

# The level of anxiety in pregnant women in COVID-19 pandemic: a cross-sectional study

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**Abstract. – OBJECTIVE:** We aimed to determine the COVID-19 anxiety level in pregnant women who presented to an outpatient clinic during the COVID-19 pandemic.

**PATIENTS AND METHODS:** This is a descriptive cross-sectional study including 203 of 310 pregnant women who presented to the outpatient clinic of a training and research hospital of the Ministry of Health between 29 September-1 October, 2020. The level of anxiety was assessed with the COVID-19 Anxiety Inventory (CAS) using a face-to-face survey method.

**RESULTS:** The mean age of the patients was 28.15±5.95 years. In the study, while 6.2% of women over 30 years old was identified to have psychological problems, 0.7% of those under 30 years old had such problems. The rate of diagnosis of COVID-19 in the family/acquaintances of those with an educational level of high school or higher was 56.9%, and those who had an educational level under high school had a corresponding rate of 39.5%. The rate of COVID-19 diagnosis in the family/acquaintances of those with an educational level of high school or higher was significantly higher ( $p<0.05$ ). The mean COVID-19 anxiety scale score was 0.18±0.47; COVID-19 anxiety was not observed in pregnant women.

**CONCLUSIONS:** This study detected no anxiety in pregnant women. Therefore, it can be said that pregnant women do not need immediate psycho-social support.

*Key Words:*

Pregnant, Anxiety, COVID-19, Epidemic, Pandemic.

in serious acute respiratory syndrome, has rapidly spread around the world. On March 11, 2020, the World Health Organization (WHO) declared the COVID-19 outbreak an international public health emergency, raising its classification to a global pandemic<sup>1</sup>.

The COVID-19 pandemic which has remarkably affected our lives, has brought many constraints and life changes. These changes and restrictions have included general curfew, remote education and working, among other measures. The unpredictability of the pandemic and the impact of the restraints associated with it have caused fear and anxiety in people worldwide<sup>2</sup>. Pregnancy is both a natural process in a woman's life and a process in which there are significant psychosocial changes and a high probability of encountering many factors that might pose stress and anxiety<sup>3</sup>. Increased anxiety during pregnancy may also cause postpartum depression or other mood disorders. The COVID-19 epidemic has psychologically affected pregnant women, who are considered as a vulnerable population in the society, in many ways.

The aim of this study is primarily to determine the COVID-19 anxiety levels of pregnant women who presented to hospital for routine outpatient controls during pregnancy in the period of the COVID-19 pandemic; it also aimed to contribute the planning of psycho-social support services for pregnant women by sharing them with stakeholders and evaluating the results of the study.

## Introduction

In December 2019, a cluster of cases of pneumonia of unknown etiology in Wuhan, China's Hubei province, was reported to the World Health Organization (WHO). In a short time, coronavirus 2 (SARS-CoV-2), the causative agent of coronavirus disease 2019 (COVID-19) resulting

## Patients and Methods

This descriptive cross-sectional study was conducted in the outpatient clinic of a training and research hospital of the Ministry of Health between 29th September and 1st October, 2020. The study originally aimed to recruit 200 preg-

nant women. Two hundred and three of 310 pregnant women who presented to the follow-up room agreed to participate in the study, the sample was not selected. The questionnaire included 12 questions about sociodemographic (age, education and occupation), chronic disease, and fertility characteristics. International Labor Organization (ILO) and International Standard Occupation Classification 08 (ISCO) were used to group the occupational grouping of women and their spouses<sup>4</sup>. The second part included questions on COVID-19 Anxiety Scale (CAS). The CAS is a brief 5-item mental health screener with strong reliability ( $\alpha=0.93$ ) and validity, according to a study performed with 775 adults. The pregnant women were asked to rate how often they experienced items in the CAS in the last 2 weeks on a 5-point Likert-type scale from 0 (never) to 4 (almost every day in the last 2 weeks). The items in the scale were marked between zero and twenty points in total and an anxiety level of 9 points or over was considered as high<sup>5</sup>. The validity and reliability of the CAS were measured, and a value of Cronbach's alpha of 0.80 was found in a study in Turkey<sup>6</sup>. This study was approved by the TR Ministry of Health Scientific Research Commission (24.08.2020) and by the local Ethics Committee.

### Statistical Analysis

The study data were analysed using the SPSS statistical package program (SPSS Inc., Chicago, IL, USA) in a computer environment. The descriptive statistics of the study included frequency and percentage (%); continuous data were reported as mean  $\pm$  standard deviation. Chi-square analysis was performed for categorical variables in the four-eyed tables, with Fisher's exact test having been used for the eyes with an expected value of less than 5%.  $p<0.05$  was considered statistically significant for all analyses.

## Results

The mean age of the study population was  $28.15\pm 5.95$  (minimum 16, maximum 47). Sixty-eight percent of women were 30 years or younger. The mean age of the spouses of the women was  $31.54\pm 6.10$  years (minimum 18, maximum 51).

Twenty-five-point one percent (25.1%) of women were illiterate; 25.1% of them attended high school or higher; 89.7% of them were working in jobs that do not require qualifications and all of them were housewives. Ten-point three

percent (10.3%) of the spouses were illiterate; 36.4% attended high school or above; 33.0% were working in jobs that do not require qualifications; 30.1% were service or sales personnel; 12.3% were unemployed (Table I).

Thirteen-point three percent ( $n=27$ ) of the participants had chronic disease; 2.5% ( $n=5$ ) had mental illness; 4.9% ( $n=10$ ) had COVID-19 diagnosis; 43.8% ( $n=89$ ) had COVID-19 diagnosis in their family or acquaintances; and 13.3% ( $n=27$ ) had deaths in the family or acquaintances due to COVID-19. The mean number of pregnancies of the participants was  $3.26\pm 2.04$ ; the mean number of living children was  $1.64\pm 1.48$ ; the mean number of deceased children was  $0.09\pm 0.37$ ; the mean number of voluntary abortions was  $0\pm 0.07$ ; and the mean number of involuntary abortions was  $0.54\pm 1.04$ .

In the study, 6.2% of women over the age of 30 had mental disease; 0.7% of those who were 30 years or younger had mental disease. The rate of diagnosis of COVID-19 in the family/acquaintances of those with an educational level of high school or higher was 56.9%, and those who had an educational level under high school had a corresponding rate of 39.5%. The rate of COVID-19 diagnosis in the family/acquaintances of those with an educational level of high school or higher was significantly higher ( $p<0.05$ ). The average scores of women regarding how often they experienced the situations specified in the COVID-19 Anxiety Scale in the last 2 weeks are illustrated on Table II.

The total mean COVID-19 anxiety scale score was  $0.18\pm 0.47$ , and anxiety was not detected in pregnant women. The item with the highest score of  $0.24\pm 0.71$  was "I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus". The item with the lowest score of  $0.10\pm 0.51$  was "I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus".

## Discussion

Pregnancy already causes considerable psychosocial changes in women's lives, and the process of pandemic has also had a significant effect on psychological health of women. These psychological changes can have negative effects on maternal and child health. In this study, 13.3% of the women had chronic disease and 2.5% had mental illness. It was found that 4.9% of patients were diagnosed with COVID-19 while 43.8% had

**Table I.** Sociodemographic characteristics of the participants.

Characteristic	Have a Chronic Disease		No Chronic Disease		Total	
	n	%	n	%	n	%
<b>Age</b>						
< 20	2	7.4	15	8.5	17	8.4
20-25	3	11.1	56	31.8	59	29.1
26-30	11	40.8	51	29.0	62	30.5
31-35	4	14.8	31	17.6	35	17.2
>36	7	25.9	23	13.1	30	14.8
<b>Education</b>						
Illiterate	7	25.9	44	25.0	51	25.1
Primary school	9	33.4	50	28.4	59	29.1
Middle school	3	11.1	39	22.2	42	20.7
High school	6	22.2	18	10.2	24	11.8
University and above	2	7.4	25	14.2	27	13.3
<b>Occupation</b>						
Employees in unqualified jobs	25	92.6	157	89.2	182	89.7
Professional occupation	1	3.7	10	5.7	11	5.4
Office service	1	3.7	6	3.4	7	3.4
Service and salesperson	0	0.0	3	1.7	3	1.5
<b>Spouse's Age</b>						
< 20	0	0.0	2	1.1	2	1.0
20-25	3	11.1	28	15.9	31	15.3
26-30	4	14.8	65	36.9	69	34.0
31-35	8	29.6	39	22.2	47	23.2
>36	12	44.5	42	23.9	54	26.6
<b>Spouse's Education</b>						
Illiterate	3	11.1	18	10.2	21	10.3
Primary school	15	55.6	44	25.0	59	29.1
Middle school	3	11.1	46	26.1	49	24.1
High school	1	3.7	36	20.5	37	18.2
University and above	5	18.5	32	18.2	37	18.2
<b>Spouse's Occupation</b>						
Employees in unqualified jobs	8	29.6	59	33.5	67	33.0
Service and salesperson	3	11.1	58	33.0	61	30.0
Unemployed	6	22.2	19	10.8	25	12.3
Quality agriculture, forestry, water	2	7.4	9	5.1	11	5.4
Craftsmen and related workers	5	18.5	6	3.4	11	5.4
Professional occupation	1	3.7	10	5.6	11	5.4
Other*	2	7.4	17	9.6	19	9.4
<b>Total*</b>	<b>27</b>	<b>13.3</b>	<b>176</b>	<b>86.7</b>	<b>203</b>	<b>100.0</b>

\*: Technicians, technicians and associate professionals (9) Plant and machine operators and assemblers (7), Office workers (3) \*\*Line %

the disease diagnosed in their family or acquaintances. Deaths due to COVID-19 were detected in the families or acquaintances of 13.3% of the pregnant women.

The rate of mental disease of people over 30 years of age was higher than that in patients aged 30 and below; the rate of diagnosis of COVID-19 in the family/acquaintances of those with an educational level of high school or higher was found to be significantly higher than that observed in those with an educational level below high school. Anxiety was not detected in pregnant women in the present study.

Similar studies which have used the COVID-19 Anxiety Scale (CAS) questions were not found since the CAS scale has been newly developed. Therefore, the results of our study could not be compared with studies using the CAS scale. The findings of the studies using different stress and anxiety scales were compared in the process of pandemic.

Preis et al<sup>7</sup> investigated factors predictive of pandemic-related pregnancy stress through social media using the Pandemic-Related Pregnancy Stress Scale (PREPS). They recorded that approximately 30% of women recorded high levels of

**Table II.** Coronavirus Anxiety Scale (CAS).

	Have a Chronic Disease (n=27)	No Chronic Disease (n=176)	Total (n=203)
1. I felt dizzy, lightheaded, or faint, when I read or listened to news about the coronavirus.	0.33±0.96	0.09±0.40	0.12±0.52
2. I had trouble falling or staying asleep because I was thinking about the coronavirus.	0.59±1.08	0.16±0.52	0.22±0.64
3. I felt paralyzed or frozen when I thought about or was exposed to information about the coronavirus	0.26±1.81	0.23±0.70	0.24±0.71
4. I lost interest in eating when I thought about or was exposed to information about the coronavirus	0.48±1.01	0.18±0.63	0.22±0.70
5. I felt nauseous or had stomach problems when I thought about or was exposed to information about the coronavirus.	0.26±0.71	0.08±0.47	0.10±0.51
<b>Total Average Score</b>	<b>0.39±0.80</b>	<b>0.15±0.39</b>	<b>0.18±0.47</b>

Preparedness Stress (27.2%) and Perinatal Infection Stress (29.1%), with 17.9% of the sample reporting high levels of both<sup>7</sup>.

A multicentre, cross-sectional study was conducted to evaluate the prevalence of anxiety and depressive symptoms using the Edinburgh Postnatal Depression Scale (EPDS) in a total of 2839 pregnant women in China. In that study, pregnant women who were underweight prior to pregnancy, younger than 35 years, primiparous, full time employees, in middle income category, and had convenient living space were at increased risk for developing anxiety and depressive symptoms during the pandemic<sup>8</sup>.

Demir and Kilic<sup>9</sup> investigated 177 pregnant women who presented to clinics for routine pregnancy follow-up by using Beck Anxiety Inventory (BAI). They specified that the levels of anxiety were mild (8-15 points) in 30.5% of pregnant women, moderate (16-25 points) in 11.3%, and severe (26-63 points) in 2.8%<sup>9</sup>.

A study which used generalized anxiety disorder-7 (GAD-7) scale recruited 788 pregnant women and found that anxiety symptoms were absent to minimal in 21.1% of women, mild in 35.6%, moderate in 21.6%, and severe in 21.7%<sup>10</sup>. A cross-sectional online study which was conducted in Norway, Switzerland, Ireland, the UK, and the Netherlands included pregnant and breastfeeding women. The seven-item Generalized Anxiety Disorder scale (GAD-7), the Perceived Stress Scale (PSS), and the Edinburgh Depression Scale (EDS) were used to evaluate their mental health status. Moderate to severe generalized anxiety symptoms were revealed in 11% of the pregnant women. The Perceived Stress Scale (PSS) score ranges from 0-40, with high scores indicating excess perceived stress. The participants' mean PSS score was 14.1±6.6<sup>11</sup>.

Shangguan et al<sup>12</sup> enrolled a total of 2,120 Chinese pregnant women who were attending a self-help crisis intervention. They used perceived stress scale and Generalized Anxiety Disorder-7 (GAD-7) scale. Seventeen-point eight percent of pregnant women stated mild anxiety. Only 3.9% of women stated moderate to severe anxiety. They found that having relatives or neighbours with a diagnosis of COVID-19 was not associated with anxiety ( $p>0.05$ ).

A cross-sectional study from Turkey evaluated 403 pregnant women using an online survey. The hospital anxiety and depression scale (HADS) was used to measure anxiety and depression in that study. Sixty-four-point five percent of pregnant women were found to have anxiety. In that study, it was noticed that physical activity status, working status, having information about COVID-19, discomfort with hospital visits, having information about COVID-19, and being informed by healthcare workers about COVID-19 were associated with anxiety<sup>13</sup>.

A meta-analysis which evaluated 34 studies (N=42,773) about anxiety in pregnant women found that the total of anxiety prevalence was 30.5%. However, an adjustment made by time demonstrated that the prevalence of anxiety was higher in studies conducted later in the epidemic<sup>14</sup>. Another meta-analysis which evaluated the prevalence of anxiety found a range of 0.3-56% for anxiety prevalence<sup>15</sup>.

The results of our study are not in agreement with previous studies. This may have resulted from using different scales, the differences of sample sizes, different geographical and temporal conditions in which the studies have been conducted during the pandemic, or the differences in



the sociodemographic characteristics of women (age, education, occupation, work, etc.).

The main limitation of our study is that it only included pregnant women who presented to the hospital for routine outpatient controls during their pregnancy.

## Conclusions

Anxiety was not detected in pregnant women. The pregnant women included in our study do not need immediate psycho-social support. However, we think that the psychological effect of the pandemic will be different in risky groups due to local and regional differences. It is recommended to conduct research on pregnant women who are in the sensitive group of the society since the pandemic process continues.

## Conflict of Interest

The Authors declare that they have no conflict of interests.

## Ethics Approval

Sciences University Gazi Yaşargil Training and Research Hospital Clinical Research Ethics Committee dated 25.09.2020 and numbered 570 were received.

## Informed Consent

The patients gave written informed consent for the study.

## Disclosure statement

The authors declare that they have no conflict of interest.

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## Authors' Contribution

All authors of the study idea, design, control resources, materials, data collection and/or processing analysis and/or commentary literature review writing contributed to critical review.

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