

COVID-19 VACCINE ACCEPTANCE AMONG PREGNANT WOMEN ATTENDING ANTENATAL OPD AT TERTIARY CARE CENTER, BAHRAICH: UTTAR PRADESH

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Abstract

Background: When a pregnant woman gets COVID-19 infection, she is more likely to develop COVID 19 disease and poor new born outcome as compared to non-pregnant woman. Therefore, vaccination has been shown to be the most practicable and effective means of preventing the spread of SARS-CoV-2 to expectant mothers and their unborn child, as well as any major illness or other consequences, by eliciting immune responses during pregnancy. As far as our knowledge, there has been only few studies done to determine how many pregnant Indian women accept the COVID-19 vaccine in the state of Uttar Pradesh. Therefore, the aim of the current study was to assess the rate of COVID-19 vaccine acceptance and to identify the associated factors that affect vaccination acceptability. **Materials and Methods:** It was a cross-sectional study carried out in a tertiary care hospital setting from May 2023 to July 2023 in the Obstetrics Department of the Maharaja Suhel Dev Autonomous State Medical College and hospital, Bahraich Uttar Pradesh. 100 pregnant women over the age of eighteen who volunteered to participate in the study were included in it. Face-to-face interviews with participants utilizing a pretested, structured questionnaire were used to gather information. We employed Chi square to find the factors that were related to vaccination acceptability. **Result:** 10 of the 100 pregnant women indicated that they would be willing to get the vaccination, yielding an acceptance percentage of 10%. The association between vaccine acceptance and age of the pregnant females, occupation of the pregnant females and type of family was statistically significant. Knowledge about the availability of COVID 19 vaccine in pregnant female was 75%. There is no significant association found between knowledge of vaccine and age, education, type of family and occupation of pregnant females. **Conclusion:** In this study, there was a low level of acceptance of the COVID-19 vaccination. Key reason for refusal were fear of the vaccination's negative effects and potential harm to the unborn child. In the course of pregnancy care, medical professionals ought to stress the advantages of receiving the COVID-19 vaccine while expecting.

INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic is a global outbreak of coronavirus –caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2),^[1] Since 2019, COVID-19 infections have been considered a serious threat to public health.^[2] Millions of individuals have been infected with a novel coronavirus, affecting healthcare systems and resulting in lockdowns both nationally and internationally.^[3]

There have been 772,838,745 and 45,004,816 confirmed cases of COVID-19, including 6,988,679 and 533,316 deaths, as reported to World Health Organization (WHO) till 19 December 2023 and a total of 13,595,721,080 and of 2,208,365,081 vaccine doses have been administered till 25th November 2023 globally and nationally respectively.^[4]

During the pandemic, effective preventive measures include COVID-19 appropriate behaviour such as maintain physical distancing, greet without physical contact, use of face masks, and personal and

respiratory hygiene, however, the most crucial strategy for comprising the COVID-19 pandemic over the long term is vaccination induced herd immunity.^[5] If the causes and reasons behind vaccination reluctance are found, then vaccination rates will increase particularly among susceptible populations like pregnant females.

Pregnant women and mothers were not found to be at higher risk for COVID-19,^[6] But if infected, pregnant women are at greater risk of severe illness and mortality,^[7,8] requiring hospitalization, intensive care unit (ICU) admission, and ventilatory support, and to die from illness compared to non-pregnant women.^[9-12] Comorbid conditions like obesity, diabetes, and hypertension increases the risk of life-threatening complications for pregnant women suffering from COVID-19 illness. Pregnant women with COVID-19 infection also have an increased risk of unfavourable neonatal outcomes, such as preterm birth and low birth weight, in comparison to pregnant women without COVID-19 infection.^[13]

It has been determined that the most practical and efficient method of preventing the spread of SARS-CoV-2 to expectant mothers and their unborn children is the COVID-19 vaccination.^[14,15] Through passive trans-placental transfer of antibodies from the vaccinated mother to foetus during pregnancy, the vaccine also protects the unborn child against COVID-19 infection.^[16] Therefore, it is highly advised that pregnant and lactating females be given access to the vaccination by the Society of Maternal-Foetal Medicine, the Centers for Disease Control(CDC) and Prevention, and the American College of Obstetricians and Gynaecologist.^[17-19]

During the first two immunization rounds for COVID-19, women who were pregnant or nursing were not eligible to get the vaccine available in India – Covishield (non-replicating viral vector vaccine) and Covaxin (inactivated virus). Furthermore, on recommendation of the National Technical Advisory Group on Immunization (NTAGI), Ministry of Health and Family Welfare (MoHFW), Government of India permitted COVID-19 vaccination of pregnant women in July 2021. This decision gives pregnant females an opportunity to decide whether to get the COVID-19 vaccine.^[20]

Low vaccine uptake has become a growing challenge worldwide.^[21-24] A study stated low acceptance of COVID-19 vaccination (37%) in a sample of pregnant women, and most common refusal reason was concern about vaccine safety.^[25] In a questionnaire-based survey from 16 countries, 52.0% of pregnant women expressed willingness to accept COVID-19 vaccine.^[26]

To the best of our knowledge, very little research has been done to determine how many Indian pregnant women in the state of Uttar Pradesh accept the COVID-19 vaccination. Therefore, the aim of the current study was to assess the rate of COVID-19 vaccine acceptance and to identify the associated variables that affect vaccine acceptability. To speed up vaccine administration within these populations, it

would be beneficial to understand the obstacles and factors that influence vaccine acceptability.

MATERIALS AND METHODS

This hospital-based observational cross-sectional study conducted among pregnant women in the antenatal clinic of Autonomous state medical college, Bahraich Uttar Pradesh, from May 2023 to July 2023 after approval from the Institutional Ethics Committee.

We used a convenient sampling technique, during the study period, we were able to collect data from 100 pregnant women. Study population comprised all pregnant women attending the antenatal clinic during the data collection period. The duration of pregnancy was calculated from the last menstrual period (LMP) or the first-trimester ultrasound if the dates were not available. Pregnant women above 18 years of age who were willing to participate in this study were included after taking informed consent. Pregnant women with a history of mental sickness, hearing loss, seriously ill or with some emergency conditions, and being reluctant to participate were excluded from the study.

Method of sampling was consecutive, and every pregnant women who came to the antenatal clinic to receive antenatal services and met the inclusion criteria was interviewed. After obtaining informed consent, information was collected by face-to-face interview using a structured and pretested questionnaire. The questionnaire was developed and validated by a pilot study. Each pregnant woman included in study underwent an interview with confidentiality after receiving routine antenatal services. The questionnaire was divided in four sections. The first section of the questionnaire included socio-demographic information such as age, educational status, ethnicity, residence, religion, occupation. The second section evaluated the obstetric history and general health status. The third section estimated knowledge about COVID-19 vaccine and in the fourth section focused on acceptance attitude of COVID-19 vaccine and reasons of non-acceptance. Vaccine acceptance was defined as a response of not receiving vaccine in the past but willingness to receive COVID-19 vaccine during pregnancy, whereas vaccine non-acceptance was defined as a response of not taking vaccine in past and not willing to receive vaccine during pregnancy.

The Statistical data was recorded and analyzed using by the Statistical Package for Social Sciences (SPSS) Software. Categorical data are described as number and percentage, the continuous variables were presented as mean and standard deviations. Chi-square test was used to test and describe the relationship between two categorized variables. A p-value of 0.05 was considered significant.

RESULTS

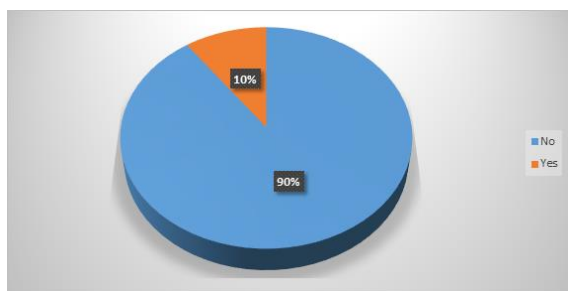


Figure 1: Acceptance of covid-19 Vaccine

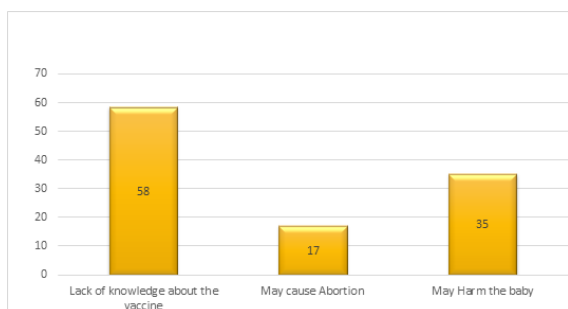


Figure 2: Reasons for refusal in pregnancy

*Multiple responses

A total of 100 pregnant females were included in the current study. [Table 1] describes the socio-demographic profile of the study participants. Majority of the pregnant females (71%) were in the age group of 21-30 years and (68%) belonging to rural area. 27% of pregnant females were educated up to graduate and above but majority of them were housewives. 68% of pregnant females were Hindu, 69% lived in a joint family and 62% were multipara. More than 3/4th of the pregnant females belonged to lower and lower middle socio-economic class (according to Modified B G Prasad Classification). [Table 2] describes the knowledge of pregnant females about the COVID-19 vaccine. Majority of the pregnant females knew about the existence of vaccine against COVID-19, which can be used during pregnancy but further knowledge about vaccine safety and its usage was lacking. 79% of the

females believed that vaccine taken during the pregnancy protects the baby and 14% thought that it could prevent severe disease and complications in mother; while the remaining 7% believed that the vaccine is protective for both the mother and the baby. Majority of the pregnant females (86%) had no knowledge whether the vaccine can be administered in complicated pregnancy. majority of the females had no knowledge in response to the question that whether COVID-19 vaccine can cause any problems in pregnant women and foetus, 88% and 90% respectively. Only 5% pregnant females had knowledge about unvaccinated pregnant woman was at greater risk of severe COVID-19 disease and complications.

[Table 3] illustrate the attitude and practice of the pregnant females regarding the COVID-19 vaccination. Regarding safety of COVID-19 vaccine during pregnancy, majority of the females (86%) considered the vaccine to be unsafe during pregnancy. Among all the pregnant females 88% had no idea about whether anyone can get infection with COVID-19 even after vaccination. 83% of the total study participants had been previously vaccinated (i.e. before the confirmation of pregnancy) with atleast a single dose of the vaccine and rest 17% were never vaccinated. None of the female took the vaccine after pregnancy confirmation and only 10% of the pregnant females were willing to take the vaccine shot during their pregnancy.

[Table 4] shows the association between the knowledge about COVID-19 vaccine and socio-demographic variables such as age, Residence, Education, occupation, religion and family type. Among all the variables only the association between the educational status of pregnant females and knowledge about the COVID-19 vaccine was found to be statistically significant.

[Table 5] describe the association between the acceptance towards COVID-19 vaccine and socio-demographic variables such as age, Residence, Education, occupation etc. Among all the variables age, occupation and family type of the pregnant female were significantly associated with vaccine acceptance.

Table 1: Sociodemographic profile of the study population

Demographic Variable	N= 100	
	N	%
Age in years		
18 – 20	14	14
21 – 30	71	71
31- 40	15	15
Residence		
Rural	68	68
Urban	32	32
Education status of pregnant women		
No formal education	18	18
Primary school	9	9
Middle is school	15	15
High school	11	11
Intermediate	20	20
Graduate and above	27	27
Occupation of pregnant women		

Unemployed Housewife	96	96
Unskilled manual	2	2
Sales and services	2	2
Religion		
Hindu	68	68
Muslim	32	32
Category		
SC	2	2
OBC	77	77
General	21	21
Type of family		
Nuclear	31	31
Joint	69	69
Socioeconomic Status (Modified BG Prasad classification)		
Social class 1	2	2
Social class 2	6	6
Social class 3	8	8
Social class 4	39	39
Social class 5	45	45
Parity		
Primipara	38	38
Multipara	62	62

Table 2: Knowledge about COVID-19 vaccination

Variable	N = 100	
	N	%
Do you know that vaccine against COVID -19 is available for pregnant females?		
No	25	25
Yes	75	75
Why pregnant women should take the vaccine?		
Prevents severe disease and complications in mother	14	14
Protects the baby	79	79
Both	7	7
Should a pregnant woman with complications take the vaccine?		
Yes	3	3
No	11	11
Don't know	86	86
Can there be any problems in the pregnant woman if COVID-19 vaccine is taken?		
Yes	01	01
No	11	11
Don't know	88	88
Can there be any problems to the baby if COVID-19 vaccine is taken by the mother during pregnancy?		
Yes	2	2
No	8	8
Don't know	90	90
Who is at greater risk of severe COVID-19 disease and complications-		
Unvaccinated pregnant woman	5	5
Vaccinated pregnant woman	7	7
Don't know	88	88

Table 3: Attitude and Practice regarding COVID-19 Vaccination

Variable	N = 100	
	N	%
Do you think even after vaccination, a person can get infected with COVID-19?		
Yes	10	10
No	2	2
Don't know	88	88
Is vaccination with COVID-19 vaccine safe during pregnancy		
Yes	14	14
No	86	86
Have you been previously vaccinated with COVID-19 vaccine (i.e. before pregnancy)		
Yes	83	83
No	17	17
Have you taken the vaccine after pregnancy was confirmed?		
Yes	0	0
No	100	100
Are you willing to take COVID-19 vaccine during pregnancy		
Yes	10	10
No	90	90

Table 4: Association between the knowledge about COVID-19 vaccine and socio-demographic Variable

Variable	Knowledge about COVID-19 vaccine		P-value
	No (n=25)	Yes (n=75)	
Age (Years)			
18-20	05(20%)	09 (12%)	0.37
21-30	15 (60%)	56 (74%)	
31-40	05 (20%)	10(13%)	
Residence			
Rural	20 (80%)	48 (64%)	0.13
Urban	05(20%)	27 (36%)	
Education			
Graduate and above	05 (20%)	22 (29%)	0.02
Intermediate	02 (08%)	18 (24%)	
High school	02 (08%)	09 (12%)	
Secondary	03 (12%)	12 (16%)	
Primary	06 (24%)	03 (04%)	
illiterate	07 (28%)	11 (15%)	
Occupation of pregnant woman			
Sales and Service	01(04%)	01(1.5%)	0.49
Unemployed/Housewife	23 (92%)	73 (97%)	
Unskilled manual labour	01 (04%)	01 (1.5%)	
Religion			
Hindu	16 (64%)	52(69%)	0.620548
Muslim	09 (36%)	23(31%)	
Family type			
Joint	18 (72%)	51 (68%)	0.70803
Nuclear	07 (28%)	24 (32%)	

Table 5: The association between the acceptance towards COVID-19 vaccine and socio-demographic Variable

Variable	Acceptance of COVID 19 vaccine		P-Value
	Not Acceptance (90)	Acceptance (10)	
Age (Years)			
18-20	09 (10 %)	04 (40 %)	0.02
21-30	66 (73%)	05 (50%)	
31-40	15 (17%)	01 (10 %)	
Residence			
Rural	62 (69%)	05 (50%)	0.23
Urban	28 (31%)	05 (50%)	
Education			
Graduate+	24 (26.7%)	02 (20 %)	0.75
Intermediate	19 (21%)	01 (10 %)	
High School	09 (10%)	02 (20 %)	
Secondary	15 (16.4 %)	01 (10%)	
Primary	08 (8.9%)	01 (10 %)	
illiterate	15 (17%)	03 (30%)	
Occupation of pregnant woman			
Sales and Service	01 (1.1%)	01 (10%)	0.007
Unemployed/Housewife	88 (97.8%)	08 (80%)	
Unskilled manual labour	01 (1.1%)	01 (10%)	
Religion			
Hindu	62 (68.9%)	08 (80%)	0.47
Muslim	28 (31.1%)	02 (20%)	
Family type			
Joint	66 (73.3%)	04 (40%)	0.04
Nuclear	27 (26.7%)	06 (60%)	

DISCUSSION

During the pandemic period, the demand for COVID-19 vaccine has been robust and acceptance was high among Uttar Pradesh population, while the main difficulty in promotion of vaccine acceptance was concerns of vaccine safety and efficacy. The COVID-19 vaccination was first administered in India on January 16, 2021. Healthcare and frontline worker, paramilitary groups, sanitation workers, and disaster management volunteers participated in the first rollout. The paucity of information on the safety of COVID-19 vaccinations during pregnancy and the

cultural attitudes of the local population, there is a global disparity in the rates of COVID-19 vaccination during pregnancy.^[28-30]

The acceptance rate of COVID-19 vaccine among pregnant women in our study was low with 10 %, this is in contrast to previous studies that reported acceptance rate of 78,52%, 37%, 52%, 41%, 44.3% and 58.3% COVID-19 vaccination during pregnancy.^[20,25,26,31,32,33] The differences in vaccine acceptance rate among pregnant women could be attributed to study population differences, varying awareness of COVID-19 severity, risk perception, and access to health care services.

In our study we found the significant association of the acceptance of COVID-19 vaccine on the basis of age, occupation and type of family. This is in contrast to previous studies that reported no association found between occupation, type of family and acceptance of COVID-19 vaccine.^[20] In our study we did not found any significant difference between acceptance of COVID-19 vaccine and educational status of pregnant females. This finding is similar to study conducted by Pairat k et al.^[36] On the contrary, a survey conducted across 16 nations found that older age and higher income were significant predictors of vaccine acceptance.^[26]

The vaccine was freely available at various government healthcare facilities, therefore the family's' monthly income had no bearing on the vaccination's acceptance rates. In our study the most common reason for vaccine refusal were lack of knowledge about the vaccine, fear of vaccine that it may cause harm to foetus and fear of abortion of mothers themselves. These findings were similar to a study conducted by Kumari A et al, Goncu Ayhan et al. and Ghamri et al.^[20,25,35] Pregnant women had similar concerns about the influenza vaccination that was advised during the 2009–2010 pandemic in the United Kingdom.^[36] Majority of participants taken vaccine before pregnancy. Lack of trust and doubt about safety of vaccine is main reason for refusal of vaccine.

In our study 75% of the participants were aware that the vaccine was available. Which was greater than the study conducted in North India (68%),^[15] another study conducted by Niranjjan R et al,^[37] and Nupur Mandar Deshpande et al,^[38] in which awareness was 87% and 89% respectively.

Majority of the study participants has taken the vaccine before pregnancy but acceptance was in pregnancy was very low. The Pregnant females had knowledge about COVID19 vaccination in pregnancy but they were not taken the vaccine because of fear of the mother about her pregnancy and concerns about safety of the vaccine. Other than usual fear, there may be various other influential factors such as the mental, emotional status of mothers, source of information about COVID-19 vaccination from peer discussion and social media and other information. Thus, there is a necessity to spread awareness about prospective advantages and safety evidence of vaccination during pregnancy, which would help the mothers to make an informed decision about acceptance of vaccine. Recommendations from family members, friends, and doctors can also encourage pregnant women to get vaccinated.

CONCLUSION

The acceptance of the COVID-19 vaccination among pregnant women was remarkably low in this study. The primary causes of poor vaccination rates were worries about safety of vaccine because of the

possibility that the vaccine will have negative side effects on the foetus and mother. Pregnant women's positive attitude, good knowledge, formal education, and advanced age were independent predictors of the acceptance of the COVID-19 vaccine. During antenatal visit, health care providers should also communicate the advantages of the COVID-19 vaccination and to routinely evaluate the immunization status of pregnant women.

Therefore, in order to overcome misconceptions regarding side effects, vaccine safety, an reluctance there is need to increase public awareness about safety of COVID-19 vaccine during pregnancy using a variety of communication methods.

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