

Relationship Between COVID-19 Vaccination Status and Maternal, Neonatal, and Placental Outcomes

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ARTICLE INFO

Keywords:

Pregnant Women, Covid-19 Vaccination, maternal, neonatal, placental outcomes

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ABSTRACT

It cannot be denied that the Covid-19 pandemic has caused a huge blow to the entire fabric of life in all areas, including the economy, including maternal and perinatal health. Globally, it has been reported that worsening maternal and perinatal outcomes include increased maternal deaths, stillbirths, ruptured ectopic pregnancies and the incidence of maternal depression. Several researchers reported that there was no significant relationship between Covid-19 vaccination and an increased incidence of maternal and neonatal morbidity compared to populations who did not receive the Covid-19 vaccine.

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1. INTRODUCTION

The development of COVID-19 cases shows that there has been an increase in confirmed cases of pregnant women with COVID-19 in a number of large cities in Indonesia who are in serious condition (severe cases). Pregnant women have an increased risk of becoming seriously ill if infected with COVID-19, especially pregnant women with certain medical conditions (Ministry of Health).

2. METHOD

The design of this research is analytical cross-sectional. The research was conducted on pregnant women who were about to give birth at RSU Herna and RSU Mitra Sejati Medan. Placenta samples were collected in the delivery room and in the operating room at RSU Herna and RSU Mitra Sejati Medan from April to October 2022. Inclusion criteria included mothers who were about to give birth either normally or by caesarean section, were at term of pregnancy and were willing to take part in the research by signing a research agreement. . Exclusion criteria if Covid-19 immunization status is unclear. The relationship between vaccination status and sample characteristics, and the relationship with Apgar scores and birth weight were tested using the Chi-square test. Meanwhile, the relationship between vaccination status and placental weight was calculated using the unpaired T test.

3. RESULTS AND DISCUSSION

Research was conducted on 190 patients who gave birth at the RSU. Herna and RSU. Mitra Sejati Medan from April 2022 to August 2022 with characteristics as in table IV.1.

Characteristics of respondents

Age

Table 1. Characteristics of the research sample

Characteristics	Vaccination Status		p value
	Already Vaccinated	Not Vaccinated Yet	
Age			
20-35 years (person)	69	89	0.32
>35 years (person)	17	15	
Gravida			
Primigravida	37	44	0.92
Multigravida	49	60	

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The number of those who had been vaccinated was 86 (45.2%) and those who had not been vaccinated was 104 (54.8%). The mean age of those who received the vaccine was 31.3 ± 6.6 years and those who had not been vaccinated was 29.2 ± 5.2 years, there was no statistically significant difference. The majority were gravida 2 or above, both those who had been vaccinated, namely 49 (56.9%) and those who had not been vaccinated, 60 (57.6%).

Table 2 Relationship between vaccination status and maternal outcomes

Vaccination Status	Maternal Outcomes									p value
	Antepartum hemorrhage	HDK/PE	KPD	PJT <2500 gr	PPH	KJK	Preterm labor	Post-term pregnancy	No complications	
Already Vaccinated	10	11	44	3	1	2	2	1	8	0.001
Not Vaccinated Yet	9	12	58	5	4	-	4	9	7	

Pregnancy complications include antepartum hemorrhage, hypertension in pregnancy, premature rupture of membranes (KPD), stunted fetal growth, postpartum hemorrhage and intrauterine fetal death (KJK). There were complications in 74 (39.5%) who had been vaccinated and 101 (53.2%) in those who had not been vaccinated and there were 15 without maternal complications. The most common complication was premature rupture of membranes (KPD), both in those who had been vaccinated, 44 (43.2%) and in those who had not been vaccinated, 58 (56.8%). Post-term pregnancy was found in 10 women, of which 9 (90%) had not been vaccinated. There were 2 intrauterine fetal deaths (KJK) in those who had been vaccinated, while in those who had not been vaccinated there were no KJK (Table IV.2).

Table 3 Vaccination status and perinatal outcomes

Vaccination Status	Perinatal Outcomes					
	Baby's Weight		p value	APGAR score		p value
	<2500 gr	>2500 gr		<7	>7	
Already Vaccinated	6	80	0.81	40	46	0.65
Not Vaccinated Yet	9	95		44	60	

The number of mothers with a birth weight of less than 2500 grams or LBW among those who had been vaccinated was 6 (43%) and those who had not been vaccinated was 8 (57%). Birth weights above 2500 grams were found in 81 (42.6%) who had been vaccinated and 95 (57.4%) who had not been vaccinated. APGAR scores <7 were found in 40 (47.6%) who had been vaccinated and in 44 (52.4%) who had not been vaccinated. There was no significant difference between vaccination status and birth weight and APGAR scores with $p > 0.05$.

Table 4 Relationship between vaccination status and average placental weight

Vaccination Status	Average Placenta Weight (grams)	p value
Already Vaccinated	526.97 ± 219.12	0.51
Not Vaccinated Yet	563.37 ± 138.02	

The mean weight of the placenta in pregnant women who had been vaccinated was 526.97 ± 219.12 grams and in those who had not been vaccinated was 563.37 ± 138.02 grams (Table IV.4). There was no statistically significant difference in mean placental weight between the vaccinated and non-vaccinated groups.

4. CONCLUSION

Of the 190 mothers giving birth at RSU.Herna and RSU.Mitra Sehati Medan, 45.7% had received the Covid-19 vaccine and 54.3% had not received the vaccine. The average weight of the placenta in samples who had received the Covid-19 vaccine was 551 grams and in those who had not received the vaccine was 563 grams. The average weight of the placenta is in accordance with normal size. The Covid-19 vaccine acts as a protective factor against the incidence of maternal complications with a prevalence ratio of 0.8. There was no significant difference in the incidence of LBW and the incidence of asphyxia (APGAR score <7) between those who had been vaccinated against Covid-19 and those who had not been vaccinated.

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