A Cross-Sectional Study on COVID-19 Vaccine Acceptance among Antenatal Mothers Residing at Field Practice Area of Chengalpattu Medical College

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Abstract

Background: To control this pandemic due to COVID-19 and to reduce the mortality and morbidity among the antenatal mothers, COVID-19 vaccination is a safe and effective approach. This study is conducted to estimate the prevalence of COVID-19 vaccine acceptance among antenatal mothers in field practice area of Chengalpattu medical college.

Objectives: To estimate the prevalence of COVID-19 vaccine acceptance among Antenatal mothers residing in the field practice area of Chengalpattu Medical College. To explore the various factors influencing the COVID-19 vaccine acceptance and non acceptance among the study population.

Methodology: A Community Based Cross-Sectional Study was employed from October 2021 to November 2021. 51 Participants selected from rural area and 51 from urban area . A semi structured self administered questionnaire was used to collect the data. Institutional ethical committee approval was obtained .The data was collected and entered in MS Excel and analyzed using SPSS software Version 25.

Results: In this study the prevalence of COVID-19 vaccine acceptance among the antenatal mothers was found to be 70.59%.The vaccine coverage was found to be high among the study participants in the age group 23-29 years 45.83%, those pregnant women residing in urban area 51.39% and those living in joint families 77.78% .Statistically significant association were found among the gestational age >28weeks (p value 0.000) and awareness regarding the prevention of COVID-19 infection by COVID-19 vaccination (p value 0.000) with the vaccination status .

Conclusion: This study concludes that the COVID-19 vaccine acceptance among the study participants were 70.59% and vaccine non acceptance were about 29.41%. COVID-19 vaccine acceptance was higher among Antenatal mothers residing in the urban area when compared to rural area, hence special focus to be given in the rural area through individual counselling by the health care workers during the antenatal check up, immunization session, outreach camp, village health nutrition day. Intensification of awareness about COVID-19 vaccine is essential to improve the vaccine coverage and to reduce the vaccine hesitancy.

Keywords: *COVID-19 Vaccine Acceptance,Antenatal Mothers,Chengalpattu*

INTRODUCTION

Coronavirus(COVID-19) is an infectious disease caused by SARS -COV -2 virus. In India first case reported in January 2020. During the first and second waves this pandemic had caused drastic morbidity and mortality , hence the Government had taken lot of preventive measures to control this pandemic. COVID-19 vaccine was the major milestone achieved in the prevention of COVID-19 pandemic.

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Moreover India had begun administration of COVID-19 vaccine on 16th Jan 2021. Initially the special focus for COVID-19 vaccination were given to the health care workers followed by front line worker, Geriatric population, age group more than 45 years with comorbidities and all people above 18 years.

The pregnant women are the most vulnerable group population and they are at a high risk of developing COVID-19 associated adverse pregnancy outcomes, such as preterm births, undergoing caesarean section, intensive care unit (ICU) admission, mechanical ventilation, and death[1]. Experts are of the view that the benefits of vaccination to the pregnant women outweigh its potential risks. Based on the recommendations from National Technical Advisory Group on Immunization (NTAGI), MoHFW has approved vaccination of pregnant women against COVID-19 with the condition that the pregnant women may be informed about the risks of exposure to COVID-19 infection along with the risks and benefits associated with the COVID-19 vaccines available in the country. Based on the information provided, a pregnant woman will have the choice to take the vaccination[2].

As of 1 November 2021, India has administered over 1.06 billion doses overall, including first and second doses of the currently-approved vaccines[3]. As per the data provided by Directorate of Public Health(Tamil Nadu) out of 6,74,163 antenatal (AN) mothers in the Tamil Nadu State, 3,76,074 have been vaccinated (at least one dose) against COVID-19[4]

OBJECTIVES: To estimate the prevalence of COVID-19 vaccine acceptance among Antenatal mothers residing in the field practice area of Chengalpattu Medical College. To explore the various factors influencing the COVID-19 vaccine acceptance and non acceptance among the study population**.**

METHODS AND MATERIALS:

A community based cross sectional study was conducted in Uthiramerur Government primary urban health center area and Manampathy Government primary rural health center area in Uthiramerur block . Total population is 1,53 ,768 and antenatal mothers is 1180 in the Uthiramerur block during the study period. Sampling frame obtained from family health register in the primary health centers. 102 Antenatal mothers were selected by simple random sampling technique among the rural area(n=51) and urban area (n=51).

ELIGIBILITY CRITERIA:

Antenatal mothers above 18 years of age were included. Antenatal mothers who are not present at the time of study and who became COVID-19 positive in the current pregnancy, who had serious allergies to vaccines or components of vaccines in the past, who are not willing to participate in the study and with history of mental illness were excluded.

SAMPLE SIZE:

The required sample size was calculated using a single population Proportion formula, Based on the study done by Mose and Yeshaneh etal in Ethiopia[1], vaccine acceptance was found to be 70.9% which is considered for sample size calculation. Relative precision of 13% and 10% non-response rate, the arrived sample size was 102.

DATA COLLECTION PROCEDURE:

Data was collected by face-to-face interview using a semi structured questionnaire. The interview was conducted privately and assured of the confidentiality of the interview. WHO COVID-19 prevention protocols such as using face mask, maintaining physical distancing, and using hand sanitizer were followed during data collection time.

DATA COLLECTION INSTRUMENT The questionnaire contains: (a)socio-demographic characteristic of the study respondents, (b) pregnancy related questions, (c)vaccination details.

ETHICAL APPROVAL: Institutional ethical committee permission was obtained from Government Chengalpattu Medical College, Chengalpattu, Number CMCH-21-PR-318. Informed consent was obtained from the participants before interview, confidentiality and privacy was maintained during the data collection.

DATA ANALYSIS: The data was entered in MS Excel and analyzed using SPSS software Version 25. Appropriate descriptive and inferential statistical analysis were done .

OPERATIONAL DEFINITION: Those who are taken any of the COVID-19 vaccines currently recommended by Government of India during the

antenatal period. Those who have received even a   first dose will be considered as a vaccine acceptance.

RESULTS:

Figure1: COVID-19 Vaccination Status of Antenatal mothers
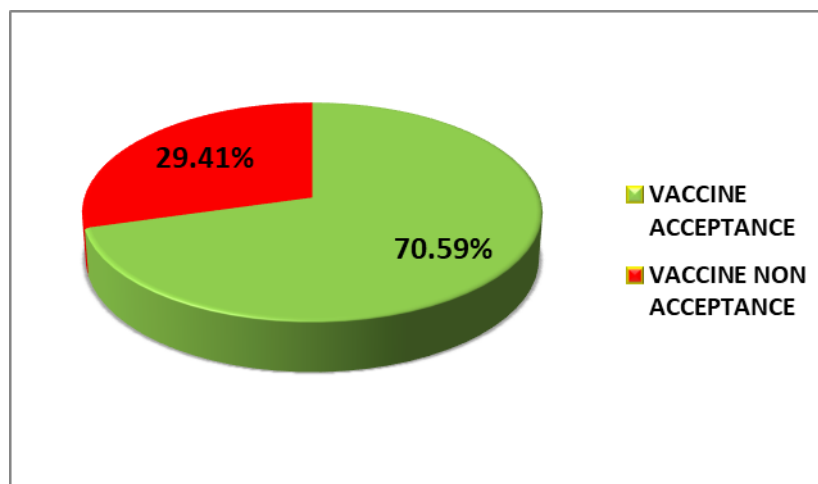
As shown in figure 1, vaccine acceptance was found to be 70.59% and and   vaccine non acceptance was found to be 29.41%.

Table1: SOCIO DEMOGRAPHIC DETAILS OF COVID-19 VACCINE ACCEPTORS AND NON ACCEPTORS AMONG THE ANTENATAL MOTHERS:

Socio Demographic variables	Vaccine Acceptance n=72	Vaccine non Acceptance n=30
AGE GROUP		
18-23 years	26(36.11%)	15(50.00%)
24-29 years	33(45.83%)	13(43.34%)
30-35years	13(18.06%)	1(3.33%)
36-41 years	0(0.00%)	1(3.33%)
TYPE OF FAMILY		
Nuclear Family	16(22.22%)	12(40.00%)
Joint Family	56(77.78%)	18(60.00%)
SETTLEMENT		
Urban	37(51.39%)	14(46.67%)
Rural	35(48.61%)	16(53.33%)
FAMILY SIZE		

|		
<5 Members	16(22.22%)	12(40.00%)
>5 Members	56(77.78%)	18(60.00%)
RELIGION		
Hindu	60(83.33%)	26(86.67%)
christian	12(16.67%)	4(13.33%)
EDUCATIONAL STATUS		
Illiterate	2(2.78%)	0.00%
Upto School	48(66.67%)	19(63.33%)
College	22(30.55%)	11(36.67%)
SOCIO ECONOMIC STATUS		
Upper Class	6(8.33%)	1(3.33%)
Upper Middle Class	30(41.67%)	12(40%)
Middle Class	19(26.39%)	7(23.34%)
Lower Middle Class	16(22.22%)	6(20%)
Lower Class	1(1.39%)	4(13.33%)

As shown in table 1,vaccine acceptance was high among the age group 23-29 years(45.83%)than other age groups and higher in joint family(77.78%) than nuclear family, urban coverage (51.39%) than rural coverage. Vaccine acceptance was found to be higher among the Family with more than 5 members (77.78%) ,and in upper middle class (41.67%)when compared with middle and lower class.

Table 2: PREGNANCY DETAILS OF COVID-19 VACCINE ACCEPTORS AND NON ACCEPTORS

| Variables	Vaccine Acceptance n=72	Vaccine non Acceptance n=30
GRAVIDITY		
Primi gravida	40(55.56%)	16(53.33%)
Multi gravida	32(44.44%)	14(46.67%)
GESTATIONAL AGE		
I Trimester	8(11.11%)	10(33.33%)
II Trimester	10(13.89%)	13(43.33%)
III Trimester	54(75.00%)	7(23.34%)

As shown in Table 2,the vaccine acceptance among primi gravida(55.56%) is higher than multigravida(32.44%) and third trimester coverage is higher(75%) when compared with first (11.11%) and second trimester(13.89%)

**Figure 2: SOURCE OF INFORMATION ABOUT COVID-19 VACCINE AMONG THE STUDY PARTICIPANTS**
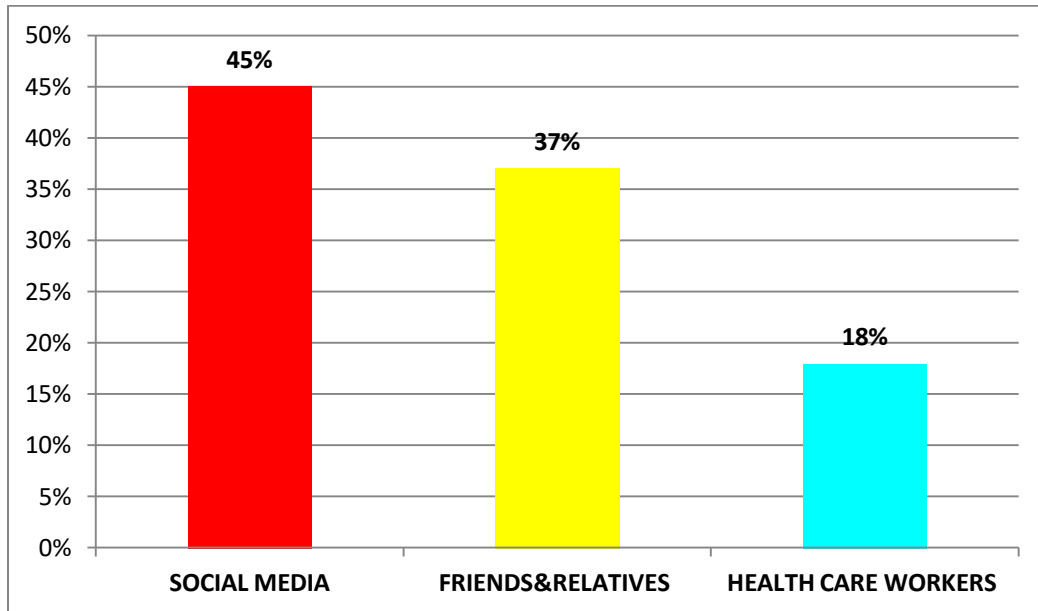
As shown in figure 2,In this study the source of information about COVID-19 vaccine were 46 (45%) participants came to know from social media like television, newspaper, whatsapp and facebook,38(37%) participants were came to know from friends, Neighbours and relatives and 18(18%) participants were came to know through health care workers .

Figure 3: REASONS FOR COVID-19 VACCINE ACCEPTANCE AMONG THE VACCINE ACCEPTORS (n=72)
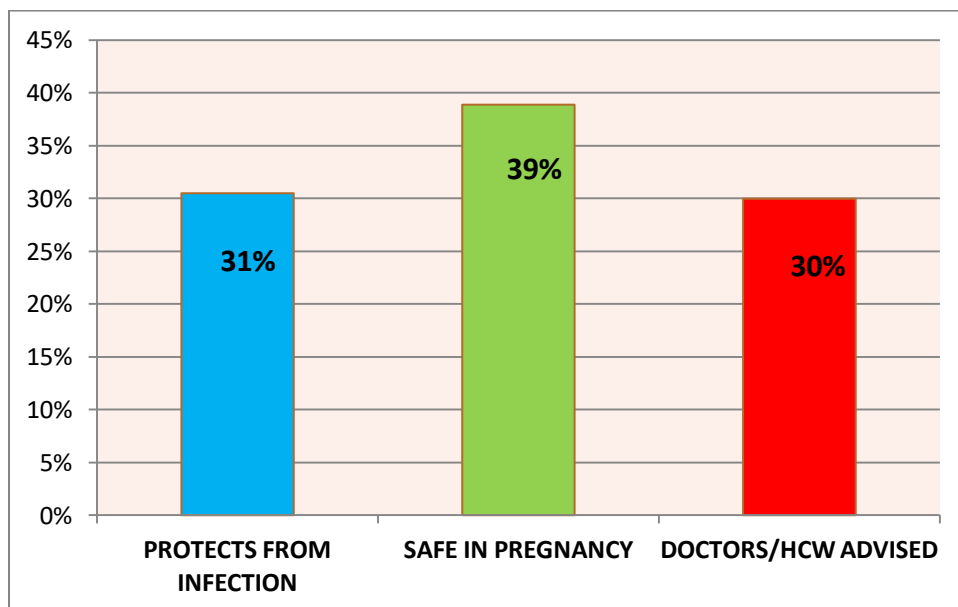
As shown in figure 3,Among the vaccine acceptors , the reasons for vaccine acceptance were found to be safe in pregnancy(39%) , protects from infection(31%) and by doctors and healthcare workers advise(30%)

Figure 4: REASONS FOR THE NON ACCEPTANCE OF COVID-19 VACCINE AMONG THE UNVACCINATED ANTENATAL MOTHERS (n=30)
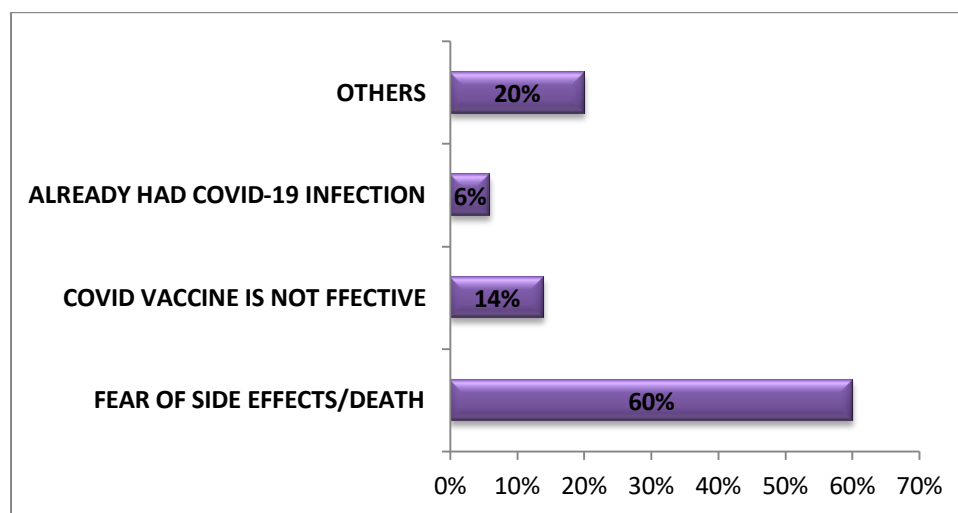
As shown in figure 4,About 60%of non acceptance of COVID-19 is because of fear of getting side effects and fear of death,14%of participants told that the COVID-19 vaccine is not effective,6% are having are already got covid-19 infection. Other reasons (20%) were that they had strong immunity against COVID-19 infection, vaccine not available during antenatal visit, having symptoms like cough and cold so plan to get the COVID-19 vaccine later.

PLACE OF COVID-19 VACCINATION: Among the COVID-19 vaccine acceptors about 77.78% participants had COVID-19 vaccination at nearby Government primary health center, 6.94% participants vaccinated in Government Headquarters Hospital and about 15.28% participants are vaccinated through the covid-19 vaccination camp in their villages.

VACCINE DOSES AND SIDE EFFECTS: Among the COVID-19 vaccine acceptors,About 96% participants had single dose and only 4% had two doses. Among the COVID-19 vaccine acceptors , 20.69% had history of myalgia, 13.79%, had history of fever ,12.08% had fever with myalgia and 10.34% had mild pain over the injection site, mild tiredness, and 43.10% participants had not experienced any side effects.

Table3: ANALYSIS BETWEEN GESTATIONAL AGE AND COVID-19 VACCINATION STATUS AMONG STUDY PARTICIPANTS

Variables		Vaccination status		Statistical Test Value df	P value
		Vaccine acceptance	Vaccine non acceptance		
Gestational age	<28Weeks(n=36)	16(44.4%)	20(55.6%)	Chi square test 18.316 df =1	0.000*
	>28Weeks(n=66)	56(84.8%)	10(15.2%)		

As shown in Table 3, The COVID -19 vaccine acceptance among the antenatal mothers with gestational age more than 28 weeks was higher than those with gestational age less than 28 weeks. This difference was found to be, statistically significant (p value 0.000)

Table 4: **AWARENESS ABOUT COVID-19 VACCINE AND VACCINATION STATUS OF THE STUDY PARTICIPANTS**

Variables		Vaccination status		**Statistical Test Value df**	**P value**
		Vaccine acceptance	**Vaccine non acceptance**		
Awareness about COVID-19 vaccination	Awareness present (n=66)	64(97.0%)	2(3.0%)	Fisher's Exact Test 62.688 df-1	0.000*
	No Awareness(n=36)	8(22.2%)	28(77.8%)		

As shown in Table 4,The vaccine acceptance was found to be higher among those who were aware about the benefits of COVID-19 vaccination.

DISCUSSION

In this study, the age group of the study participants were between 18 to 41 years, the mean age was found to be 24.93 years. The COVID-19 vaccine acceptance among age group 23-29 years was higher (45.83%) due to increasing fear of maternal and fetal complication ,which was contrast to the findings of the study done by Razzaghi etal[5],where COVID-19 vaccine acceptance during pregnancy was highest among the women aged 35–49 years.

In present study ,the Vaccine acceptance was higher among the antenatal mothers living in joint families (77.78%) when compared to those living in nuclear families (22.22%) . This difference may be due to increasing family size and elderly people in the family were at higher risk of getting COVID-19 infection.

In current study ,the vaccine acceptance among the antenatal mothers residing in rural areas was slightly lower(48.61%) when compared to urban area(51.39%). Awareness about the benefits and importance of COVID-19 vaccine is required to increase the vaccine coverage and to reduce the vaccine hesitancy in rural population. This study shows that the COVID-19 vaccination coverage was higher among upper middle class(41.67%). The economic status of the population plays a vital role in getting vaccination in private institutions as well.

In this study, Among the COVID-19 vaccine acceptors, the vaccine coverage was found to be high in primi gravida (55.56%) due to fear of getting infection and for safety of pregnancy than the multigravida(44.44%), which was contrast to the findings of the study done by Mose and Yeshaneh etal[1] where COVID -19 vaccine coverage was high among multigravida.

In present study the vaccine coverage was found to be higher in gestational age with more than 28 weeks than the gestational age with less than 28 weeks. This difference may be due to delay in vaccine acceptance and fear of getting any congenital anomalies or any abortions and due to high risk of getting COVID-19 infection for both mother and baby during admission for delivery.

In current study ,most of the participants about 45% got information about COVID-19 vaccine through social media which was similar to the study done by Mose and Yeshaneh etal[1] and 37% through friends, neighbours and relatives and 18% through health care workers. Among the vaccine acceptors ,the reasons

for vaccine acceptance were found to be safe in pregnancy(39%),protects from infection(31%) and by doctors and healthcare workers advise(30%).

In current study, among the unvaccinated participants, the major reason for refusal of COVID-19 vaccines are due to fear of side effects and death(60%) similar to the study done by Mose and Yeshaneh etal[1] and the study done by Kwan etal at Southeast Asia[6].This may be due to people perception regarding new disease and new vaccines.

CONCLUSION

This study concludes that the COVID-19 vaccine acceptance among the study participants were 70.59% and vaccine non acceptance were about 29.41%. The COVID-19 vaccine acceptance was higher among Antenatal mothers residing in the urban area when compared to rural area, hence special focus to be given in the rural area through individual counselling by the health care workers during the antenatal checkup, immunization session, outreach camp, village health nutrition day. Intensification of awareness about COVID-19 vaccine is essential to improve the vaccine coverage and to reduce the vaccine hesitancy.

LIMITATIONS

This study was conducted in a single block of Chengalpattu district. If we conduct the research in whole district, it will give better insight regarding the factors influencing the COVID-19 vaccine acceptance and non acceptance.

RECOMMENDATIONS:

1. In addition to the mega vaccination camps conducted by our Tami Nadu Government , special focus has to be given for vaccinating the antenatal mothers weekly once exclusively to increase the vaccination coverage among them.
2. Small incentives can be given for those antenatal mothers who completed two doses of COVID-19 vaccination.

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