Determination of the Vaccination Hesitations and Vaccination Behaviors of the Pregnant Women

Gebelerin Aşı Tereddütlerinin ve Aşılanma Davranışlarının Belirlenmesi

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ABSTRACT

Objective: Vaccination during pregnancy is important for both maternal and fetal/newborn health. The aim of this study was to examine the vaccination behaviors and levels of vaccine hesitancy among pregnant women.
Methods: This descriptive study involved 518 pregnant women. Data were collected between March and May 2022, utilizing demographic information form and the Vaccine Hesitancy Scale (VHS).
Results: The mean VHS score was found to be 31.92±4.68. The rate of vaccine hesitancy among pregnant women was determined to be 31.5%. The mean score for lack of confidence was 25.63±4.10, while the mean score for perceived risks was 6.29±1.50. Pregnant women who received information about vaccination during pregnancy from healthcare professionals had higher mean scores on the VHS, as well as on the lack of confidence and perceived risks sub-dimensions, compared to those who did not receive such information (p<.05). Of the pregnant women, 86.3% had received/were planning to receive tetanus vaccine, at least 1 dose of COVID-19 vaccine had been received by 61.8% before pregnancy and by 11.8% during pregnancy, and 37.5% had received/were planning to receive hepatitis B vaccine.The vaccine hesitancy of pregnant women who had received the COVID-19 vaccine before pregnancy, as well as those who had received or were planning to receive the tetanus and hepatitis B vaccines during pregnancy, was lower compared to those who had not received these vaccines(p<.05).
Conclusions: As the vaccine hesitancy of pregnant women increased, their vaccination decreased. Healthcare providers catering to pregnant individuals should assess and address hesitancy, ensuring timely vaccinations.

Keywords: Vaccines, vaccination, vaccine hesitancy, pregnancy, women, pregnant women

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ÖZET

Amaç: Gebelikte aşılama hem anne hem de fetal/yenidoğan sağlığı açısından önemlidir. Bu çalışmanın amacı gebelerin aşılama davranışlarını ve aşı tereddüt düzeylerini belirlemektir.
Yöntem: Tanımlayıcı olarak yürütülen bu çalışmaya 518 gebe dahil edildi. Araştırmanın verileri, Mart-Mayıs 2022 tarihleri arasında Tanıtıcı bilgi formu ve Aşı Tereddüdü Ölçeği (ATÖ) kullanılarak toplandı.
Bulgular: Gebelerin ATÖ puan ortalaması 31.92±4.68, aşı tereddüdü oranı %31.5 olarak belirlendi. ATÖ alt boyutlarından Güven eksikliği puan ortalaması 25.63±4.10 iken, Riskler puan ortalaması 6.29±1.50 idi. Sağlık çalışanlarından gebelikte aşılanma konusunda bilgi alan gebelerin ATÖ toplam puan, Güven eksikliği ve Riskler alt boyut puan ortalamaları, almayanlara göre daha yüksekti (p<.05). Gebelerin %86.3'ü tetanoz aşısı yaptırmış/yaptırmayı planlıyor, %61.8'i gebelikten önce, %11.8'i gebelik sırasında en az 1 doz COVID-19 aşısı yaptırmış ve %37.5'i Hepatit B aşısı yaptırmış/yaptırmayı planlıyordu. Gebelikten önce COVID-19 aşısı yaptıran gebeler ile gebelikte tetanoz ve hepatit B aşısı yaptıran veya yaptırmayı planlayan gebelerin aşı tereddütleri, bu aşıları yaptırmayanlara göre daha düşüktü (p<.05).
Sonuç: Gebelerin aşı tereddütleri arttıkça aşılanmaları azalmaktadır. Gebelere hizmet veren sağlık profesyonelleri; gebelerin aşı tereddütlerini değerlendirmeli, uygun girişimleri yapmalı ve zamanında aşılanmayı sağlamalıdır.

Anahtar Sözcükler: Aşılar, aşı, aşı kararsızlığı, gebelik, kadın, gebe kadınlar

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INTRODUCTION

Pregnancy is a dynamic process characterized by anatomical and physiological changes within the woman's body. These changes include immune system suppression and increased functional activity in the respiratory and cardiovascular systems. As a result, pregnant women are more susceptible to infections during this period (1). Maintaining a robust immune response against infections is of utmost importance for the health of both the pregnant woman and the developing fetus/newborn (1, 2). Vaccination represents a highly effective and safe preventive measure for protecting pregnant women against infections. By receiving vaccinations during pregnancy, women can significantly reduce the risks associated with mortality and morbidity related to infectious diseases (3, 4).

In the planning of healthcare services aimed at increasing vaccination rates during pregnancy, it is crucial to understand the factors influencing vaccination behavior (5). Among these factors, the vaccine hesitancy of pregnant women plays a significant role (6, 7). Vaccine hesitancy is defined as “delay in acceptance or refusal of vaccines despite availability of vaccine services” (8). Recent years have witnessed an increase in vaccine hesitancy worldwide, leading to decreased confidence in vaccines and vaccination (9, 10, 11, 12). While studies on vaccine hesitancy primarily focus on parents (9, 13), research involving pregnant women has primarily centered around Covid-19 vaccines, with many of these studies lacking a valid and reliable measurement tool to objectively assess vaccine hesitancy (10, 14, 15, 16). Furthermore, no study examining the vaccine hesitancy and vaccination behaviors of pregnant women has been identified. Therefore, this study was conducted to assess the vaccination behaviors and vaccine hesitancy of pregnant women. The findings will contribute to the reduction of existing vaccine hesitancy by providing insights into the education and counseling services that should be provided to pregnant women.

MATERIALS and METHODS

This descriptive study was conducted between March and May 2022. The target population consisted of pregnant women who attended the obstetrics outpatient clinic of a hospital. The sample included volunteers 18 years of age or older, 12 weeks pregnant or more, and literate. The sample size was determined using the formula for sampling an unknown population (n= t^2pq/d^2). Based on the study conducted by Azizi et al., which reported a vaccine hesitancy rate of 25.5% among pregnant women (9), the minimum required sample size was calculated as 506 pregnant women, assuming a confidence level of 98% and a margin of error of .05. Considering potential data loss, a total of 550 pregnant women were invited to participate in the study. However, 32 of the invited pregnant women declined to take part. Therefore, the final study sample consisted of 518 pregnant women.

Data Collection

The data for this study were collected using a personal information form and the Vaccine Hesitancy Scale.

The personal information form consisted of 28 questions related to participants' sociodemographic characteristics, obstetric history, and vaccination-related information (3, 5, 6, 7, 8).

The Vaccine Hesitancy Scale (VHS) included 9 items and two sub-dimensions: lack of confidence and risks. Participants' responses to the scale were assessed on a 5-point Likert-type scale. The total score that can be obtained from the scale is between 9-45 points. Higher scores on the scale indicated a lower level of vaccine hesitancy (17). In the Turkish validation and reliability study of the scale conducted by Yılmaz et al., the Cronbach's alpha coefficients for the lack of confidence and risks sub-dimensions, as well as the total scale, were reported as 0.89, 0.63, and 0.87, respectively (18). In the current study, the Cronbach's Alpha values for the lack of confidence and risks sub-dimensions, as well as the total scale, were found to be 0.92, 0.57, and 0.86, respectively.

Data Analysis

The study data were analyzed using the Statistical Package for the Social Sciences (SPSS) 20.0 software package. Descriptive statistics were utilized to test the normality of the dataset. Skewness and kurtosis values were examined to assess the normality of the data, with values ranging between ±2 considered indicative of normal distribution (19). Given that the skewness and kurtosis values fell within this range, parametric tests were employed to evaluate the factors influencing the scale scores. Alongside descriptive statistics, independent samples t-tests were conducted to compare two independent groups, while one-way ANOVA analysis was employed for comparisons involving more than two independent groups. A significance level of p≤.05 was considered statistically significant.

Ethical Considerations

Ethical approval for conducting the study was obtained from the ethics committee of Ankara University (Date: 28.02.2022, Decision no: 04/43). Informed consent was obtained from all participants included in the sample. The research was conducted in accordance with the principles outlined in the Declaration of Helsinki.

RESULTS

The characteristics of the participants are presented in Table 1. Although the mean age of the participants (27.97±5.17) is not included in the table, it was calculated for the study. Table 2 provides information about the obstetric history of the participants. It was found that 77.0% of the participants had previously received information about vaccines from a healthcare professional.

The study revealed that the rate of vaccine hesitancy among pregnant women was determined to be 31.5%. The mean score for pregnant women on the total Vaccine Hesitancy Scale (VHS) was calculated as 31.92±4.68. Furthermore, the mean score on the lack of confidence sub-dimension was found to be 25.63±4.10, while the mean score on the risks sub-dimension was determined to be 6.29±1.50.

The mean scores on the total VHS and the lack of confidence sub-dimension were found to be influenced by participants' age. Specifically, participants between the ages of 18 and 35 had lower mean scores on the total VHS and the lack of confidence sub-dimension compared to those between the ages of 36 and 42 (p<.05). Additionally, participants with a low monthly income exhibited lower VHS scores compared to those with medium and high incomes. Moreover, participants with a low monthly income had lower scores on the lack of confidence sub-dimension compared to those with a high monthly income (p<.05). These findings are summarized in Table 1.

Table 1. Comparison of the pregnant women the VHS scale and its sub-dimensions scores according to their sociodemographic characteristics (n = 518).

		Lack of confidence	Risks	VHS
Variables	n (%)	Mean ± SD	Mean ± SD	Mean ± SD
Age				
18-35	467 (90.2)	25.48±4.16	6.31±1.53	31.78±4.78
36-42	51 (9.8)	26.98±3.29	6.14±1.200	33.12±3.46
Analysis†		t=-3.011 p=.004*	t=.764 p=.445	t=-2.503 p=.015*
Education status				
Elementary school (a)	85 (16.4)	26.08±4.658	6.08±1.552	32.16±5.34
Middle school (b)	114 (22.0)	25.39±4.11	6.30±1.59	31.68±4.89
High school (c)	183 (35.3)	25.20±3.85	6.28±1.38	31.48±4.41
University and above (d)	136 (26.3)	26.12±4.02	6.42±1.55	32.54±4.38
Analysis #		F=1.809 p=.145	F=.881 p=.451	F=1.502 p=.213
Family type				
Core	382 (73.7)	25.82±3.84	6.34±1.45	32.16±4.33
Extended	136 (26.3)	25.07±4.74	6.15±1.64	31.22±5.50
Analysis†		t=1.680 p=.094	t=1.225 p=.221	t=1.807 p=.072
Status of working in a paid job				
Yes	155 (29.9)	25.39 ±4.09	6.40 ±1.53	31.79 ±4.54
No	363 (70.1)	25.73 ±4.11	6.24 ±1.49	31.97 ±4.75
Analysis†		t=-.864 p=.388	t=1.095 p=.274	t=-.406 p=.685
Monthly income				
Low (a)	122 (23.5)	24.80±4.22	6.08±1.59	30.89±4.84
Middle(b)	350 (67.6)	25.75±4.05	6.32±1.50	32.07±4.64
High (c)	46 (8.9)	26.85±3.80	6.63±1.22	33.48±4.05
Analysis#		F=4.725 p=.009* (a-c)	F=2.430 p=.089	F=5.812 p=.003* (a-b; a-c)
Social security				
Yes	431 (83.2)	25.48±3.82	6.33±1.42	31.81±4.34
No	87 (16.8)	26.37±5.23	6.08±1.85	32.45±6.12
Analysis†		t=-1.511 p=.134	t=1.198 p=.234	t=-.931 p=.354

Abbreviations: VHS, Vaccine Hesitancy Scale; †, Independent t-test; #, One-way ANOVA Test; *p < 0.05; **p < 0.001

The mean scores on the total VHS and its lack of confidence and risks sub-dimensions were found to be higher among participants who received information about vaccination during pregnancy from healthcare professionals compared to those who did not (p<.05). This finding is presented in Table 2.

Table 2. Comparison of the pregnant women the VHS scale and its sub-dimensions scores according to their obstetric history (n = 518).

		Lack of confidence	Risks	VHS
Variables	n (%)	Mean ± SD	Mean ± SD	Mean ± SD
Number of pregnancies				
1	206 (39.8)	25.56±4.04	6.28±1.46	31.84±4.55
2	172 (33.2)	25.44±4.15	6.45±1.48	31.90±4.70
≥3	140 (27.0)	25.94±4.14	6.10±1.58	32.04±4.87
Analysis#		F=.614 p=.541	F= 2.159 p=.116	F=.077 p=.926
Number of living children				
No	234 (45.2)	25.32±3.98	6.28±1.45	31.61±4.49
1	179 (34.5)	25.63±4.33	6.37±1.60	32.01±4.91
2	71 (13.7)	26.37±3.67	6.10±1.49	32.46±4.46
≥3	34 (6.6)	26.12±4.54	6.29±1.36	32.41±5.18
Analysis#		F=1.357 p=.255	F= .575 p=.632	F=.814 p=.487
Status of planning the pregnancy				
Planned	301 (58.1)	25.82±4.06	6.25±1.54	32.07±4.71
Unplanned	217 (41.9)	25.35±4.16	6.35±1.45	31.70±4.65
Analysis†		t=1.276 p=.203	t=-.722 p=.471	t=.886 p=.376
Mode of conception				
Natural	475 (91.7)	25.65±4.16	6.28±1.51	31.93±4.74
Treatment	43 (8.3)	25.40±3.42	6.37±1.36	31.77±4.01
Analysis†		t=.384 p=.701	t=-.377 p=.707	t=.216 p=.829
Having regular pregnancy follow-ups				
Yes	466 (90.0)	25.73±4.05	6.29±1.50	32.03±4.66
No	52 (10.0)	24.65±4.45	6.27±1.47	30.92±4.79
Analysis†		t=1.805 p=.072	t=.103 p=.917	t=1.614 p=.107
Having pregnancy follow-ups in a primary health service				
Yes	471 (90.9)	25.76±3.92	6.27±1.50	32.02±4.54
No	47 (9.1)	24.32±5.48	6.51±1.49	30.83±5.88
Analysis†		t=1.754 p=.085	t=-1.060 p=.290	t=1.351 p=.183
The most frequently used health institution in pregnancy follow-ups				
Primary health services	138 (26.6)	25.50±4.22	6.22±1.51	31.72±4.95
Secondary and tertiary health services	301 (58.1)	25.53±3.82	6.31±1.44	31.84±4.44
Private hospitals	79 (15.3)	26.19±4.88	6.34±1.72	32.53±5.09
Analysis#		F=.885 p=.413	F= .194 p=.824	F=.837 p=.434
Status of getting information about vaccination during pregnancy				
Yes	399 (77.0)	25.88±3.87	6.38±1.49	32.26±4.41
No	119 (23.0)	24.78±4.72	5.98±1.49	30.76±5.36
Analysis†		t=2.311 p=.000**	t=2.553 p=.007*	t=2.772 p=.000**

Abbreviations: VHS, Vaccine Hesitancy Scale; †, Independent t-test; #, One-way ANOVA Test; *p < 0.05; **p < 0.001

The vaccination status of the participants is presented in Table 3. As indicated in the table, 40.0% of the participants had received 2 doses of the tetanus vaccine. Prior to pregnancy, 38.2% of the participants had not received the COVID-19 vaccine, while 88.2% received it during pregnancy. Regarding the hepatitis B vaccine, 62.5% of the participants had not been vaccinated before pregnancy, and they also did not receive it during pregnancy. Only 2.5% of the participants received the flu vaccine.

Additionally, it is worth noting that 4.05% of the participants were recommended vaccines other than routine ones, including pneumococcal vaccine (0.8%), Haemophilus influenza vaccine (0.4%), inactivated polio vaccine (0.2%), typhoid vaccine (0.2%), meningococcal vaccine (0.4%), hepatitis A vaccine (1.0%), yellow fever vaccine (0.2%), and rabies vaccine (1.0%). It was found that 66.66% of the participants received the recommended vaccines, although this information is not provided in the table.

Table 3. Vaccination status of pregnant women (n = 518).

Variables	n	%
Tetanus vaccine		
Completed tetanus shots before pregnancy	47	9.1
Did not get them	71	13.7
1 dose	171	33.0
2 doses	207	40.0
3 doses	15	2.9
Will get them when the time comes or when informed	7	1.3
Influenza vaccine		
Yes	13	2.5
No	505	97.5
COVID-19 vaccine before pregnancy		
None	198	38.2
1 dose	118	22.8
2 doses	182	35.1
3 doses	19	3.7
4 doses	1	.2
COVID-19 vaccine during pregnancy		
None	457	88.2
1 dose	46	8.9
2 doses	14	2.7
3 doses	1	.2
Hepatitis B vaccine		
Completed hepatitis B vaccines before pregnancy	149	28.8
No vaccines before pregnancy and none during pregnancy	324	62.5
No vaccines before pregnancy but will get them when the time comes or when informed	3	.6
1 dose	38	7.3
2 doses	4	.8
Total	518	100

The mean scores on the total VHS and its lack of confidence and risks sub-dimensions were found to be higher among participants who had received at least one dose of the tetanus vaccine or were planning to receive it, compared to those who had not received it ($p<.05$).

Similarly, participants who had received at least one dose of the COVID-19 vaccine before pregnancy had higher mean scores on the total VHS scale and its lack of confidence and risks sub-dimensions compared to those who had not received it ($p<.05$). Furthermore, the mean scores on the total VHS scale and the risks sub-dimension were higher among participants who had received the hepatitis B vaccine or were planning to receive it, compared to those who had never received it ($p\leq.05$). These findings are summarized in Table 4.

Table 4. Comparison of the pregnant women the VHS scale and its sub-dimensions scores according to their vaccination status (n = 518).

		Lack of confidence	Risks	VHS
Variables	n (%)	Mean ± SD	Mean ± SD	Mean ± SD
Tetanus				
None	71 (13.7)	23.14±5.30	5.85±1.70	28.99±5.95
Those who had got it/were planning to get it[a]	447 (86.3)	26.02±3.74	6.36±1.46	32.38±4.27
Analysis†		t=4.409 p=.022*	t=2.705 p=.011*	t=4.621 p=.006*
Getting COVID-19 vaccine before pregnancy				
None	198 (38.2)	24.28±4.42	6.11±1.56	30.39±5.13
At least one dose	320 (61.8)	26.46±3.66	6.40±1.45	32.86±4.12
Analysis†		t=-5.800 p=.000**	t=-2.138 p=.033*	t=-5.714 p=.000**
Getting COVID-19 vaccine during pregnancy				
None	457 (88.2)	25.52±4.16	6.26±1.50	31.78±4.73
At least one dose	61 (11.8)	26.39±3.57	6.51±1.51	32.90±4.18
Analysis†		t=-1.754 p=.083	t=-1.213 p=.226	t=-1.756 p=.080
Hepatitis B vaccine				
None	324 (62.5)	25.44±4.06	6.16±1.47	31.60±4.61
Those who had got it/were planning to get it[b]	194 (37.5)	25.93±4.16	6.51±1.52	32.43±4.77
Analysis†		t=1.299 p=.195	t=2.545 p=.011*	t=1.954 p=.050*

a Pregnant woman who had got at least one dose during pregnancy and those who will get it when the time comes.

b Pregnant women who had received all their vaccines before pregnancy; those who had received at least one dose; those who had not received any vaccines before pregnancy, but will get them when the time comes /when informed

Abbreviations: VHS, Vaccine Hesitancy Scale; †, Independent t-test; #, One-way ANOVA Test; *p < 0.05; **p < 0.001

DISCUSSION

Vaccine hesitancy is a global concern that can impede efforts to control or eradicate preventable yet potentially debilitating diseases. To the utmost extent of our comprehension, this study stands as the primary exploration delving into the vaccination behaviors and vaccine hesitancy aspects among pregnant women. The mean score on the total Vaccine Hesitancy Scale (VHS) was found to be 31.92±4.68 among pregnant women. There are limited study evaluating the vaccine hesitancy of pregnant women using a reliable and objective measurement tool in the literatüre. Additionally, approximately one in three pregnant women exhibited vaccine hesitancy. Previous studies focusing solely on COVID-19 vaccine hesitancy among pregnant women reported rates ranging from 25.0% to 50% (10, 16, 20, 21). Pregnant women often experience concerns regarding vaccine safety and efficacy, which can undermine their trust in vaccination (12). The vaccine hesitancy of pregnant women is a significant issue as it may act as a barrier to vaccination behavior.

The study findings revealed that pregnant women aged ≤35 exhibited greater levels of vaccine hesitancy and lack of confidence compared to those aged >35 years. A study conducted by Ogbuabor and Chime corroborated these findings, showing that mothers below the age of 30 were three times more likely to experience vaccine hesitancy compared to those aged 30 years and above. This disparity in vaccine hesitancy rates among different age groups could stem from the perception among young mothers that vaccination is ineffective, unreliable, or unproductive. Alternatively, it is plausible that young mothers lack confidence in the quality of vaccination services provided to them (22).

The findings of the study revealed a significant association between decreasing income levels and increasing levels of vaccine hesitancy and lack of confidence. This observation is consistent with the results reported by Gencer et al., who also found a high prevalence of vaccine hesitancy among pregnant women reporting low income levels (10). Considering that individuals with lower income levels may face higher health risks, vaccination plays a crucial role in ensuring their well-being. Therefore, it is recommended to specifically assess the vaccine hesitancy and vaccination status of pregnant women with low-income backgrounds, as targeting interventions and tailored approaches may be beneficial in addressing their concerns and promoting vaccination acceptance.

There were no significant differences observed in terms of education level, family type, working status, and social security with regard to participants' vaccine hesitancy, lack of confidence, and perception of risks. Consistent with our findings, Ogbuabor & Chime also reported that the education level of expectant mothers was not a predictor of vaccine hesitancy (22). A systematic review conducted by Rosso et al. found that socio-demographic factors did not have a significant impact on vaccine hesitancy or refusal in Western countries (12). However, in our study, participants who received information about vaccination during pregnancy from healthcare professionals exhibited lower levels of vaccine hesitancy, lack of confidence, and risk perception compared to those who did not receive such information. These findings suggest that the source of information about vaccines plays a more influential role in vaccine hesitancy than certain sociodemographic and obstetric characteristics. This conclusion is supported by previous studies (3, 7, 23). The initial step for pregnant women to accept immunization is to have access to accurate and reliable immunization information. Healthcare workers, particularly nurses and midwives, play a significant role as intermediaries between pregnant women and sources of information. By possessing a better understanding of which vaccines can be administered during pregnancy and providing education on the topic, healthcare professionals can effectively prevent infectious diseases during pregnancy and postpartum periods (24).

Approximately 9 out of 10 pregnant women who participated in the study had received or planned to receive tetanus vaccines. Similar findings were reported in studies conducted both in our country (3, 25) and different countries (26, 27, 28), indicating a high prevalence of tetanus vaccination during pregnancy. Since tetanus vaccination is part of the routine immunization schedule for pregnant women, it is expected to have high vaccination rates. However, it is crucial to further increase vaccination coverage and ensure full immunization to promote maternal and infant health. Despite the high rates of tetanus vaccination, approximately 6 out of 10 pregnant women who participated in the study had never received the hepatitis B vaccine. The lower rate of hepatitis B vaccination may be attributed to the vaccination policies of the country where the study was conducted. While tetanus vaccines have been included in national vaccination programs since the 1980s (6), hepatitis B vaccines were introduced later in 1998 (29). We believe that this time difference still influences the vaccination patterns years later. Therefore, it is essential to raise awareness about hepatitis B vaccination before and during pregnancy to ensure optimal coverage.

Approximately 4 out of 10 pregnant women participating in the study had not received a COVID-19 vaccine before pregnancy, and 9 out of 10 had not received it during pregnancy. Similar findings were reported by Polat et al., who determined that half of the pregnant women had declined vaccination (30). In a cohort study, it was found that less than one-third of the women expressed a desire to receive a COVID-19 vaccine during their pregnancy (31). Factors strongly associated with acceptance of the COVID-19 vaccine during pregnancy include having confidence in the importance and efficacy of the vaccine, open communication regarding the safety of COVID-19 vaccines for pregnant women, and a positive attitude towards other vaccines (32). We believe that examining the perspective of pregnant women, who are considered a vulnerable group, and exploring the reasons for vaccine refusal and hesitancy will be a crucial step in combating COVID-19 infection.

Nearly all of the pregnant women participating in our study had not received an influenza vaccine during their pregnancy. Studies in the literature consistently demonstrate low influenza vaccination rates during pregnancy, which is consistent with our findings (3, 7, 33, 34). In both seasonal and pandemic influenza, pregnant and postpartum women are at a higher risk of experiencing severe complications (35). The underlying reason for the low vaccination rate observed in our study may be attributed to the lack of routine administration of influenza vaccines and their exclusion from the list of free vaccines. It is crucial to identify the factors contributing to these low vaccination rates and develop effective strategies to increase influenza vaccination coverage during pregnancy. Only a small number of pregnant women participating in the study were advised to receive vaccines other than routine vaccinations, and more than half of those who received such recommendations actually received the recommended vaccines. Ensuring vaccination in special cases through the provision of sufficient information and counseling on recommended vaccines is crucial for the health of both the mother and the fetus/newborn.

It was observed that pregnant women who had received a COVID-19 vaccine prior to pregnancy and those who had received tetanus and hepatitis B vaccines during pregnancy or were planning to receive them had lower vaccine hesitancy compared to those who had not received these vaccines. Increased vaccine hesitancy among pregnant women may lead to avoidance of vaccination. The rise in vaccine hesitancy has become a significant obstacle to global immunization efforts for both children and adults (36). If vaccination rates continue to decline due to vaccine hesitancy, the future health of the younger generation could be severely compromised. Therefore, it is crucial to address vaccine hesitancy among perinatal women in order to promote positive attitudes and beliefs towards vaccination (37).

CONCLUSION

Approximately one in three pregnant women exhibited vaccine hesitancy. The study findings revealed that vaccine hesitancy was influenced by the age and income status of pregnant women, while other sociodemographic and obstetric characteristics did not have a significant impact. Obtaining information about vaccines emerged as a crucial factor affecting vaccine hesitancy. Furthermore, Vaccination hesitations were higher in pregnant women with low vaccination behavior. The study also revealed that the tetanus vaccination rate during pregnancy was high, while the hepatitis B vaccination rate was comparatively lower, and the influenza vaccination rate was notably low. The COVID-19 vaccine uptake during pregnancy was also reported to be quite low.

Pregnancy represents a critical period for immunization, considering the potential benefits for both maternal and fetal/newborn health. Consequently, pregnant women can be considered an ideal target population for interventions aimed at increasing vaccine confidence. Healthcare professionals, particularly nurses, midwives, obstetricians, and family physicians, should play an active role in providing comprehensive information about vaccines to pregnant women. By identifying the factors contributing to negative attitudes and vaccine hesitancy, healthcare workers can help alleviate concerns and promote vaccination acceptance among pregnant women.

Conflict of interest
No conflict of interest was declared by the authors.

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