Prevalence of COVID-19 Vaccine Acceptance among Pregnant Mothers

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Abstract
Background: *COVID-19 vaccination could be a safe and effective approach to manage the pandemic and to forestall its associated morbidity and mortality. To our information, a study to assess the prevalence of COVID-19 vaccine acceptance among pregnant mothers. Therefore, the objective of this study was to assess the prevalence of COVID-19 vaccine acceptance among pregnant mothers attending prenatal care.* ***Methods:*** *A cross-sectional study was conducted. Non probability purposive sampling technique was chosen to select 165 study participants. The questionnaire contained: socio-demographic characteristic of the study respondents, knowledge, practice of the study respondents on COVID-19 preventive measures, and intention of COVID-19 vaccine acceptance among pregnant women. A structured interview was used to collect the data. Data were entered into excel sheet and exported to SPSS for analysis. Descriptive and inferential statistical analyses were used.* ***Results:*** *The COVID-19 vaccine acceptance was found to be 92%. Majority (47.2%) of mothers had adequate knowledge and 70.3% had good practice towards COVID-19 and its preventive measures.* ***Conclusion:*** *COVID-19 vaccine acceptance was found to be 92%. Maternal age (25–33) years, secondary maternal educational status, good knowledge, and good practice of pregnant mothers towards COVID-19 and its preventive measures were factors associated with COVID-19 vaccine acceptance. Health care providers should provide health education to pregnant mothers to increase their knowledge about the diseases and disseminate leaflets regarding COVID-19 preventive measures. Moreover, before initiation of COVID-19 vaccine administration to pregnant mothers they must promote the protection and effectiveness of COVID-19 vaccine.*

Keywords: COVID-19, knowledge, practice, pregnant women, vaccine acceptance

INTRODUCTION

"CDC encourages all pregnant mothers or who are thinking about becoming pregnant and those breastfeeding to urge immunized to shield themselves from COVID-19," said CDC Director Dr. Rochelle Wilensky. "The vaccines are safe and effective, and it has never been more urgent to increase vaccinations as we face the extremely transmissible Delta variant and see severe outcomes from COVID-19 among susceptible pregnant mothers." (Centers for disease control and prevention) [1].

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COVID-19 vaccination is suggested for all individual 12 years and older, as well as those who are pregnant, breastfeeding, attempting to get pregnant currently, or may become pregnant in the future. Proof regarding the protection and effectiveness of COVID-19 vaccination throughout antenatal period has been growing [2]. This information recommends that the advantages of receiving a COVID-19 vaccine outweigh any noted or potential risks of vaccination throughout pregnancy. There's presently no proof that any

vaccines, as well as COVID-19 vaccines, cause fertility issues in women or men [3]. Pregnant and recently pregnant individual are lot of possibility to get severely sick with COVID-19 compared with non-pregnant individual. Obtaining a COVID-19 vaccine will defend you from severe health problem from COVID-19.

Vaccination of pregnant individual builds antibodies which may defend their baby: When pregnant individual receives an COVID-19 vaccine throughout pregnancy, their bodies build antibodies against COVID-19, just like non-pregnant individual. Antibodies created once a pregnant person received an COVID-19 vaccine were found in umbilical cord blood. This implies COVID-19 vaccination throughout pregnancy may facilitate defend babies against COVID-19. A lot of information is required to see however these antibodies, just like those created with different vaccines, could give protection to the baby [4].

In India, at this time three vaccines have received approval for restricted use in emergency scenario. One of them is an inactivated vaccine (Covaxin) and other two are based on nonreplicating viral vector platform (Covishield and Sputnik V) [5]. A pregnant mother who opts for vaccination, may well be immunized at any time of the antenatal period. To assist pregnant mothers, create an informed decision to be immunized, they should be provided with information about the risks of COVID-19 infection in pregnancy, the advantages of vaccination, along with the likely side effects of vaccination. (MOH, FWD) [6].

PROBLEM STATEMENT
A study to assess the prevalence of COVID-19 vaccine acceptance among pregnant mothers at selected setting, Chennai.

OBJECTIVES
1. To assess the acceptance of COVID-19 vaccine among pregnant mothers.
2. To associate the background variables with acceptance of COVID-19 vaccine among pregnant mothers.

METHODS AND MATERIALS
A cross sectional study was conducted at selected health centers among pregnant mothers. All pregnant mothers attending antenatal care clinics were selected as a sample. Total 165 antenatal mothers selected through nonprobability purposive sampling techniques [7]. All pregnant women who were found in selected health centers during data collection period were included. Pregnant women who were critically ill during the study period, who had documented history of mental illness and hearing impairment, which were unable to provide the required information by themself were excluded [8].

Data Collection Procedure
Data was collected by face-to-face interview employing a structured form. The interview was conducted once mother got the ANC service and every mother was interviewed in private and warranted of the confidentiality of the interview. Data collector were followed the WHO COVID-19 prevention protocols like using face mask, maintaining physical distancing, and using hand sanitizer during data collection time. The stuffed questionnaires were collected and checked for consistency a day by the investigators [9].

Data Collection Instrument
The instrument was ready once reviewing relevant literature. The tool was prepared in English language and translated to Tamil. The tool contains: socio-demographic characteristic of the study respondents, knowledge, practice of the study respondents on COVID-19 preventive measures, and intention of COVID-19 vaccine acceptance among pregnant women.

Study Variable Measurements

COVID-19 vaccine acceptance: "Willingness of COVID19 vaccination?" those who respond "Yes" for this question were thought of as vaccine acceptance and people pregnant mothers who respond "No" were thought of as vaccine hesitancy [10].

Knowledge regarding COVID-19: The respondents' level of knowledge regarding COVID-19 was reported as good, moderate and poor knowledge if the study participant correctly responded to > 75%, 50–75% & <50% of knowledge assessment tools.

Practice of COVID-19 preventive measures: The respondents' level of practice of COVID-19 preventive measures was reported as good practice if the study participant correctly responded to more than or equal to 50% of practice assessment tools, and poor for <50%.

Data Analysis and Processing

After data collection, the responses in the completed questionnaire were coded and entered into excel data and exported to SPSS for analysis. It was cleaned and edited (checking for missing values and outliers) accordingly. For COVID-19 knowledge and practice questions internal consistency of the items was checked using Cronbach alpha (α) and the score of 0.69 was taken as an acceptable measure of internal consistency of items on the scale [11].

The outcome variable of the study was COVID-19 vaccine acceptance which was assessed by asking a question "Willingness of COVID19 vaccination?" The outcome variable was coded as "0" for vaccine hesitancy/not accepting and "1" for vaccine acceptance.

Ethical Approval and Consent to Participate

Participants were informed about the purpose and objective of the study. They were also informed that they have the right to discontinue or refuse to participate in the study if they were not comfortable with the questionnaire. Written informed consent was obtained from each study participant. Confidentiality of information and privacy has been maintained.

RESULTS

Socio-demographic characteristics

A total of 165 pregnant mothers were involved and making a response rate of 100%. Most respondents, 81 (49.1%) were aged from 25 to 33 years old, 112 (67.8%) were Hindus, 76 (46.1%) mothers had completed secondary education, and 157 (95.2%) mothers were unemployed (Table 1).

Table 1. Socio-demographic characteristics of pregnant mothers.

S.N.	Variables	Frequency	Percentage
1	*Maternal Age*		
	18 – 24	80	48.5
	25 – 33	81	49.1
	34 - 41	4	2.4
2	*Religion*		
	Hindu	112	67.8
	Christian	36	21.8
	Muslim	17	10.3
3	*Maternal Education*		
	Primary education	20	12.1
	Primary education	76	46.1
	Degree	69	41.8
4	*Maternal Occupation*		
	Employed	8	4.8
	Unemployed	157	95.2

**Maternal obstetric health care service characteristics**

In this study majority, 99 (60%) pregnant mothers were primi gravida, 146 (88.55) mothers had 25 weeks and above gestational weeks, 165 (100%), of mothers had an antenatal care follow-up. Of these, 136 (82.4%) mothers had >4 times ANC follow-up and concerning medical illness, 140 (84.8%) mothers did not have any history of medical illness (Table 2).

Table 2. Obstetric health care service characteristics of pregnant mothers.

S.N.	Variables	Frequency	Percentage
1	*Gravida*		
	Primi	99	60.0
	Multi	66	40.0
2	*Gestational Weeks*		
	< 12 weeks	7	4.2
	13–24 weeks	12	7.3
	25 weeks and above	146	88.5
3	*ANC Visits*		
	Yes	165	100.0
4	*Number of ANC Visits*		
	2	6	3.6
	3	23	13.9
	>4	136	82.4
5	*Maternal medical illness*		
	Yes	25	15.2
	No	140	84.8

Maternal knowledge and practice of COVID-19 preventive measures

Among 165 pregnant mothers, 78 (47.2%) mothers had Adequate knowledge, 54 (32.8%) had moderate knowledge and 33 (20%) mothers had inadequate knowledge, and 116 (70.3%) had good practice and 49 (29.7) had poor practice towards COVID-19 and its preventive measures (Figure 1).
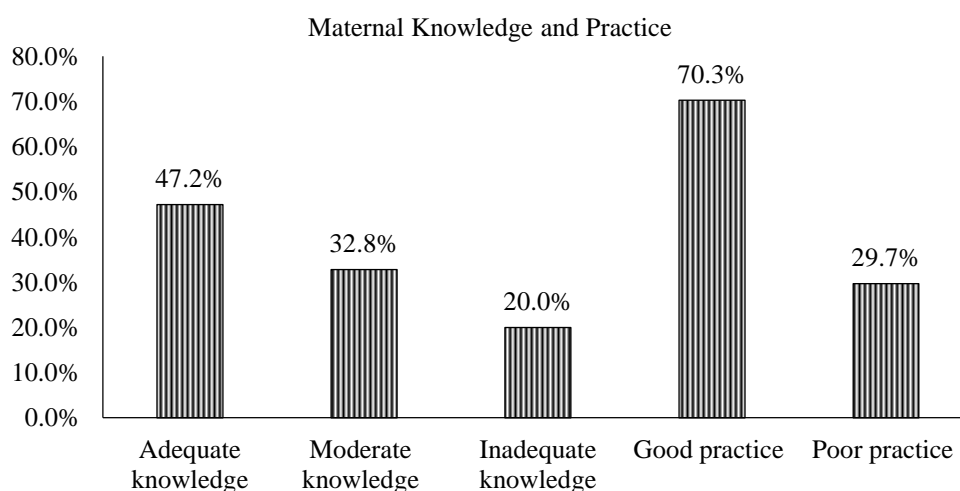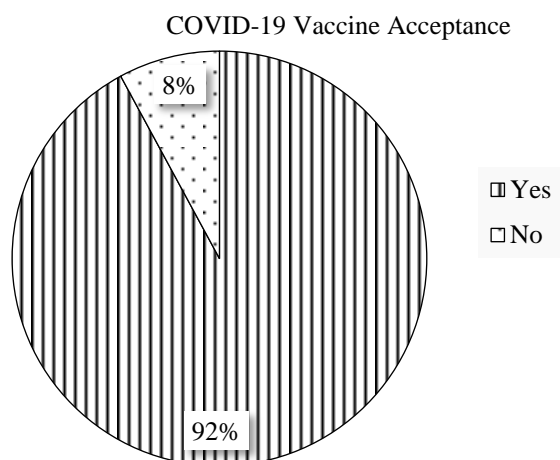

Figure 1. Maternal knowledge and practice of COVID-19 preventive measures among pregnant women.

COVID-19 Vaccine acceptance among study participants

The COVID-19 vaccine acceptance, majority 152 (92.1%) were accepted the COVID19 vaccine, while 13 (7.9%) mothers did not accept to use the COVID-19 vaccine [12]. The reasons for refusal of

accepting COVID-19 vaccine were due to fear of side effect & the vaccine might affect my foetuses (Figure 2).

Figure 2. COVID-19 vaccine acceptance among pregnant women.

Correlation of maternal knowledge and practice of COVID-19 preventive measures

There was a positive correlation between knowledge and practice of COVID-19 preventive measures among pregnant women (Table 3).

Table 3. Correlation of maternal knowledge and practice of COVID-19 preventive measures.

Variables	Correlation coefficient value
Knowledge	r = 0.215
Practice	p = 0.006
	**S

$**p<0.01$ S – significant

Association of maternal knowledge with socio-demographic & obstetrics characteristics

There was a statistically significant association between maternal knowledge with number of antenatal visits at $p < 0.01$ level of significance. There was no statistically significant association between maternal knowledge with maternal age, education, occupation, gravida, gestational weeks, ANC visits.

Association of maternal practice of COVID-19 preventive measures with socio-demographic and obstetrics characteristics

There was no statistically significant association between maternal practice with maternal age, education, occupation, gravida, gestational weeks, ANC visits and number of antenatal visits.

DISCUSSION

The newly emerged COVID-19 infectious disease has adverse impact on pregnant mothers and their unborn. Though, after so many trials of vaccine, to date the World Health Organization approved more than three COVID-19 vaccines to mitigate the spread and potential threat of the diseases. Nevertheless, vaccine hesitancy becomes one of the greatest challenges globally. The finding of the present study showed that the acceptance of COVID-19 vaccine among pregnant women was 92%. The result was higher than studies conducted in Saudi Arabia (64.7%), 21 United States (67%), 26 Middle Eastern Population (36.8%), 27 and Poland (31.3%).

However, it was lower than studies conducted in Addis Ababa (80.9%), 20 in China (91.3%), 22 in Indonesia, Southeast Asia (93.3%), 29 and South Africa (81.6%), 17 would accept vaccine when it

becomes available among the general population. The possible explanation for the difference might be due to the difference in access to health care service, awareness on the severity of COVID-19, and study population difference.

The present study assessed maternal knowledge and practice of COVID-19 and its preventive measures. The finding of this study showed that 47.2% of mothers had Adequate knowledge and 70.3% had good practice towards COVID-19 and its preventive measures. The result was higher than studies conducted in Gondar City residents, northern Ethiopia (50.7%), 33 and in Dirashe district, southern Ethiopia (63.5%). The possible justification might be this study was conducted in health facility that expose the study participates to health care workers which enable them to have more awareness regarding knowledge of COVID-19 preventive measures. This study also found that 61.4% of pregnant mothers had good practice towards COVID-19 and its preventive measures, that was above a study conducted in Gondar (51%). However, it absolutely was below a study conducted in African nation. The variation of the finding can be explained that because of study area and study population difference; for example, pregnant mothers have higher awareness of COVID-19 prevention practice compared to the community because of frequent visits to health establishment throughout their prenatal care follow-up.

CONCLUSION

This study provides early insight into the pregnant women knowledge, practice and acceptance regarding COVID-19 vaccines. Maternal Knowledge was associated with number of antenatal visits. Vaccine acceptance was high among pregnant women. With associate understanding of the vital important practice of vaccination in antenatal period, the utilization of different vaccines throughout pregnancy, the efficaciousness and safety of COVID-19 vaccines in nonpregnant populations, associated their mechanism of inducement an immune reaction, clinicians will define the advantages of COVID-19 illness, as well as the undefined but possibly limited risk to the foetus, and potential benefit to the neonate.

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