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Pregnant Women's Attitudes about the COVID-19 Vaccine

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Abstract

Objective: Detected in Wuhan, China in 2019, the coronavirus, which causes acute respiratory syndrome, is a global public health problem. Studies have also reported that COVID-19 infection poses a high risk for pregnant women. This study aimed to assess the attitudes of pregnant women toward the COVID-19 vaccine and the factors influencing these attitudes.

Methods: A descriptive and cross-sectional study was conducted with 280 pregnant women between April 7 and November 4, 2022. Data were collected using a Descriptive Information Form and the Attitudes Towards COVID-19 Vaccination Scale.

Results: The mean age of the participants was 27.04±5.53 years. The mean score on the positive attitude subscale of the Attitudes Towards COVID-19 Vaccination Scale was 3.46±0.91, while the mean score on the negative attitude subscale was 2.64±0.83. Pregnant women who were vaccinated or planned to be vaccinated had significantly more positive attitudes than those who were unvaccinated or did not plan to be vaccinated ($p<0.05$).

Conclusion: The study revealed that pregnant women who were vaccinated or intended to receive the vaccine exhibited more positive attitudes toward COVID-19 vaccination than those who refused the vaccine or were undecided. However, vaccine hesitancy persists, largely due to insufficient information regarding the efficacy and potential side effects of newly developed vaccines during pregnancy.

Keyword: Vaccine behavior, COVID-19, pregnancy, vaccination

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INTRODUCTION

The coronavirus, first identified in Wuhan, China, in 2019, causing acute respiratory syndrome, has remained a significant public health concern globally (1,2). Studies have shown that COVID-19 infection poses a higher risk for pregnant women compared to the general population (2). Physiological changes and immune suppression during pregnancy increase susceptibility to infections, placing both the mother and fetus at risk (3). Recognizing pregnant women as a vulnerable population has led to their prioritization for COVID-19 vaccination (4).

Research indicates that pregnant women who receive the COVID-19 vaccine are at a reduced risk of preterm birth, neonatal intensive care unit admissions, stillbirth, and maternal mortality compared to unvaccinated pregnant women (5). However, the rapid development of COVID-19 vaccines, their inclusion of viral agents or components, and insufficient research on their effects in specific populations have raised concerns regarding their safety during pregnancy. Such uncertainties have contributed to vaccine hesitancy among certain groups, including pregnant women (3).

Although vaccination has been shown to mitigate perinatal complications associated with COVID-19, hesitancy during the perinatal period has resulted in low vaccination rates. Therefore, understanding pregnant women's vaccine intentions and identifying their perceptions and attitudes toward vaccination is critical (4,6).

Currently, there is limited research evaluating pregnant women's attitudes toward the COVID-19 vaccine. This study aims to explore the attitudes of pregnant women regarding COVID-19 vaccination and the factors influencing these attitudes.

METHODS

This study was conducted at Tekirdağ Çorlu State Hospital between April 7 and November 31, 2022. The total number of pregnant women who presented to the Gynecology Polyclinic at the hospital between January 1 and December 31, 2021, was 1,940. The sample size was calculated as 238 pregnant women using the known population sampling formula via Raosoft sample size calculation software (α=0.05, 1-β=0.90). To account for potential attrition, a total of 280 pregnant women were included in the study (http://www.raosoft.com/samplesize.html).

Data were collected using a structured questionnaire administered by the researcher through face-to-face interviews. Inclusion criteria for participation in the study were voluntary agreement to participate, age ≥18 years, being in the first, second, or third trimester of pregnancy, and having either a singleton or multiple pregnancy.

Measures and instruments

Descriptive Information Form: This form was developed by researchers based on a comprehensive review of the literature (6, 7, 8).

Attitudes Towards COVID-19 Vaccine Scale: This scale was originally developed by Genis et al. in 2020. It consists of nine items divided into two sub-dimensions. Items within the negative attitude subscale are reverse-scored. Cronbach's alpha coefficient for the overall scale is reported as 0.80 (6). In the current study, Cronbach's alpha coefficients were calculated as 0.92 for the positive sub-dimension and 0.85 for the negative sub-dimension, indicating high internal consistency.

Ethical consideration

Ethical approval was obtained from the Kırklareli University Clinical Research Ethics Committee (Reference Number: E-69456409-199-4253069, Date: 03.03.2022). Institutional permission was granted by the Tekirdağ Provincial Health Directorate on 07.04.2022. All procedures adhered to the ethical standards set forth by institutional and/or national research committees and were conducted in accordance with the principles of the 1964 Helsinki Declaration and its later amendments or comparable ethical guidelines.

Statistical analysis

The Kolmogorov-Smirnov test was applied to assess the normality of the data. Descriptive statistics and the Chi-square test were used for the comparison of categorical variables. The Mann-Whitney U test was employed to compare non-normally distributed data between two groups, while the Kruskal-Wallis test was used for comparisons among more than two groups. A p-value of <0.05 was considered statistically significant.

RESULTS

The mean age of the pregnant women included in the study was 27.04±5.53 years. Among the participants, 40.4% were primary school graduates, 85.4% had not contracted COVID-19 during pregnancy, 65.7% had received at least one dose of a COVID-19 vaccine, and 42.5% had obtained information about the vaccine from healthcare personnel (Table 1).

The analysis of the mean scores of pregnant women on the subscales of the Attitudes Towards COVID-19 Vaccine Scale (Table 2) revealed a mean score of 3.46±0.91 on the positive attitude subscale and 2.64±0.83 on the negative attitude subscale. A statistically significant difference was observed between the mean scores of pregnant women who had received the COVID-19 vaccine and those who had not, on both the positive and negative attitude subscales of the Attitudes Towards COVID-19 Vaccine Scale (Table 2).

In the study, a statistically significant difference was determined between the positive and negative attitude subscale scores of the Attitudes towards COVID-19 Vaccine Scale

obtained by pregnant women who responded using one of the "I have been vaccinated," "I will be vaccinated," "I am undecided," or "I do not think I will be vaccinated" statements (p=.000, p=.000). As a result of the further analysis conducted to determine which groups the difference originated from, it was determined that there was no statistically significant difference between the positive attitude subscale scores of the Attitudes towards the COVID-19 Vaccine Scale obtained by pregnant women who responded they did not want to be vaccinated and they were undecided about being vaccinated (p = .088), while there was a statistically significant difference between the positive attitude subscale scores of the Attitudes towards the COVID-19 Vaccine Scale obtained by pregnant women who responded they did not think of being vaccinated and they would be vaccinated, they did not think of being vaccinated and they had been vaccinated, they were undecided and they would be vaccinated, and they were undecided and they were vaccinated (p=.000, p=.000, p=.037, and p=.000). While it was determined that there was no statistically significant difference between the mean negative attitude subscale scores of the Attitudes towards COVID-19 Vaccine Scale In the study, a statistically significant difference was found between the positive and negative attitude subscale scores of the Attitudes Towards COVID-19 Vaccine Scale among pregnant women who responded with one of the following statements: "I have been vaccinated," "I will be vaccinated," "I am undecided," or "I do not think I will be vaccinated" (p=.000, p=.000). Further analysis to identify the sources of the differences revealed that there was no statistically significant difference between the positive attitude subscale scores of pregnant women who stated they did not want to be vaccinated and those who were undecided about vaccination (p = .088). However, a statistically significant difference was found between the positive attitude subscale scores of pregnant women who responded that they did not think they would be vaccinated and those who responded that they would be vaccinated, that they had been vaccinated, that they were undecided, or that they were vaccinated (p = .000, p = .000, p = .037, and p = .000, respectively).

Moreover, while no statistically significant difference was found between the mean negative attitude subscale scores of the Attitudes Towards COVID-19 Vaccine Scale among pregnant women who responded they would be vaccinated and those who were undecided (p = .585), a statistically significant difference was observed between the mean negative attitude subscale scores of pregnant women who responded that they had been vaccinated and those who were undecided, had been vaccinated and did not think they would get vaccinated, would be vaccinated and did not

think they would get vaccinated, and had been vaccinated and did not think they would get vaccinated ($p = .014$, $p = .000$, $p = .000$, and $p = .026$, respectively) (Table 3).

Table 1. Distribution of Sociodemographic and Descriptive Characteristics of Pregnant Women

Variables	**Mean±ss**	**Min-Max**
Age	27.04±5.53	(18-49)
Pregnancy weeks	29.09±10.70	(5-42)
	n	%
Education statues		
Illiterate	14	5.0
Primary education	113	40.4
High school	76	27.1
University	77	27.5
Economic statues		
Low	104	37.1
Middle	138	49.3
High	38	13.6
Use of cigaret		
Yes	42	15.0
No	238	85.0
Total	**280**	**100**

Table 2. Comparison of Characteristics of Pregnant Women Regarding Covid 19 Infection

Variables	**n (280)**	**%**
Has anyone in your family had covid19 infection?		
Yes	179	63.9
No	101	36.1
Did you have a covid19 infection during your pregnancy?		
Yes	41	14.6
1. Trimester (1 – 13 weeks)	10	3.6
2. Trimester (14 – 26 weeks)	28	9.9
3. Trimester (27 – 41 weeks)	3	1.1
No	239	85.4
Have you been vaccinated against Covid 19?		
Yes	184	65.7
Before pregnancy	152	54.3
During pregnancy	32	11.4
Not vaccinated	96	34.3
Are you planning to be vaccinated against Covid 19?		
Vaccination	184	65.7
I will be vaccinated	16	5.7
Undecided	23	8.2
I don't plan to get vaccinated	57	20.4
Do you think the Covid-19 vaccine is safe and protective for pregnant women?		
I think	93	33.2
Undecided	89	31.8
I don't think	98	35.0
Where/whom did you get information about the Covid-19 Vaccine?		
Institutions such as Ministry of Health / NGOs	65	23.2
Health personnel	119	42.5
From my friend	38	13.6
Television/radio	121	43.2
Book/magazine/newspaper	9	3.2
Conference/seminar	8	2.9
Social media	74	26.4
Total	**280**	**100**

Table 3. Comparison of Pregnant Women's Attitudes Towards COVID-19 Vaccination Scale Subscale Mean Scores

Variables	Positive attitude score (Min-Max:1-5)	Negative attitude score (Min-Max:1-5)
	3.46±0.91	2.64±0.83
Have you been vaccinated against COVID 19?		
Yes	3.81±.72	2.34±.71
No	2.82±.88	3.20±.74
*p	.000	.000
Are you considering getting vaccinated against COVID 19?		
Vaccination	3.81±.72	2.34±.71
I will be vaccinated	3.83±.66	2.51±.61
Undecided	3.19±.43	2.85±.53
I don't plan to get vaccinated	2.37±.74	3.53±66
**p	.000	.000

*Mann whitney u test, ** Kruskall Wallis test

DISCUSSION

In the study, it was determined that 54.3% of the pregnant women had received the COVID-19 vaccine prior to pregnancy, 11.4% during pregnancy, and 5.7% were planning to get vaccinated. Approximately 1 in 4 pregnant women were either undecided or reported that they would not be vaccinated. A review of the international literature revealed that 8.2% of pregnant women in a study conducted in Italy, 71.2% of 221,190 pregnant participants in a study conducted in Canada (as of December 2021), and 84.3% of 140 pregnant women in a study conducted in Saudi Arabia had been vaccinated either during or before pregnancy (4, 9, 10). Additionally, a 2021 study conducted in the United States assessed women aged 18-49 who had received at least one dose of the vaccine, revealing that pregnant women had the lowest vaccination rate (45.1%) (11). Local literature reported that 76.3% of 375 pregnant women had been vaccinated (12).

It was reported that 57.5% of 193 pregnant women in a study conducted in Canada and 43% of 387 pregnant women in a study conducted in California accepted the COVID-19 vaccine (13, 14). Similarly, a study by Sutton et al. (2021), involving 1,012 pregnant, non-pregnant, and breastfeeding women, found that pregnant women who agreed to be vaccinated or intended to be vaccinated had the lowest rate of acceptance (15). In a study involving 538 pregnant women who had not yet been vaccinated, it was reported that 82.7% agreed to receive the vaccine. Additionally, pregnant women who had been diagnosed with COVID-19 during pregnancy and were concerned about the fetus found vaccination during pregnancy to be more risky (4). A meta-analysis of 16,926 pregnant women indicated that 47% of them agreed to be vaccinated (16). A local study reported that only 2% of pregnant women had been vaccinated (17). In light of our study and the existing literature, it can be concluded that the vaccination rate is influenced by the possibility that the unborn or future babies may be affected. This is directly related to the perceived safety of receiving the vaccine during pregnancy, with many women

either already vaccinated or planning to be vaccinated based on these concerns.

In this study, it was determined that one-third of pregnant women considered receiving the COVID-19 vaccine during pregnancy to be safe and protective, one-third were undecided, and one-third did not find it safe or protective. A review of foreign literature revealed that 40% of pregnant women who had not been vaccinated expressed concerns about the vaccine's safety in a study conducted in Sub-Saharan Africa (18). Additionally, another study found that nearly all pregnant women who refused vaccination did so on the grounds that they did not find the vaccine safe (4, 13). In the local literature, 9.2% of pregnant women reported finding the vaccine safe (17). Both this study and existing literature indicate that pregnant women generally exhibited more positive attitudes toward the COVID-19 vaccine. Those who had been vaccinated or were considering vaccination showed significantly more favorable attitudes (17, 19).

CONCLUSION

It was concluded that hesitations regarding vaccines stemmed from their recent development, coupled with insufficient information about their effectiveness and potential side effects during pregnancy. This concern was not unique to pregnant women in our country but was also observed in special situations such as breastfeeding, pregnancy planning, and having chronic conditions.

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Ethics Committee Approval: Ethics approval for this study was obtained from the Kırıkkale University Institute of Health Sciences Ethics Committee (ethics committee date: 03.03.2022, ethics committee number: 69456409-199-4253069).

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