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Coronavirus-induced Anxiety among Pregnant Women

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Abstract

Introduction: Anxiety about COVID-19 is common and seems to be mostly due to the unknown and confusing nature of the virus. Given the effects of stress on maternal and fetal health and the lack of a similar study on this issue and the importance of the issue, so we decided to assess the degree of anxiety in COVID-19 in pregnant women.

Materials and Methods: The present study is a cross-sectional study (descriptive-analytical). The statistical population of this study includes pregnant women referred to Kashani Hospital in Jiroft from March to August 2020. A total of 182 pregnant women referred to the hospital were interred in the study.

Results: The mean age of pregnant women was 27.2 ± 7.2 years. Among the demographic factors of pregnant women, only a significant relationship was seen between maternal age and anxiety caused by COVID-19. Also, the mean anxiety of psychological symptoms was significantly higher than the physical symptoms ($P < 0.001$). Both factors indicated moderate anxiety.

Conclusion: Given that there is currently limited information available to pregnant women with COVID-19 and its complications in pregnant mothers, it is necessary to pay more attention to corona prevention training programs and how to deal with stress and anxiety in pregnant women.

Keywords: Anxiety, Coronavirus, COVID-19, Pandemic, Pregnant women

1. Introduction

Coronaviruses are a large family of viruses that can cause respiratory infections from the common cold to severe illnesses. Recently, the virus was named COVID-19 or coronavirus acute respiratory syndrome-2 [1]. The spread of the virus was so rapid that the World Health Organization declared it a pandemic [2]. There is a

wide variety of clinical manifestations of COVID-19, including asymptomatic cases, upper respiratory tract infection, severe viral pneumonia, respiratory failure, and even death; however, hospital admission is needed for only a few cases [3]. Fever, cough, shortness of breath, fatigue, diarrhea, nausea, and sore throat represent the most common symptoms [4]. However, information on other pathogenic coronaviruses such as Acute Respiratory Syndrome (SARS) and Middle East

Respiratory Syndrome (MERS) may provide insight into the effects of COVID-19 in pregnancy [2]. Because monitoring systems have been developed for COVID-19 cases, it is essential to gather and report information on pregnancy status maternal and fetal outcomes, and some preliminary evidence that can provide a guide to the prevention and treatment of pregnant women with COVID-19 disease. Studies of 9 women with COVID-19 who were in the third trimester of pregnancy showed no fetal mortality, neonatal death, or asphyxia, and four neonates with COVID-19 did not observe infection [5].

On the other hand, it has been reported that there is no possibility of vertical transmission of the virus to the fetus in the third trimester. Samples collected from amniotic fluid, blood, umbilical cord, and saliva showed a negative COVID-19 test, so there was no chance of vertical transmission of the infection to the fetus in women with late pregnancy [6]. This immunity is probably due to the fact that the angiotensin receptor converting the enzyme ACE2 COVID-19 is poorly expressed in the placenta and the cells in that area do not become infected [7]. Although, as noted, studies in China have not shown vertical transmission, there is new evidence of IgM in the baby's serum at birth. Because IgM does not cross the placenta, it may indicate an immune response in neonates to uterine infection, these results are inconclusive and need further testing [8]. It seems that the effect of infection on pregnant women is less or they are not more likely to be infected than others. In this regard, in 9 pregnant women whose COVID-19 tests were confirmed, the neonates of two patients developed fetal distress and the complication of premature rupture of embryonic membranes was reported in two pregnant women with coronavirus. Mothers and babies are safe during pregnancy and childbirth, so most care was provided before and after birth [5].

Anxiety is a common symptom in patients with chronic respiratory disorders and can significantly reduce patients' quality of life. Almost all cases of anxiety assessment, it also includes physical cases that overlap with the symptoms of chronic respiratory disease and side effects of medications [9]. Anxiety affects up to two-thirds of COVID-19 patients and leads to decreased quality of life and physical function. Little research has been done on anxiety experiences in patients with severe respiratory symptoms [10]. The World Health Organization estimates anxiety at the top of mental disorders at 400 million people worldwide [11]. Anxiety about COVID-19 is common and seems to be mostly due to the unknown and confusing nature of the virus. Always Fear of the

unknown reduces the perception of immunity and has been anxiety for humans. Lack of scientific information about COVID-19 also exacerbates anxiety [12]. At this time, people are looking for more information to relieve their anxiety. Anxiety can make people unable to distinguish right from wrong, so they may be exposed to false news [13]. Stress and anxiety can weaken the immune system and make them vulnerable to diseases such as COVID-19 [14]. Stress and anxiety caused by the COVID-19 epidemic in pregnant women should be controlled because stress and anxiety during pregnancy cause complications such as preterm delivery, a low Apgar score of the baby, and low birth weight. Some postpartum mothers worry about conditions such as breastfeeding and care, vaccination, and screening. In this regard, increasing mothers' awareness about the symptoms of the disease, and risk factors, as well as remote counseling for pregnancy care and helping to reduce maternal anxiety and worry is recommended [15]. Due to the special conditions of pregnancy and the unknown and new nature of the coronavirus, these people have more stress and anxiety than other people in the community, and pregnant women should be given the necessary prevention and training in this field. Due to the effect of stress on the health of mother and fetus and the lack of similar studies in this area and the importance of the issue, we decided to consider COVID-19 anxiety in pregnant women, if there is any added stress, training methods, self-care and anxiety Let's pay attention to this group.

2. Materials and Methods

This is a cross-sectional (descriptive-analytical) study. The statistical population of this study includes pregnant women referred to Kashani Hospital in Jiroft from 20 March 2020 until 20 September 2020. The sampling method in this research was the census method so that all pregnant women that referring to Kashani Hospital in Jiroft during a period of study were selected and entered to the study. The data collection tool in this research was Corona Disease Anxiety Scale (CDAS) questionnaire, which includes 18 items and two components. Items 1 to 9 measure psychological symptoms and items 10 to 18 measure physical symptoms, which are scored on a 4-point Likert scale (never = 0, sometimes = 1, most times = 2, and always = 3) and have an alpha coefficient. Cronbach for the first factor ($\alpha = 0.879$), the second factor ($\alpha = 0.861$), and for the whole questionnaire is 0.919, which validity and reliability was confirmed by Alipour et al. Based on this questionnaire, the mean score of anxiety of psychological symptoms (5-0, 19-6, 27-27); Physical symptoms (1-0, 9-2, 10-27) and the whole

questionnaire (0-16, 17-19, 54-30) show mild, moderate and severe anxiety, respectively [16]. This questionnaire was completed by the interviews with pregnant mothers by researchers. The collected data were analyzed by SPSS software version 20. First, statistical indicators related to descriptive statistics such as mean, standard deviation, frequency, and frequency percentage were calculated, and then the Kolmogorov-Smirnov test was used to assess the normality of the data. To investigate the relationship between the variables with the level of anxiety of pregnant mothers, parametric tests such as independent t-sample, analysis of variance, and non-parametric Chi-square test were used. Before starting for complete questionnaire, the respondent was given explanations about the study and informed consent was obtained from the participants.

3. Results

A total of 182 pregnant women with a mean age of 27.2 ± 7.2 years (range 17 to 41 years) were included in the study. The demographic information of pregnant women with COVID-19 was given in Table 1. The highest number of participants was in the age group of 20 to 30 years (54.9%). Also, most pregnant mothers had a diploma (40.7%) and most of them were Iranians (96.2%) and housewives (81.9%). The frequency of urban women was higher than rural women (79.7%). In terms of the relationship between demographic variables and the mean anxiety score, the mean anxiety was observed first in the age group over 40 years and then in the age group of 20-30 years. The results show that there is a statistically significant difference between the degree of anxiety caused by COVID-19

Table 1. Average level of anxiety caused by COVID-19 disease in pregnant women in Jiroft city during the COVID-19 pandemic

Variable names	Grouping	Percent	Frequency	Standard Deviation	Anxiety	P-value*
Age mothers	>20	6	11	5.4	15.6	0.04
	20-30	54.9	100	7.4	16.3	
	30-40	7/35	65	6.4	15.6	
	<40	3/3	6	9.8	21.6	
Age Gestational	1-10	0	0	-	-	0.02
	10-20	7/2	74	10.6	16.8	
	20-30	7/40	10	5.3	15	
	30-40	6/56	103	7.9	17	
Number of Gravidity	1	8/3	7	5.4	15.4	0.06
	2	8/30	56	8.1	16.2	
	3	22	40	5.2	15.7	
	<4	4/10	19	10.8	20	
Cause of hospitalized	diabetes	7/18	34	8.3	16.3	0.92
	hypertension	22	40	5.7	16.9	
	bleeding	4/21	39	7.1	16.1	
	Abdominal pain	22.5	41	7.8	14.9	
	hydrorrhea grvida'rum	5.5	10	5.7	15	
	Embryonic movement	8.2	15	5.9	17.7	
	NST disorder	1.6	3	7	21.3	
Mother's education	High school	18.7	34	10	16.9	0.83
	diploma	40.7	74	6.5	15.6	
	Bachelor	35.7	65	5.7	16.6	
	Master's degree and higher	4.9	9	7.7	15	
Mother nationality	Iranian	96.2	175	7.1	16.2	0.56
	foreigners	3.8	7	4.3	14.7	
Mother's residence	Urban	79.7	145	7.1	16.3	0.60
	rural	20.3	37	7	15.6	
Mother's job	Employed	18.1	33	7.8	17.2	0.34
	housewife	81.9	149	6.9	15.9	

* P <0.05 indicates a statistically significant difference.

Table 2. Mean of anxiety due to COVID-19 in pregnant women in Jiroft during coronavirus pandemic

Factor	Mean	Standard Deviation	P-Value*
Psychological Symptoms	8.9	4.3	0.001
Physical Symptoms	7.2	4	
total	8.05	4.1	

* P < 0.05 indicates a statistically significant difference.

disease in pregnant women and maternal age ($P = 0.04$). The highest gestational age in women was 30 to 40 weeks, then 10 to 20 weeks, and did not have less than 10 weeks.

The highest mean of COVID-19 anxiety was observed at 30 to 40 weeks. Also, there was no statistically significant relationship between anxiety due to coronary heart disease in pregnant women and gestational age ($P = 0.12$). Most of the referred pregnant women had two pregnancies and then three pregnancies. The highest mean of COVID-19 anxiety was observed in the number of pregnancies above four, then the number of pregnancies two. There was no statistically significant difference between the degree of anxiety caused by COVID-19 disease in pregnant women and the number of pregnancies ($P = 0.06$). The most common causes of hospitalization were abdominal pain, hypertension, bleeding, diabetes, fetal motility, dehydration, and NST, respectively. The highest mean of COVID-19 anxiety has observed due to NST hospitalization and the lowest mean anxiety due to hospitalization was abdominal pain. There was no statistically significant difference between anxiety due to COVID-19 disease in pregnant women and the cause of hospitalization ($P = 0.92$).

The highest average COVID-19 anxiety disorder was seen first in a postgraduate degree, then a bachelor's degree. There was no statistically significant difference between anxiety due to COVID-19 disease in pregnant women and maternal education ($P = 0.83$). The average anxiety due to COVID-19 disease in Iranian pregnant women was higher than non-Iranian pregnant women.

There was no statistically significant difference between the degree of anxiety caused by COVID-19 disease in pregnant women and their nationality ($P = 0.56$). The average anxiety due to COVID-19 disease was higher in urban than in rural. There was no

statistically significant relationship between the degree of anxiety caused by COVID-19 disease in pregnant women and their area of residence ($P = 0.60$). The mean COVID-19 anxiety was higher in employed pregnant women than pregnant housewives. There is no statistically significant difference between anxiety due to COVID-19 disease in pregnant women and maternal occupation ($P = 0.34$).

Table 2 shows the mean score of anxiety due to coronary heart disease in pregnant women. Among the variables of the Anxiety Inventory, the mean of psychological symptoms was higher than the mean of physical symptoms ($P < 0.001$). Both factors indicate moderate anxiety.

4. Discussion

The prevalence of COVID-19 disease and the resulting number of deaths are increasing worldwide. Fear and anxiety are caused by a potentially destructive illness and can lead to mental disorders and stress in people. The aim of this study was to evaluate the level of anxiety caused by COVID-19 disease in pregnant women admitted to Kashani Hospital in Jiroft. In the present study, the mean age of pregnant women was 27.2 years, Ghasemi et al. examined the status of pregnant women referring to health centers in Tehran in their results, the average age of pregnant women was 25.3 years with a minimum age of 14 and a maximum of 47 years, which is in line with the results of our study [17]. The results of this study showed that the highest mean of COVID-19 anxiety is in the age group over 40 years. Ali et al in a study examined the frequency of anxiety and depression and its related factors in pregnant women that indicate a statistically significant difference between the degree of anxiety caused by COVID-19 disease in pregnant women and the age of the mother. [18]. Other findings of the study showed the highest mean of COVID-19 disease at 30 to 40 weeks of gestation, but there was no statistically significant relationship between anxiety and week of pregnancy. Rezaian et al. in a study examined the relationship between stress, anxiety, and depression during pregnancy, the results of which are in line with the results of the present study. Their results showed that there is no relationship between stress, anxiety, and depression in pregnant women. [19].

The results of the present study showed that 30.8% of pregnant women have their second delivery. There is no statistically significant difference between the level of anxiety caused by COVID-19 disease in

pregnant women and the number of pregnancies. Sadeghi et al. in a study examined the anxiety of pregnant mothers in the third trimester of pregnancy. They concluded that 54.7% of mothers are in their second pregnancy and there was no relationship between anxiety caused by the factors of pregnant mothers and the number of deliveries [20]. Findings of the study show that the highest mean of COVID-19 anxiety was observed due to impaired NST hospitalization. There is no statistically significant difference between anxiety due to COVID-19 disease in pregnant women and the cause of hospitalization. The study of Shah Hosseini et al. In 2010 was conducted to investigate the relationship between anxiety during pregnancy and preterm delivery in Sari, this prospective study was designed to investigate the effect of gestational anxiety on preterm delivery. The anxiety of 282 pregnant women with normal singleton pregnancies in 20-28 weeks of pregnancy referred to health centers in Sari was measured by Spielberger situational anxiety trait questionnaire, then all samples were followed up for preterm delivery until the end of pregnancy. The results showed that the mean scores of overt and covert anxiety in the studied samples were 9.9 and 9.2, respectively. 7.8% of the samples had severe overt anxiety and 9.2% of the samples had severe latent anxiety. There was a statistically significant relationship between overt anxiety with preterm delivery and between latent anxiety and preterm delivery. According to the results of this study, it was suggested that the assessment and control of psychological factors be included in prenatal care as well as other biological and medical factors [21].

The results showed that there was no statistically significant difference between COVID-19 anxiety in pregnant women and maternal education. In Sadeghi et al.'s study, more than half of pregnant mothers had undergraduate and graduate education, and there is no relationship between education level and factor-induced anxiety in pregnant mothers, which is consistent with our study [20]. Some researchers reported a significant relationship between factor-induced anxiety and their level of education [22, 23] and believed that mothers with lower levels of education experienced higher anxiety during pregnancy [24]. Also in the study, Naserin et al., Rural mothers in Bangladesh were divided into two groups in terms of having and not having literacy, which showed a strong relationship between anxiety and literacy level [25]. The results showed that there was no statistically significant difference between anxiety due to COVID-19 disease in pregnant women and maternal occupation. In the study of Ali et al. [18] and Baba Nazari et al. [26], similar results were obtained. They concluded that the average anxiety score in

housewives was slightly higher than working women, but there was a correlation between anxieties in pregnant women. And their employment status does not exist. Finally, the results show that the average anxiety of psychological symptoms was higher than physical symptoms. Alipour et al. in a study examined the preliminary validation of COVID-19 disease anxiety in an Iranian sample, the results of which are consistent with our results. They showed that the average anxiety of psychological symptoms (12.86) is higher than physical symptoms (4.88) [16].

5. Conclusion

The results of this study show that among the demographic factors of pregnant women that have been studied in this study, there is only a significant relationship between maternal age and anxiety caused by COVID-19 disease. Given that limited information is currently available about pregnant women with Covid-19, it can nevertheless be used to make recommendations for the intensive care of pregnant women. Extensive information on pathogenicity and its complications in pregnant mothers, fetuses, and infants is not provided. Preventive measures should be taken at the community level for pregnant women and they should be informed about up-to-date information related to the disease.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of the Jiroft University of medical science (Code IR.JMU.REC.1399.058)

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Author's contributions

The authors equally contributed to preparing this article.

Conflict of interest

The authors declare no conflict of interest.

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