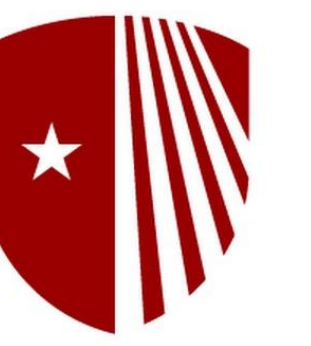




Comparison of pregnancy and COVID-19 complications stratified by maternal vaccination status



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INTRODUCTION

The COVID-19 pandemic has affected millions of people worldwide, with pregnant women being particularly vulnerable to severe illness and adverse outcomes.

However, the availability of safe and effective COVID-19 vaccines has provided hope for reducing the impact of the disease.¹

However, it is unclear how vaccination status may affect complications of both pregnancy and COVID

One study found that vaccination during pregnancy was 94% effective at preventing COVID-19 infection.²

Several studies have examined the effectiveness of COVID-19 vaccines in pregnant women and suggest it may reduce the risk of severe illness and adverse outcomes. ^{2,3,4}

In addition, pregnant women who received the COVID-19 vaccine were 80% less likely to require hospitalization compared to unvaccinated pregnant women.¹

Furthermore, another study found that vaccinated pregnant women who contracted COVID-19 were less likely to experience severe illness or require intensive care unit admission compared to unvaccinated pregnant women.³

AIM

This study aims to determine if maternal vaccination status affects COVID-19 and pregnancy complications.

METHOD

This is a retrospective study of pregnant women diagnosed with SARS-CoV-2 during the Alpha/Delta or Omicron wave in the period between 2/1/21 - 4/1/22.

The study was conducted at a single academic tertiary care center.

Patients were divided into groups based on vaccination status.

The primary outcome was COVID-19 complications such as venous thromboembolism (VTE), stroke, myocardial infarction (MI), pneumonia (PNA), acute respiratory failure (ARF), renal or hepatic failure, and transaminitis.

Pregnancy complications included pregnancy induced hypertension (PIH), postpartum hemorrhage (PPH), fetal demise, preterm labor (PTL), need for blood transfusion, pyelonephritis, preterm premature rupture of membranes (PPROM).

Statistical analysis was performed using SPSS. Chi square test was used to compare categorical variables and student t test was used to compare continuous variables. Significance was defined as p<0.05.

RESULTS

A total of 463 pregnant patients were included in this study. One hundred and fifty nine were fully or partially vaccinated while 304 were not vaccinated.

There was a significantly higher incidence of COVID-19 complications, such as PNA or ARF, in patients who did not receive the vaccine (3.3%) compared to those who received the vaccine (0%)(p<0.05). [Figure 1]

There were no differences in demographic data of patients with or without COVID complications. [Table 1]

There was no significant difference in the incidence of COVID complications in pregnant patients with medical conditions. [Table 2]

Vaccination status was not associated with any pregnancy complication, with the exception of preeclampsia without severe features. [Table 3] In such patients there was significantly higher incidence of preeclampsia without severe features in vaccinated patients (5.7% vs 1.6%, p<0.05). [Figure 2]

Of note the incidence of PPROM in patients who received the booster dose 10.4% (5/48) was significantly higher than those who did not receive the booster dose 3.5% (13/373) p<0.05 [Figure 3].

CONCLUSIONS

Our data suggests that vaccination status is not related to obstetrical outcomes, however pregnant women who received the COVID-19 vaccine are protected from COVID-19 complications.

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Table 1: Demographic data

	Covid Complications		P-Value
	YES	NO	
AMA	6 (60%)	299 (65.9%)	0.699
BMI>35	4 (40%)	117 (26.9%)	0.357
Caucasian	5 (50%)	292 (65.2%)	0.320
Government Assisted Insurance	5 (50%)	149 (36.0%)	0.363
Multiparous	5 (50%)	141 (31.5%)	0.216

Table 2: COVID complications in pregnant patients with medical conditions

	COVID Complications		P-value
	YES	NO	
Chronic HTN	0 (0%)	17 (3.7%)	0.533
Pregestational DM	0 (0%)	13 (2.9%)	0.587
Asthma	2 (20%)	47 (10.4%)	0.326
Pregnancy induced HTN	0 (0%)	63 (13.9%)	0.205
Gestational DM	2 (20%)	62 (13.7%)	0.565
Multifetal gestation	1 (11.1%)	13 (3.3%)	0.201

Table 3: Pregnancy complications in pregnant patients who received full or partial vaccination

	Vaccinated (Partial or Full)		P-value
	YES	NO	
Any OB Complication	21 (13.2%)	50 (16.4%)	0.358
GHTN	10 (6.3%)	28 (9.2%)	0.277
Preeclampsia without severe features	9 (5.7%)	5 (1.6%)	0.017
Preeclampsia with severe features	9 (5.7%)	7 (2.3%)	0.060
PPH	5 (3.1%)	8 (2.6%)	0.751
Fetal Demise	1 (0.6%)	3 (1.0%)	0.693
Preterm Labor	6 (3.8%)	12 (3.9%)	0.927
PPROM	8 (5.0%)	10 (3.3%)	0.357
Other	5 (3.1%)	23 (7.6%)	0.58

Figure 1: Incidence of Covid complications in Vaccinated and Unvaccinated pregnant patients

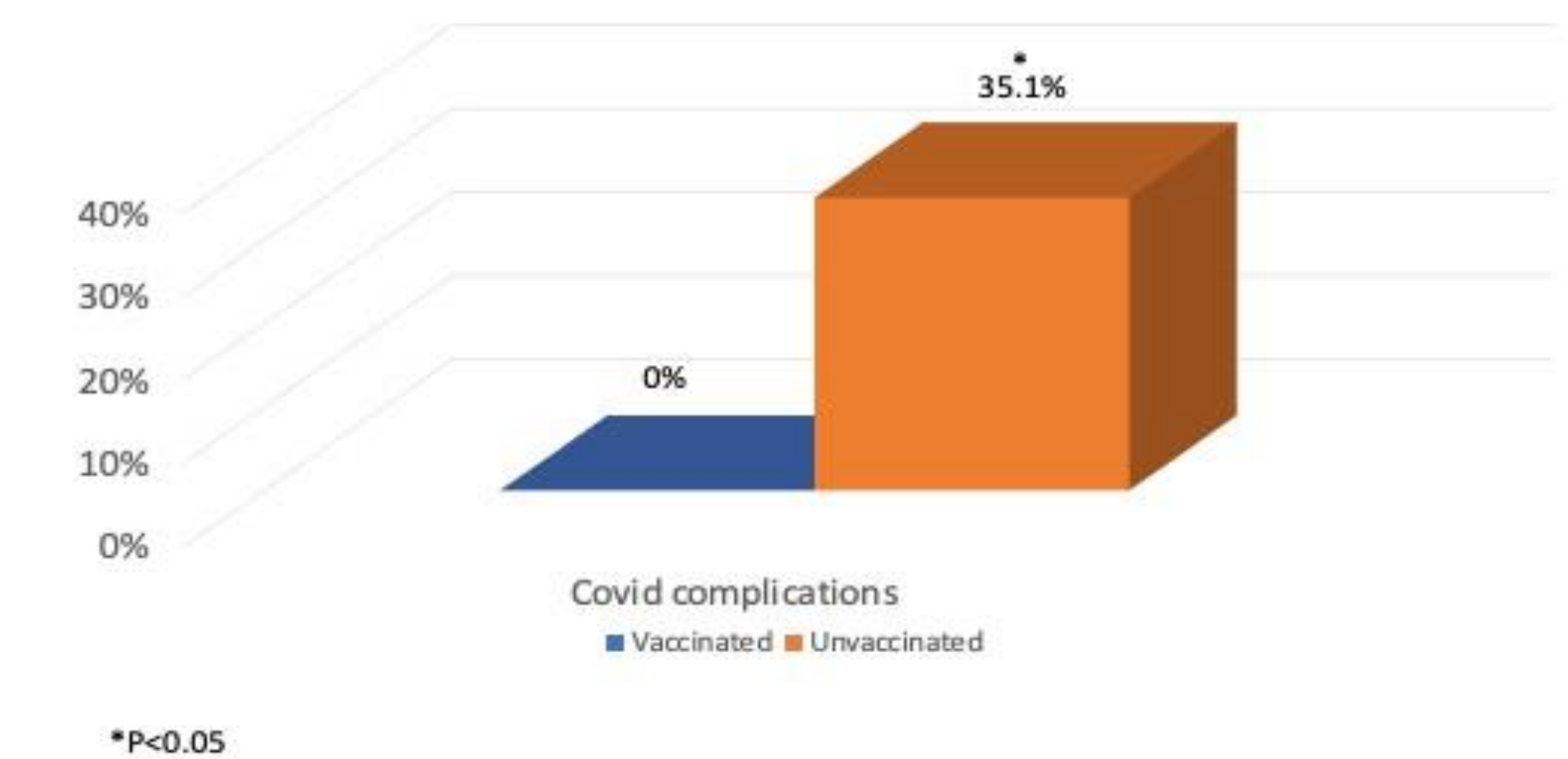


Figure 2: Incidence of preeclampsia without severe features in Vaccinated and Unvaccinated pregnant patients

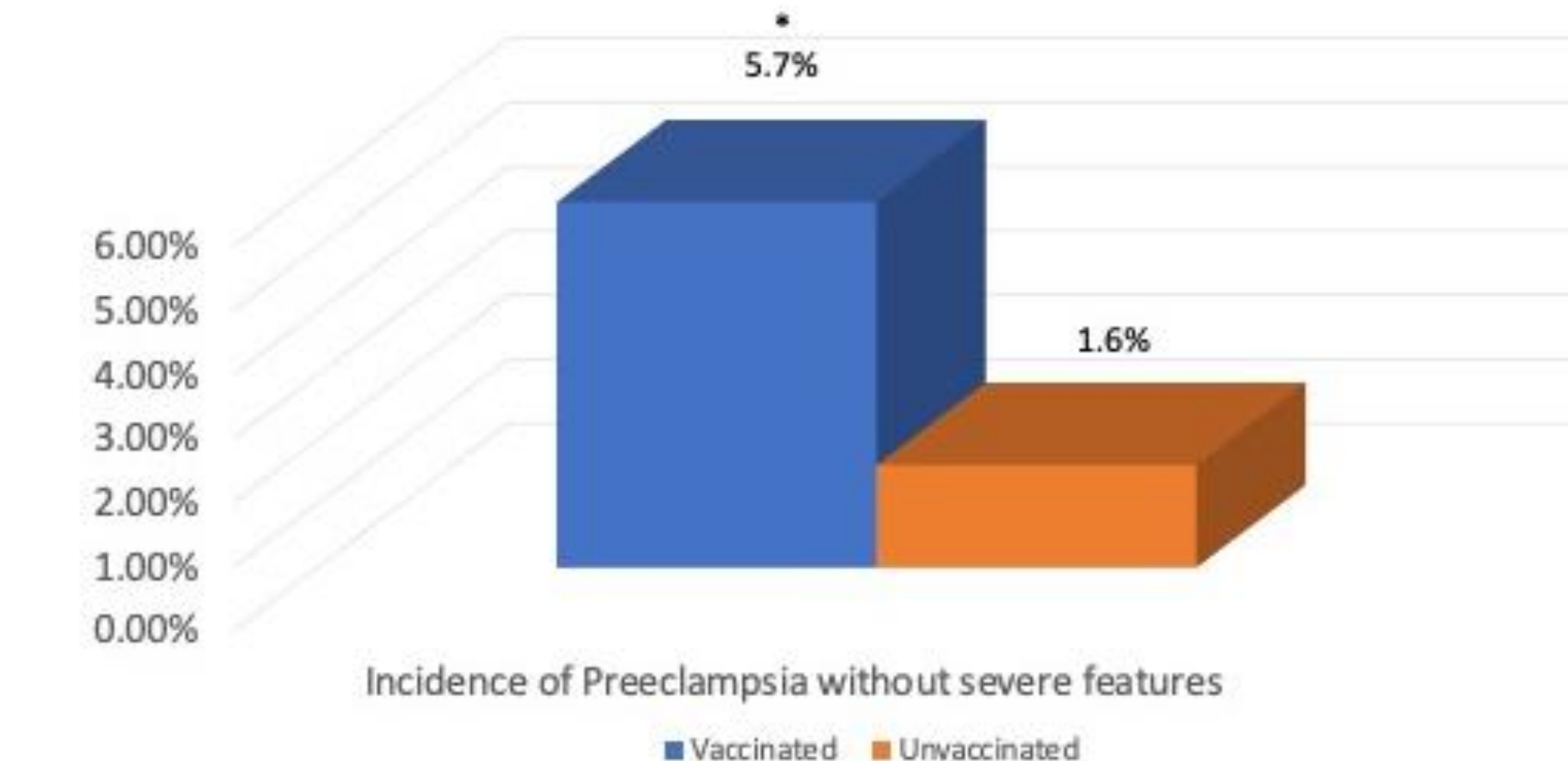


Figure 3: Incidence of PPROM in pregnant patients based on administration of Covid booster dose

