anxiety and were concerned about becoming infected (10). In another study conducted in Hong Kong, anxiety and depression levels were compared in pregnancies before and during SARS, and it was reported that anxiety level was slightly higher during SARS, but there was no statistically significant difference between the depression levels of the two groups (3). Although the recent studies on this subject belonging to the COVID-19 pandemic period are also limited, the number of these studies is increasing day by day. In a recent study by Mappa et al, it was concluded that the COVID-19 epidemic increased the anxiety level of pregnant women and caused the number of women to reach abnormal anxiety levels to double (11). Corbet et al also found high anxiety level in pregnant women during COVİD-19 pandemic, and they were most concerned about their elderly relatives, then their children, followed by their unborn children. They were least concerned about their own health (12). To the best of our knowledge, our study is the first study conducted in a pregnant population with more definite boundaries and in which the level of anxiety at the pathological level is used at higher levels. By conducting this study in low-risk pregnant women hospitalized for delivery, we think that we can minimize the anxiety levels related to pregnancy, and the anxiety felt by pregnant women could be more specific to COVID-19 pandemic by defining higher scores as pathological. We found a positive relationship between trait score and state score. So if the pre-existing anxiety level measured by trait score increases, there is a higher probability of having increased state anxiety during the pandemic period. COVİD-19 contact and pathological trait score were found to be significant factors for the presence of pathological state score. When the pregnant woman is hospitalized during a pandemic, if she has COVİD-19 contact or has a pathological trait score, there is a high probability that her state anxiety may reach to pathological scale.

CONCLUSION

Our data suggest that pregnant women with history of COVİD-19 contact or with pathological trait score have higher state anxiety during COVID-19 outbreak. It is important to identify women with high risk of developing anxiety in order to provide early psychological interventions. Applying a screening tool to identify women at risk of anxiety and depression during pregnancy should be a universal practice to promote the long-term well-being of mothers and babies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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