VM VIA MEDICA

ORIGINAL PAPER / OBSTETRICS

Investigation of awareness and anxiety levels of pregnant women during pandemic process

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ABSTRACT

Objectives: It is currently unknown that how pregnant women deal with the Coronavirus disease and its results. The aim of this study is to evaluate the psychological impact of the coronavirus pandemic on pregnant women and to determine whether pregnant women have sufficient knowledge and awareness for a healthy antenatal process.

Material and methods: This study was conducted at two centers. Regardless of the gestational age, a questionnaire was distributed to 1003 pregnant women in total, from which 51 original questions we prepared. Five hundred twenty-six participants were included in the study. The questionnaire was delivered using the QR code method. The questionnaires were answered online by participants via SurveyMonkey.

Results: The period when anxiety was highest was the 2nd trimester, whereas women in the 1st trimester had the lowest level of anxiety. High levels of awareness were observed in patients with heart disease, but patients with diabetes mellitus had a high level of anxiety.

Conclusions: It is important to maintain the mental and physical health of pregnant women, who are in a more delicate condition than other individuals in the society. In this regard, healthcare professionals have important duties such as taking necessary precautions and explaining the seriousness of the situation to pregnant women.

Key words: anxiety; awareness; COVID-19; pregnancy

Ginekologia Polska 2022; 93, 1: 24–36

INTRODUCTION

The coronavirus disease (COVID-19) pandemic started on December 31, 2019, in the Chinese city of Wuhan, the capital of Hubei province [1]. On January 30, 2020, the World Health Organization reported that the COVID-19 outbreak was a public health emergency of international concern.

As of November 18, 2020, the virus, which has rapidly spread across the country and around the world, has become a very serious issue and public health problem, with 56,237,909 cases, 1,349,116 deaths, and 39,155,994 recovered cases in approximately 11 months.

In Turkey, the first case was reported on March 11, 2020, which was later than in other developing countries owing to the precautions taken prior to the emergence of the first case. As of November 18, 2020, 425,628 cases, 11,820 deaths, and 361,655 recovered cases have been reported in Turkey [2].

Pregnant women are known to be predisposed to the complications and the severe outcomes of a COVID-19 infection, as declared from SARS and MERS [3, 4].

The panic caused by the virus across the world coupled with the thought of staying home under quarantine, fear of death, protecting loved ones, and the mothering instinct has

caused significant anxiety problems in particularly sensitive populations. While the effect of the pandemic on pregnant women is not yet known and only a few studies available, the Royal College of Obstetrics and Gynecology reported that the COVID-19 pandemic increases the risk of perinatal anxiety, depression, and domestic violence [5]. The importance of mentally and emotionally supporting women has been emphasized in COVID-19 guidelines. Necessary measures should be taken to offer psychological support for pregnant women suffering from anxiety caused by this dramatic outbreak.

Pregnancy is related to increased risk for severe psychological issues such as depression, anxiety and postpartum psychosis due to physiological, immunological and hormonal alterations [6].

MATERIAL AND METHODS

This multi-centric prospective study, conducted between March 30 and May 30, 2020, was designed as a descriptive and cross-sectional study. The questionnaires were planned to be administered in the outpatient clinic for pregnant women and the obstetric emergency services at the Umraniye and Kanuni Sultan Suleyman Training and Research Hospitals (see Supplement 1).

The questionnaire was designed to identify awareness levels of COVID-19, identify anxiety levels in the admitted pregnant women, and evaluate their attitudes in terms of prevention measures.

The questionnaire comprises of 51 original questions that investigate the pregnant women's demographic data, history of contact with COVID-19-positive patients, knowledge and concerns about COVID-19, precautionary measures, and approach to outbreak.

A link to the online questionnaire (SurveyMonkey) was sent to all pregnant participants, who were admitted to the obstetric outpatient clinics at Umraniye and Kanuni Sultan Suleyman Training Research Hospitals. The questionnaire was delivered using the QR code method and filled online to avoid contamination during this risky time.

The study was approved by the institutional ethics committee. Before starting the study, all volunteers received an informed consent form.

Questionnaires were distributed to a total of 1003 pregnant women aged 18–48 years who volunteered to participate in the survey study. Adolescent pregnant women and pregnant women with diagnosed depression, anxiety, and psychosis were excluded from the study. Illiterate pregnant women and pregnant women with diagnosed or suspected COVID-19 were not included in the study.

Five hundred twenty-nine of 1003 participants were included in the study, 526 of them answered all questions. Comparisons were made in terms of age, educational background, number of children, contact history, pregnancy week, risk factors, and anxiety and awareness levels.

According to responses to the 15 questions asked to measure anxiety regarding COVID-19 in pregnant women, based on the responses, we created a scoring system to determine the level of anxiety in pregnant women. Every correct response measuring anxiety was converted into a hundred-point scale for standardization and then assessed. Percentile values ranked at the 33.3 and is categorized as average, and anxiety was classified (Tab. 1).

According to the distribution of the responses given by the pregnant women to the 19 questions asked to assess their awareness of COVID-19, a scoring system of 19 questions to determine the level of awareness in pregnant women was created. Every correct answer indicating awareness was converted into a hundred-point scale for standardization. Percentile values ranked at the 33.3 and is categorized as average, and awareness was classified (Tab. 2).

In order to assess the level of anxiety that commonly used in Turkey and can be applied easy which has been benefited from Beck Anxiety Scala [7].

Statistical Analysis

Power analysis was performed using the G * Power (v3.1.7) program to determine the number of samples. The statistical analyses were performed using the Statistical Package for the Social Sciences, version 25 (SPSS Inc.). Along with the descriptive statistical methods for data analysis, the Shapiro–Wilk test and boxplot graphs were used to test the normality of variables in terms of normal distribution. One-way ANOVA analysis of variance was used in intergroup comparisons of normally distributed variables, while the Bonferroni test was used to determine groups with differences. The Kruskal-Wallis test was used for intergroup comparisons of non-normally distributed parameters, while Dunn's test was used to determine the groups with differences. The Mann-Whitney U test was used to compare the parameters between two groups. $P < 0.05$ was considered statistically significant.

RESULTS

Distribution of demographic characteristics, distribution of Coronavirus (COVID-19) according to other characteristics, distribution of the answers given to the questions asked about the measuring the anxiety of pregnant women about Coronavirus (COVID-19) and distribution of the answers given to the questions asked about measuring the awareness of pregnant women about Coronavirus (COVID-19) are listed in Tables 1–4, respectively.

According to the responses given to 19 questions asked to determine the level of awareness, the scores of awareness of COVID-19 were 5.26–100, with a mean score of

Table 1. Distribution of the answers given to the questions asked about the measuring the anxiety of pregnant women about Coronavirus (COVID-19)

		n	%
Do you think that you are vulnerable to Coronavirus (COVID-19) because you are pregnant?	No	195	37.1%
	Not sure	138	26.2%
	Yes	193	36.7%
Do you think that mother-to-child transmission of Coronavirus (COVID-19) infection is possible during pregnancy?	Not sure	200	38.0%
	No	163	31.0%
	Yes	163	31.0%
Do you think that Coronavirus (COVID-19) can transmit through breastmilk or breastfeeding?	Not sure	210	39.9%
	No	131	24.9%
	Yes	185	35.2%
Which of the following do you think that could happen to you because of the anxiety of getting infected by Coronavirus (COVID-19)?	Labor pain	77	14.6%
	Bleeding	38	7.2%
	Water break	22	4.2%
	Preterm labor	78	14.8%
	Abortus/Stillbirth	69	13.1%
	None	315	59.9%
Do you take vitamins to boost your immune system against Coronavirus (COVID-19) infection?	No. I don't	269	51.1%
	Sometimes, I do	103	19.6%
	Regularly, I do	154	29.3%
Are you anxious for the family members in case they may get infected by Coronavirus (COVID-19)?	I am not anxious	47	8.9%
	I am a little bit anxious	120	22.8%
	I am anxious	208	39.5%
	I am very anxious	151	28.7%
Does the thought of getting infected by Coronavirus (COVID-19) cause any of the followings?	Numbness/Tingling	19	3.6%
	Hot flushes	74	14.1%
	Weakness/Shivering	43	8.2%
	The idea of something bad is going to happen	161	30.6%
	Tachycardia	56	10.6%
	Dizziness	18	3.4%
	Feeling like drowning	55	10.5%
	Feeling like you can't breathe	73	13.9%
	Fear of death	87	16.5%
	Stomach pain	63	12.0%
	No. I don't feel any of them	171	32.5%
If you had get infected by the Coronavirus (COVID-19), what is your possibility of getting well?	I don't think that I could get well	92	17.5%
	I am not sure that I could get well	148	28.1%
	I may get well	225	42.8%
	I would definitely get well	61	11.6%
Do you think that the doctors can make the right diagnosis of Coronavirus (COVID-19) infection and then treat you in the right way?	No	39	7.4%
	Not sure	196	37.3%
	Yes	291	55.3%
Do you think of terminating your pregnancy because of the risk of mother-to-child transmission of Coronavirus (COVID-19) infection?	No	467	88.8%
	Not sure	46	8.7%
	Yes	13	2.5%

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Table 1. cont. Distribution of the answers given to the questions asked about the measuring the anxiety of pregnant women about Coronavirus (COVID-19)

		n	%
Do you think that you wash your hands after coughing, sneezing or touching your nose more frequently than before the Coronavirus (COVID-19) pandemic started?	No	35	6.7%
	Not sure	79	15.0%
	Yes	412	78.3%
Do you avoid going out because of the Coronavirus (COVID-19) pandemic?	No	30	6.1%
	Sometimes	0	0.0%
	Yes	460	93.9%
What would you do if a doctor advised a treatment at home to your housemate due to the Coronavirus (COVID-19) infection? (n: 283)	I do nothing	4	1.4%
	I would take the precautions like putting on a mask, wearing gloves, etc. and I would continue to live in the same house	54	19.1%
	I would live in another room in the house	165	58.3%
	I would move to another house	60	21.2%
What would you do if your doctor advised you to get tested for Coronavirus (COVID-19) after exposure to a person who is suspected of having Coronavirus (COVID-19) infection? (n: 285)	I would refuse	37	13.0%
	I am not sure about it	82	28.8%
	I would accept	166	58.2%
If you thought that you had some of the signs/symptoms of Coronavirus (COVID-19) infection, what would you do? (n: 282)	I would immediately go to a hospital	148	52.5%
	I would observe the signs//symptoms and wouldn't go to the hospital unless I get worse	24	8.5%
	I would call my healthcare professional friends and consult about going to the hospital	20	7.1%
	I would call 184 and consult the Ministry of Health	64	22.7%
	I would not go to a hospital and quarantine myself at home	14	5.0%
	I don't think that I should do something about it	12	4.3%

Table 2. Distribution of the answers given to the questions asked about measuring the awareness of pregnant women about Coronavirus (COVID-19)

		n	%
Do you think that you have enough information about the transmission route of Coronavirus (COVID-19) infection?	No	57	10.8%
	Not sure	62	11.8%
	Yes	407	77.4%
Do you think that you have enough information about the signs/symptoms of Coronavirus (COVID-19) infection?	No	51	9.7%
	Not sure	68	12.9%
	Yes	407	77.4%
What are the most important signs/symptoms of Coronavirus (COVID-19) infection in your opinion?	High fever	453	86.1%
	Cough	329	62.5%
	Shortness of breath	372	70.7%
	Other	32	6.1%
Would you get vaccinated with Coronavirus (COVID-19) vaccine?	No	66	12.5%
	Not sure	164	31.2%
	Yes	296	56.3%

Table 2. cont. Distribution of the answers given to the questions asked about measuring the awareness of pregnant women about Coronavirus (COVID-19)

		n	%
Do you think that you and your family get well-informed about Coronavirus (COVID-19) infection?	No	94	17.9%
	Not sure	337	64.1%
	Yes	95	18.1%
Do you think that Coronavirus (COVID-19) infection is preventable?	No	43	8.2%
	Not sure	127	24.1%
	Yes	356	67.7%
Do you think that Coronavirus (COVID-19) infection is lethal?	No	34	6.5%
	Not sure	69	13.1%
	Yes	423	80.4%
Do you think that the precautions that the Ministry of Health take against Coronavirus (COVID-19) are sufficient?	No	114	21.7%
	Not sure	105	20.0%
	Yes	307	58.4%
Have you ever get informed about Coronavirus (COVID-19) infection by the healthcare professionals?	No	311	59.1%
	I don't remember	41	7.8%
	Yes	174	33.1%
Do you try to protect yourself from getting infected by Coronavirus (COVID-19) and if you do, what do you do for it?	Washing hands frequently	466	88.6%
	Handsanitizer/Cologne	315	59.9%
	Staying away from crowded places	438	83.3%
	Mask	324	61.6%
	Gloves	139	26.4%
	Staying at home	27	5.1%
	Other	17	3.2%
	None	5	1.0%
Which of the following can provide reducing the number of new Coronavirus (COVID-19) cases and deaths from this infection in Turkey?	Good personal hygiene	85	16.2%
	The precautions that the Ministry of Health takes	121	23.0%
	Healthy eating habits/Good genetics	17	3.2%
	Staying at home except for essential needs	101	19.2%
	None	122	23.2%
	All	80	15.2%
Would you quarantine yourself at home for 14 days if you exposed to a person who is infected with Coronavirus (COVID-19)?	No	16	3.0%
	Not sure	18	3.4%
	Yes	492	93.5%
Would you see a friend/relative in 14 days since he/she came from a foreign country?	No	507	96.4%
	Not sure	14	2.7%
	Yes	5	1.0%
Do you follow the daily news about the Coronavirus (COVID-19) in Turkey and worldwide?	No	16	3.0%
	Sometimes	53	10.1%
	Yes	457	86.9%
Do you think that the Coronavirus (COVID-19) pandemic has been exaggerated?	No	326	62.0%
	Not sure	70	13.3%
	Yes	130	24.7%
Do you think that you need to get informed more about the Coronavirus (COVID-19) infection?	No	186	35.4%
	Not sure	71	13.5%
	Yes	269	51.1%

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Table 2. cont. Distribution of the answers given to the questions asked about measuring the awareness of pregnant women about Coronavirus (COVID-19)

		n	%
What would you do if your doctor advised you hospitalization due to the Coronavirus (COVID-19) infection? (n: 283)	I would not accept the treatment	21	7.4%
	I am not sure about it	39	13.8%
	I would accept the treatment	223	78.8%
What would you do if your doctor advised you to get tested for Coronavirus (COVID-19) after exposure to a person who is diagnosed with Coronavirus (COVID-19) infection? (n: 282)	I would refuse	29	10.3%
	I am not sure about it	57	20.2%
	I would accept	196	69.5%
Who would you share it with if you were diagnosed with Coronavirus (COVID-19) infection? (n: 286)	I wouldn't share it with anyone	18	6.3%
	I would share it only with my spouse	53	18.5%
	I would share it with my first degree relatives and friends	46	16.1%
	I would share it with the doctors who are following me for pregnancy	47	16.4%
	I would share with everybody	122	42.7%

Table 3. Distribution of demographic characteristics

		n	%
Health-care worker (n: 416)	Yes	29	7.0%
	No	387	93.0%
How many children?	None	241	45.8%
	1	172	32.7%
	2	67	12.7%
	3 ≤	46	8.7%
Marital status	Married	513	97.5%
	Single	9	1.7%
	Widowed/Divorced	4	0.8%
Educational status	Primary school	74	14.1%
	Middle school	94	17.9%
	High school	130	24.7%
	Associate's degree	67	12.7%
	Postgraduate and more	161	30.6%
Do you smoke?	Never	459	87.3%
	Less than 10 cigarettes	45	8.6%
	10 to 20 cigarettes	18	3.4%
	More than 20 cigarettes	4	0.8%
Gestational age	< 14 weeks	123	23.8%
	14–28 weeks	152	29.5%
	> 28 weeks	241	46.7%
How many people do live in your house?	1–2	226	43.0%
	3 to 5	262	49.8%
	6 or more	38	7.2%
How many times have you been to the Emergency Room in the last year?	Never	187	36.3%
	1 to 5 times	253	49.1%
	More than 5 times	75	14.6%
Have you exposed to a person who is suspected of Coronavirus (COVID-19) infection?	No	500	95.1%
	Yes	8	1.5%
	Not sure	18	3.4%

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Table 3. cont. Distribution of demographic characteristics

		n	%
Have you ever used public transportation in the last month?	Yes	121	23.0%
	No	405	77.0%
How many times do you touch your face in a daytime?	Never	55	10.5%
	1 to 5 times	258	49.0%
	More than 5 times	213	40.5%
Do you go to the hospital for your routine prenatal visits?	No. I don't go	106	20.2%
	Sometimes, I go	99	18.8%
	Regularly, I go	321	61.0%
Which risk factors do you have related to Coronavirus (COVID-19) infection?	Diabetes	16	3.0%
	Hypertension	12	2.3%
	Lung Diseases	28	5.3%
	Cancer	7	1.3%
	Heart Diseases	21	4.0%
	Liver Diseases	8	1.5%
	Renal Diseases	6	1.1%
	Thyroid Diseases	20	3.8%
	Other Risk Factors	15	2.9%
	None	420	79.8%

Table 4. Distribution of Coronavirus (COVID-19) according to other characteristics

		n	%
Do you think that antibiotics are effective against Coronavirus (COVID-19)?	No	321	61.0%
	Not sure	159	30.2%
	Yes	46	8.7%
Do you think that social media is taken advantage for giving information about the Coronavirus (COVID-19) infection?	No	126	24.0%
	Not sure	121	23.0%
	Yes	279	53.0%
Have you ever get vaccinated against influenza?	No	449	85.4%
	I don't remember	51	9.7%
	Yes	26	4.9%

60.13 ± 14.81. Of the participants, 3.6% who scored 33.3 and below had low awareness, 58.7% who scored 33.3–66.6 had moderate awareness, and 37.6% who scored ≥ 67 had high awareness (Tab. 5).

In terms of number of children, however, there was a significant difference among the scores of COVID-19 awareness ($p < 0.05$): the awareness increased as the number of children increased. The awareness score of women who had no children was significantly lower than that of those who had three children ($p = 0,016$; $p < 0.05$). There was a significant difference among the scores of COVID-19 awareness in terms of the number of people living in the household ($p < 0.05$); the awareness score of those with a household of 1–2 people was significantly lower than that of those

with a household of 3–5 people ($p: 0,012$; $p < 0.05$). There was a significant difference among the scores of COVID-19 awareness in terms of visiting the healthcare facility

Table 5. Distribution of COVID-19 Awareness Scores

	COVID-19 Awareness Scores
Min–Max	5.26–100
Avr ± SD	60.13 ± 14.81
Low Awareness Levels	19 (3.6)
Moderate Awareness Levels	309 (58.7)
High Awareness Levels	198 (37.6)

SD — standard deviation

for routine pregnancy check-ups (p < 0.05); the awareness score of those continuing routine pregnancy check-ups was significantly higher than that of those not undergoing or occasionally undergoing routine pregnancy check-ups (p: 0,001; p < 0.01). (Tab. 6)

The awareness score of patients with heart disease was significantly higher than that in those without heart disease (p < 0.05) (Tab. 7).

According to the responses given to 15 questions asked to determine the level of anxiety, the scores of COVID-19 anxiety ranged from 13.33 to 86.67, with a mean score of 53.49 ± 13.63. Those with a score of ≤ 33.3 were classified as having low anxiety and accounted for 11.4% of the respondents; those with scores of 33.3–66.6 had a moderate level of anxiety and accounted for 66.2% of the respondents, and those with a score of ≥ 67 had a high level of anxiety and accounted for 22.4% of the respondents (Tab. 8).

In terms of contact with an individual with suspected COVID-19 in the past 14 days, there was a significant dif-ference among the scores of COVID-19 anxiety (p < 0.05). It was found that those with a history of contact had sig-nificantly higher anxiety scores than those without a history of contact (p = 0,014; p < 0.05). There was a significant difference among the scores of COVID-19 anxiety in terms of gestation week (p < 0.05), with the highest level of anxiety in the 2nd trimester and lowest level of anxiety in the 1st trimester (p = 0,014; p < 0.05). There was a significant difference among the scores of COVID-19 anxiety in terms of visiting the healthcare institution for routine pregnancy check-ups (p < 0.05). Those visiting regularly had significantly higher anxiety scores than those not visiting at all or visiting occasionally for routine pregnancy check-ups (p: 0.008; p < 0.01) (Tab. 9).

Those with DM had significantly higher anxiety scores than those without DM (p < 0.05) (Tab. 10).

There was a statistically significant positive correlation between the scores of COVID-19 anxiety and the scores of COVID-19 awareness (r = 0.252; p = 0.001; p < 0.01). As the

Table 6. Evaluations based on COVID-19 Awareness Scores					
		COVID-19 Awareness Scores			**p**
		Average	**SD**	**Median**	
Educational Status	Primary School	60.88	17.73	63.16	[a]0.152
	Middle School	63.38	14.76	63.16	
	High School	59.72	16.64	57.89	
	Associate's degree	58.52	14.24	57.89	
	From Bachelor's degree to Doctorate	58.91	11.58	57.89	
Health-care worker	Yes	58.80	13.72	57.89	[b]0.280
	No	62.00	15.49	63.16	
Number of children	Zero	58.62	13.95	57.89	[a]0.025*
	1 child	60.86	14.59	63.16	
	2 children	60.57	17.08	63.16	
	3 and more	64.76	15.80	63.16	
Use of public transportation	Yes	60.77	13.78	63.16	[b]0.595
	No	59.95	15.12	57.89	
Suspected COVID-19 exposure	No	60.24	14.77	57.89	[c]0.531
	Yes	63.16	12.89	63.16	
	Not sure	55.85	16.95	60.53	
Gestational age	< 14 gw	60.76	13.93	63.16	[a]0.380
	14–28 gw	59.14	14.23	57.89	
	> 28 gw	60.36	15.16	57.89	
How many people do live in your house?	1–2 people	58.59	13.63	57.89	0.011*
	3–5 people	61.91	15.06	63.16	
	> 6 people	57.06	18.38	57.89	
Routine prenatal visits	Never	57.69	15.87	57.89	0.001**
	Irregular	59.62	14.18	57.89	
	Regular	64.43	14.94	68.42	

a — Oneway Anova test, b — Student t test, c — Kruskal Wallis test, * — p < 0.05; SD — standard deviation

Table 7. Evaluation of COVID-19 Awareness Scores according to the risk factors of pregnant women

| | | COVID-19 Awareness Scores | | | p |
		Average	SD	Median	
Diabetes mellitus	No	60.20	14.76	57.89	0.571
	Yes	58.22	16.81	60.53	
Hypertension	No	60.30	14.65	57.89	0.312
	Yes	53.07	20.38	57.89	
Lung diseases	No	60.24	15.01	57.89	0.364
	Yes	58.27	10.90	57.89	
Cancer diseases	No	60.14	14.77	57.89	0.699
	Yes	60.15	19.66	63.16	
Heart diseases	No	53.13	12.88	52.63	0.016*
	Yes	60.43	14.83	63.16	
Liver diseases	No	60.08	14.86	57.89	0.475
	Yes	63.82	12.08	65.79	
Renal diseases	No	60.12	14.79	57.89	0.830
	Yes	61.40	18.13	63.16	
Thyroid diseases	No	59.95	14.77	57.89	0.094
	Yes	64.74	15.75	68.42	
Other diseases	No	60.05	14.78	57.89	0.399
	Yes	63.16	16.40	68.42	
None	No	59.93	15.23	63.16	0.988
	Yes	60.19	14.73	57.89	

Mann Whitney U test, * — $p < 0.05$; SD — standard deviation

Table 8. Distribution of COVID-19 Anxiety Scores

	COVID-19 Anxiety Scores
Min–Max	13.33–86.67
Avr ± SD	53.49 ± 13.63
Low Anxiety Levels	60 (11.4)
Moderate Anxiety Levels	348 (66.2)
High Anxiety Levels	118 (22.4)

SD — standard deviation

awareness level of pregnant women increased, the anxiety level increased as well (Fig. 1).

DISCUSSION

A total of 526 pregnant women from all three trimesters who were admitted to two centers in the Asian and European sides of Istanbul with the highest patient admissions were surveyed. Based on the data, 58.7% of the pregnant women were found to have moderate awareness. When the awareness rates of pregnant women with comorbidities were examined, it was found that the awareness levels of pregnant women with heart disease were higher. In total, 81.9% of the participants believed that they and their relatives were not sufficiently informed about COVID-19, and 59.1% thought that healthcare workers did not inform them about the COVID-19 properly. In addition, 64.6% of the participants thought they needed information about COVID-19. These data suggest that the impact of COVID-19 on prenatal and postnatal periods is yet to be proven [8].

Although 58.7% of the pregnant women thought that the measures implemented by the Ministry of Health from the beginning of the pandemic in Turkey were satisfactory, only 18.1% thought that they were informed about how to protect and isolate themselves from the COVID-19 pandemic. These results are noteworthy and can encourage the Ministry of Health and healthcare workers to conduct more projects on informing people about the modes of transmission and protection against the virus.

While the COVID-19 awareness level is expected to increase as the level of education increases, there was no significant difference in the present study. This is consistent with the results obtained by Wang et al. [9]. According to their data, the anxiety rate was increased in patients with low educational background, whereas in our study, there was no positive correlation between educational background and anxiety.

Table 9. Evaluations based on COVID-19 Anxiety Scores

		COVID-19 Anxiety Scores			p
		Average	**SD**	**Median**	
Educational Status	Primary School	53.15	16.22	53.33	[a]0.992
	Middle School	54.11	12.36	53.33	
	High School	54.26	12.75	53.33	
	Associate's degree	53.63	15.11	53.33	
	From Bachelor's degree to Doctorate	52.63	13.20	53.33	
Health-care worker	Yes	54.94	13.88	53.33	[b]0.284
	No	54.38	13.95	53.33	
Number of children	Zero	53.44	12.85	53.33	[a]0.611
	1 child	53.06	13.69	53.33	
	2 children	53.43	16.84	53.33	
	3 and more	55.51	12.42	60.00	
Use of public transportation	Yes	52.78	13.92	53.33	[b]0.511
	No	53.71	13.55	53.33	
Suspected COVID-19 exposure	No	53.25	13.67	53.33	[c]0.044*
	Yes	62.17	13.06	59.67	
	Not sure	57.78	12.10	56.67	
Gestational age	< 14 gw	51.60	13.14	53.33	[a]0.047*
	14–28 gw	55.13	12.61	53.33	
	> 28 gw	53.31	14.19	53.33	
How many people do live in your house?	1–2 people	53.22	12.60	53.33	0.830
	3–5 people	53.82	14.22	53.33	
	> 6 people	52.98	15.57	53.33	
Routine prenatal visits	Never	51.13	15.27	53.33	0.010*
	Irregular	53.25	12.90	53.33	
	Regular	56.83	13.54	60.00	

a — Oneway Anova test, b — Student t test, c — Kruskal Wallis test, * — p < 0.05; SD — standard deviation

Even though awareness levels increased as the number of children and the household size increased in the present study, there was no significant increase in the anxiety levels. In the study by Wang et al. [9], a higher number of children and increased household size were not associated with increased awareness and anxiety. Remarkably, based on data obtained in the current study, there was no significant difference between the awareness levels of healthcare worker women and non-healthcare worker women. Forty point nine percent of the pregnant women expressed hesitation to report infection with COVID-19 to their physician and the Ministry of Health. This indicates that almost 50% of the pregnant women suffering from the disease try to avoid quarantine and do not understand the gravity of the situation. The concealment of a diagnosis puts the person's immediate environment and public health and healthcare workers at risk. It can be concluded that during the management of this process, it is necessary to provide the necessary psychosocial support and increase awareness of the COVID-19 pandemic among the public.

In terms of both anxiety and awareness scoring, those who visited the healthcare institution regularly for routine pregnancy check-ups had high levels of awareness and high anxiety scores. In addition, there was a statistically significant correlation between the scores of COVID-19 anxiety and awareness.

In our study, 66.2% of the participants were moderately concerned, while Saccone et al. [10], found that 53% of respondents had been psychologically affected at a high level.

In terms of comorbidities, those with DM were more concerned about getting infected by the virus, while patients with cancer and patients with chronic lung disease, who are thought to be more prone to stress and depression, did not have a significantly increased anxiety.

Table 10. Evaluation of COVID-19 Anxiety Scores according to the risk factors of pregnant women

		COVID-19 Anxiety Scores			p
		Average	SD	Median	
Diabetes mellitus	No	52.31	13.68	2	0.046*
	Yes	59.58	10.74	60.00	
Hypertension	No	53.46	13.51	53.33	0.757
	Yes	55.00	18.88	53.33	
Lung diseases	No	53.71	13.74	53.33	0.107
	Yes	49.76	11.11	46.67	
Cancer	No	53.47	13.63	53.33	0.484
	Yes	55.24	14.25	60.00	
Heart diseases	No	53.48	13.71	53.33	0.640
	Yes	53.97	11.72	60.00	
Liver diseases	No	53.55	13.63	53.33	0.456
	Yes	50.00	14.25	53.33	
Renal diseases	No	53.46	13.66	53.33	0.607
	Yes	56.66	11.74	53.33	
Thyroid diseases	No	53.32	13.54	53.33	0.101
	Yes	58.00	15.46	60.00	
Other diseases	No	53.50	13.73	53.33	0.972
	Yes	53.33	9.76	53.33	
None	No	53.96	13.48	53.33	0.591
	Yes	53.38	13.68	53.33	

Mann Whitney U test,* — $p < 0.05$; SD — standard deviation
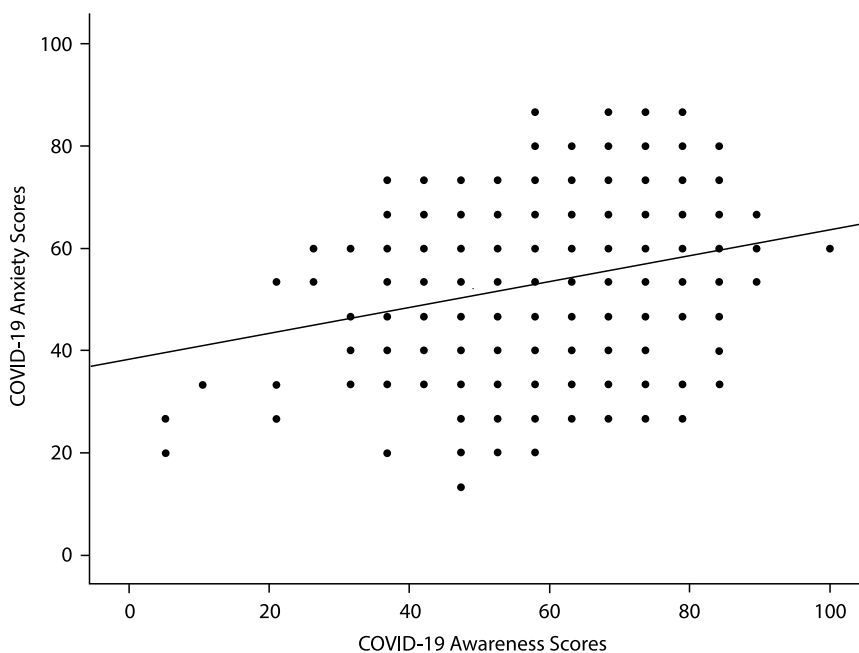
Figure 1. Relationship between COVID-19's anxiety scores and awareness scores on pregnant women

The period when anxiety was observed at the highest level was the 2nd trimester, whereas the lowest level was seen in the 1st trimester. On the contrary, in the study by Tang et al. [11], the anxiety levels of pregnant women in the 1st trimester were higher.

The study by Durankuş and Aksu included 260 participants, and the study by Yassa et al., included 172 participants. Both reported negative psychological effects of COVID-19 on pregnant women [12, 13]. In the present study, 44.7% of the participants from all trimesters thought that physicians could not diagnose COVID-19 in a timely manner and treat COVID-19 properly, while only 7.5% of participants thought so in the study by Yassa et al. [13].

In the present study, 47% of participants thought that social media was not being used efficiently for informing the society. Wu Y et al. [14], reported apart from the benefits of social media, it causes extreme fear, isolation, fear of death, and proneness to depression among the society, especially during the time of lockdown.

Mirzadeh and Khedmat particularly stressed that pregnant women need psychological support during this crisis [15].

Previous studies showed that there is an increased predisposition to emotional state disorders in pregnancy and childhood [16–18]. Pregnant women experience more anxiety and suffer from fears that arise as the delivery date approaches during advanced gestation weeks [16]. It is also obvious that if the concerns that pregnant women suffering from infectious diseases have about the health of their babies are added to this, their mental health can be affected even more.

During the pandemic, women are under stress and may therefore complain about many psychological symptoms or nonspecific symptoms that can be confused with those of COVID-19. They can also face many problems, such as emergence of unintended pregnancies.

In the present study, for example, it is noteworthy that 39% of the pregnant women avoided visiting the healthcare institution for routine pregnancy check-ups.

According to all these results, healthcare workers should further inform pregnant women about COVID-19.

Limitations

A significant number of individuals who had been followed up or treated as outpatients or inpatients for confirmed or suspected cases of COVID-19 could not be surveyed as part of the present study since our hospital served as a major hospital during this pandemic. The duration of the study was prolonged to reach the targeted number of pregnant women due to the decrease in the number of patients admitted to outpatient clinics due to fear and anxiety. Patients who had difficulty reading and understanding Turkish were not surveyed to avoid incorrect results. Owing to the high number of questions asked, some of the patients filled out the questionnaire by skipping some of the questions and some were unable to complete the questionnaire. Of all the pregnant women admitted to the emergency service, those who needed urgent diagnosis and treatment were not surveyed. Due to socioeconomic reasons such as not having access to internet or phone, some pregnant women could not be surveyed online.

CONCLUSIONS

This study shows that pregnant women have insufficient knowledge about this important health problem, their anxiety is high, and their awareness is insufficient.

Healthcare workers have an important duty to ensure early identification of the negative outcomes that may arise due to COVID-19 in pregnant women so that pregnant women are provided with the necessary psychological support.

This study presents significant clues that might constitute a ground for future studies. In addition, this study offers guidance for family physicians, obstetricians, midwives, and other healthcare workers for developing measures to protect maternal and newborn health at an advanced level.

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