Jurnal Biologi Tropis

Original Research Paper

Factors Related to Maternal COVID-19 Vaccination Status in Mpunda Public Health Center

Cut Warnaini[1*] & Jaini Rahma[2]

[1]Department of Public Health, Faculty of Medicine, University of Mataram, Mataram, West Nusa Tenggara, Indonesia;

[2]Faculty of Medicine and Health Science, University of Mataram, Mataram, West Nusa Tenggara, Indonesia;

Article History

Received : September 08th, 2024

Revised : September 19th, 2024

Accepted : October 25th, 2024

*Corresponding Author: **Cut Warnaini**, Department of Public Health, Faculty of Medicine, University of Mataram, Mataram, West Nusa Tenggara, Indonesia;

Email: cut.warnaini@unram.ac.id

Abstract: Pregnant women were among the vulnerable population for COVID-19 infection. Therefore, it is important for pregnant women to carry out a complete COVID-19 vaccination. Complete COVID-19 vaccination status for pregnant women is when the pregnant woman has received two doses of the vaccine, where the first dose of vaccination begins in the second trimester of pregnancy and the second dose is given according to the interval of the type of vaccine. Even though the Covid-19 vaccination program has contributed to reducing death rates and infectious diseases, there will still be concerns and doubts among pregnant women and women of reproductive age. Therefore, this research is aimed to observe and analyze factors related to Maternal COVID-19 Vaccination Status specifically in Mpunda Public Health Center, Bima. This study employs a mixed-method analysis and was conducted in Mpunda Public Health Center involving 136 pregnant women. We found that socioeconomic factor such as income level, prior vaccination status, and vaccination history was significantly associated with COVID-19 vaccination status among pregnant women, but not history of adverse events. We also concluded that fear of vaccine was significantly associated with COVID-19 vaccination status among pregnant women. Results of this research hopefully can add to the growing body of evidence regarding maternal COVID-19 vaccination status and aid the policy-making process regarding this topic.

Keywords: COVID-19, fear, vaccination, pregnant, women.

Introduction

In Indonesia, there have been more than 6 million cases of infection, with 150 thousand deaths due to COVID-19 as of June 10 2022. This indicates that all groups can be at risk of being infected with COVID-19, including pregnant women. Based on the SOGC (The Society of Obstetricians and Gynecologists of Canada) statement, pregnant women who are not vaccinated will still be at risk of experiencing severe infection due to COVID-19 compared to women who are not pregnant, this infection carries risks for both maternal health and fetal health (Mohavedi et al., 2023).

There are several risks to the mother during pregnancy, namely the respiratory, cardiovascular and immunological systems which experience significant physiological changes, this triggers pregnant women to experience stress, if stress occurs it can worsen the severity of the disease, on the other hand during pregnancy it will produce hypercoagulation which will endanger life due to venous and arterial thromboembolism; if respiratory viral infections occur during pregnancy, it will cause risk factors such as low birth weight and premature birth; In addition, high fever in early pregnancy can increase certain birth defects, pregnant women infected with Covid-19 have an increased risk of low birth weight and/or premature birth,

postpartum hemorrhage, and other problems requiring cesarean delivery (Lakshminrusimha & Hedriana, 2023).

Therefore, it is important for pregnant women to carry out a complete Covid-19 vaccination. Complete Covid-19 vaccination status for pregnant women is when the pregnant woman has received two doses of the vaccine, where the first dose of vaccination begins in the second trimester of pregnancy and the second dose is given according to the interval of the type of vaccine. According to Surat Edaran HK.02.01/I/2007/2021, the requirements for vaccination for pregnant women are: Pregnant women in the second trimester (13-28 weeks) and third trimester (29 to term); Pregnant women who have blood pressure above 140/90 mmHg are not recommended to vaccinate against Covid-19 and are referred to hospital; Pregnant women who have symptoms such as swollen feet, headaches, heartburn and blurred vision will be reviewed to receive vaccination and referred to hospital; If you have heart disease, asthma, DM, lung disease, HIV, hyperthyroidism, chronic kidney disease and liver disease, you must keep it under control; If you have an autoimmune disease, you must be under control and have a doctor's approval; If you have a history of severe allergies, you must receive special monitoring, especially after receiving vaccination, to anticipate the emergence of side effects; If pregnant women are receiving treatment for blood clotting disorders, blood disorders, immune deficiencies, receiving blood transfusions, receiving corticosteroid treatment or chemotherapy, vaccination will be postponed and the pregnant woman will be referred to hospital (Chavan et al., 2021).

Even though the Covid-19 vaccination program has contributed to reducing death rates and infectious diseases, there will still be concerns and doubts among pregnant women and women of reproductive age. This was proven in previous research, where non-pregnant respondents were the most likely to receive vaccination (457 respondents, 76.2%; P<.001), breastfeeding respondents had the second largest percentage who wanted to vaccinate (55.2%), while female respondents pregnant women had the lowest rate of vaccine acceptance (44.3%; P<.001).

Based on the explanation above and considering that there are still many pregnant women who are hesitant or even declined to vaccinate against Covid-19 and that there has been no research on this matter in Bima, West Nusa Tenggara, the researchers will conduct research entitled "Factors Related to Maternal COVID-19 Vaccination Status in Mpunda Public Health Center, Bima 2022". To see the Covid 19 Vaccination Status of Pregnant Women, researchers will take several samples at one of the community health centers in Bima and conduct interviews. It is hoped that this research will be able to educate pregnant women regarding Covid-19 vaccination so that they no longer have any doubts.

Mmaterial and Metode

This is a quantitative research aimed done in Mpunda public health center, Bima with the inclusion criteria of: (1) pregnant women in the second or third trimester; (2) no history of chronic disease or hypertension. While the exclusion criteria was: (1) first trimester pregnant women; (2) history of chronic disease or hypertension.

Result and Discussion

A total of 136 respondents were involved in this research with characteristics that can be seen in table 1. It was found that the average age of respondents was 30.3 years old with the smallest age being 17 years old and the oldest age being 45 years old. Even though the range was quite wide, statistically the distribution of age data in this study was still normally distributed (p=0.061). This indicates that the majority of respondents are currently in the age range where pregnancy is safe (Mohavedi et al., 2023). The average age of respondents when they first became pregnant was also found to be within safe limits, namely 24.2 years. However, the lowest age of respondents at the time of their first pregnancy was 16 years, which is included in the high-risk pregnancy age category because it is less than 20 years (Lakshminrusimha & Hedriana, 2023). Age at pregnancy that is less than 20 years or more than 35 years is considered a high risk age for pregnancy because at thatage,

the risk of various pregnancy complications and childbirth complications increases significantly when compared to the age of 20-35 years which of course will increase morbidity or even mortality.

Table 1. Sample characteristics

Characteristics	Total (n=136)
Current age	
Mean (SD)	30,3 (5,8)
Minimum	17
Maximum	45
p-value	0,061
Age at first pregnancy	
Mean (SD)	24,2 (4,6)
Minimum	16
Maximum	38
p-value	0,100
Education level (n,%)	
Never went to school	1 (0,7%)
Didn't graduate elementary school	4 (2,9%)
Elementary school	16 (11,8%)
Junior high school	20 (14,7%)
Senior high school	70 (51,5%)
Diploma or higher	25 (18,4%)
Parity	
Nullipara	35 (25,7%)
Primipara	32 (23,5%)
Multipara	69 (50,7%)
Labor facility	
Public hospital	54 (39,7%)
Private hospital	7 (5,1%)
Public health center	42 (30,9%)
Midwife	6 (4,4%)
"Polindes"	23 (16,95%)
Home	4 (2,9%)

The educational level of research respondents was dominated by respondents who graduated from high school with a percentage of 51.5%. The interesting thing that was found was that there were 0.7% of respondents who had not attended school at all, 2.9% of respondents who had not completed basic education, and 11.8% of respondents who had only completed basic education. This illustrates an educational gap that still exists in the location where the research was carried out. This gap will be a challenge for health workers in providing education regarding medical interventions to improve the quality and standard of life of the community. Regarding this research topic, education regarding vaccination is the main key to the success of the COVID-19 vaccination program carried out at the research location. This is illustrated by the majority of respondents who only received the first dose of vaccine and did not continue their vaccination program and even 11.8% of respondents had never received the COVID-19 vaccination at all. This indicates that there is still a lot of room to perfect and develop educational techniques and approaches for similar populations so that the penetration of the COVID-19 vaccination program and other vaccination programs in the future can be even better.

The relationship between patient characteristics and COVID-19 vaccination status

Spearman's correlation analysis was carried out to obtain a relationship between the education level of respondents in the study and their COVID-19 vaccination status. The results of this analysis found that there was no significant relationship between the respondent's education level and their COVID-19 vaccination status with a p-value of 0.327. These results are contrary to previous studies which found that the level of education greatly influences the desire and openness to vaccination in general and specifically on this topic, namely COVID-19 vaccination (Chavan et al., 2021; Glick et al., 2021). These studies conclude that the level of education is able to predict a person's willingness and desire to take part in the vaccination program. In addition, the impact of the level of education is not only felt by parents but is also able to predict the level of compliance with the vaccination program for their children so that, in previous studies, the level of education is the main factor as well as the main obstacle in the process of penetrating the COVID-19 vaccination program into society.

However, in contrast to previous studies, this study did not find a significant relationship between education level and COVID-19 vaccination status, which indirectly indicates that in this study population, COVID-19 vaccination status is influenced by factors other than education level and tends to be multifactorial. when compared with previous studies. Therefore, further analysis was carried out to look for other

possible aspects that influenced the COVID-19 vaccination status of respondents in this study.

Apart from aspects of educational level which influence the ability to understand the aims and functions of the COVID-19 vaccination program, various previous studies have suspected that economic aspects also have the potential to influence a person's willingness and desire to take part in the COVID-19 vaccination program. As reported by Boga, et al in 2023, they found that socioeconomic aspects turned out to be one of the factors in people's doubts about COVID-19 vaccination (Socoloy et al., 2017). In this study, the economic aspects of respondents are described through monthly income which is divided into three groups. Spearman's correlation analysis was carried out to obtain the relationship between respondents' income and COVID-19 vaccination status. It was found that income was significantly related to COVID-19 vaccination status with a p-value <0.001.

The results of this research are in line with a study conducted by Rawlings, et al in 2022 which highlighted the impact of differences in economic status on hesitation in participating in the COVID-19 vaccination program, but not refusal (Humer et al., 2023). However, in this study it cannot be concluded that this relationship is related to doubts or rejection of the COVID-19 vaccine. Even so, the significant results obtained in this research should be strong enough and able to become the basis for policy making for stakeholders so that they can formulate a policy that is appropriate to society's conditions with the aim of eliminating or reducing doubts or rejection of the COVID-19 vaccination program.

Based on the interview conducted on the respondents, it was found that most of the respondents were willing to continue further on the COVID-19 vaccination program and didn't feel afraid regarding the vaccination program, despite of the previous analysis result. It was found that the most prevalent reason of declining to recieve COVID-19 vaccination was regarding the adverse events following the vaccine and anxious regarding it's effect to the baby.

Table 2. Factors affecting COVID-19 status

	Never	First dose	Second dose	Booster	p-value
Income (n,%)					
<1.500.000	7 (5,1%)	15 (11%)	14 (10,2%)	5 (5,1%)	
1.500.000-2.500.000	7 (5,1%)	3 (2,2%)	23 (16,9%)	3 (2,2%)	<0,001
>2.500.000	2 (1,5%)	37 (27,2%)	16 (11,7%)	4 (2,9%)	
History of adverse events (n,%)					
Yes	7 (5,1%)	38 (27,9%)	30 (22%)	6 (4,4%)	0,221
No	9 (6,6%)	17 (12,5%)	23 (16,9%)	6 (4,4%)	
Prior vaccination (n,%)					
Yes	8 (5,8%)	53 (38,9%)	47 (34,5%)	12 (8,8%)	<0,001
No	8 (5,8%)	2 (1,5%)	6 (4,4%)	9 (6,6%)	
Vaccination history in family (n,%)					
Yes	10 (7,3%)	52 (38,2%)	51 (37,5%)	11 (8%)	<0,005
No	6 (4,4%)	3 (2,2%)	2 (1,5%)	1 (0,7%)	
Fear of vaccine (n,%)					
Yes	10 (7,3%)	7 (5,1%)	14 (10,2%)	5 (3,6%)	0,001
No	6 (4,4%)	48 (35,2%)	39 (28,6%)	7 (5,1%)	

Factors affecting COVID-19 vaccination status

Income level, history of adverse events, prior vaccination, vaccination history, and fear of vaccine were observed and assumed as several possible factors affecting COVID-19 vaccination status. Therefore, statistical analysis was done to prove it's significance. Spearman's correlation analysis was carried out to obtain a relationship between these factors and COVID-19 vaccination status among the participants of this study. Of all the factors, it was found that four out of five factors observed in this study indeed significantly affecting the COVID-19 vaccination status among the participants of this study.

Similar to the current study income level was found to be a sifgnificant factor determining the COVID-19 vaccination status as reported by Lillebraten, et al. in 2023 who that respondents in the low-income group have lower vaccine uptake rates than the above-low-income group (77.2% vs

86.2%, p<0,05) (Lillebraten et al., 2023). The government policy in Norway (Lillebraten et al. study location) was designed to make it convenient for residents to obtain the vaccine: the vaccine was provided at no cost, time off work to get the vaccine was compensated with sick leave benefits, and most citizens have the opportunity for paid sick leave should they have side effects from the vaccine while in indonesia the policy was limited to the cost of the vaccine itself. Even these generous policies would not be capable of eliminating all socioeconomic barriers to vaccine uptake. For example, paid sick leave is available in most salaried positions, but this is not the always the case for substitutes and part-time workers. This case was thought to be the cause of the similar result found in both studies.

Prior vaccination history and vaccination history in family was found to be significantly related to the COVID-19 vaccination status. Both of these factors represent the perception of the participants regarding the notion of vaccination program in general and also reflects the understanding of the participants regarding the beneficial effect of vaccines therefore enabling them to accept the current COVID-19 vaccination program with more ease than those who dont have a prior vaccination history nor vaccination history in family, indicating a low exposure of vaccines and it's beneficial effects hence increasing hesitancy. On the other hand, fear of vaccine was also found to be significantly related to the COVID-19 vaccination status among participants of the current study. As similarly reported by McNeil, et al. in 2022, vaccine-related fear and anxiety was found to be one of the main barrier to vaccination especially in a low-resource setting and/or a developing country, as found in this study (McNeil & Purdon, 2022). Furthermore, the main reasons for vaccine hesitancy that was mainly caused by fear of vaccine were concerns about adverse effects and efficacy, while the main reasons to get the vaccine were to protect others and self.

Kesimpulan

This research found that socioeconomic factor was significantly associated with COVID-19 vaccination status among pregnant women, but not educational level. Results of this research hopefully can add to the growing body of evidence regarding maternal COVID-19 vaccination status and aid the policy-making process regarding this topic.

Ucapan Terima Kasih

Gunakan ukuran font yang sama untuk konten bagian ucapan terima kasih. Para penulis harus mengakui para pemberi dana dari naskah ini dan memberikan semua informasi pendanaan yang diperlukan.

Referensi

Boga, B., Markó, B., & Rácz, B. G. (2023). The economic and social determinants of vaccine hesitancy in Romania during the COVID-19 pandemic. *Acta Oeconomica*, *73*(3), 419-442.

Chavan, M., Qureshi, H., Karnati, S., & Kollikonda, S. (2021). COVID-19 vaccination in pregnancy: the benefits outweigh the risks. *Journal of Obstetrics and Gynaecology Canada*, *43*(7), 814.

Glick, I., Kadish, E., & Rottenstreich, M. (2021). Management of pregnancy in women of advanced maternal age: improving outcomes for mother and baby. *International journal of women's health*, 751-759.

Humer, E., Jesser, A., Plener, P. L., Probst, T., & Pieh, C. (2023). Education level and COVID-19 vaccination willingness in adolescents. *European child & adolescent psychiatry*, *32*(3), 537-539.

Lakshminrusimha, S., & Hedriana, H. L. (2023, February). Maternal and perinatal COVID-19–the past, present and the future. In *Seminars in fetal & neonatal medicine* (Vol. 28, No. 1, p. 101434). Elsevier.

Lillebråten, A., Todd, M., Dimka, J., Bakkeli, N. Z., & Mamelund, S. E. (2023). Socioeconomic status and disparities in COVID-19 vaccine uptake in Eastern Oslo, Norway. *Public Health in Practice*, *5*, 100391.

McNeil, A., & Purdon, C. (2022). Anxiety disorders, COVID-19 fear, and vaccine hesitancy. *Journal of Anxiety Disorders*, *90*, 102598.

Movahedi, M., Siahafshari, K. M., Hajhashemi,

M., Khorvash, F., Saeidi, M., & Allameh, Z. (2023). Evaluation of maternal and fetal outcomes in pregnant women with COVID-19 based on different trimesters. *Advanced Biomedical Research*, *12*(1), 165.

Rawlings, L., Looi, J. C., & Robson, S. J. (2022). Economic Considerations in COVID-19 Vaccine Hesitancy and Refusal: A Survey of the Literature. *Economic Record*, *98*(321), 214-229.

Socolov, D. G., Iorga, M., Carauleanu, A., Ilea, C., Blidaru, I., Boiculese, L., & Socolov, R. V. (2017). Pregnancy during adolescence and associated risks: an 8-year hospital-based cohort study (2007–2014) in Romania, the country with the highest rate of teenage pregnancy in Europe. *BioMed research international*, *2017*(1), 9205016.

Tang, S., Liu, X., Jia, Y., Chen, H., Zheng, P., Fu, H., & Xiao, Q. (2023). Education level modifies parental hesitancy about COVID-19 vaccinations for their children. *Vaccine*, *41*(2), 496-503.