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Research

Factors Affecting Willingness to Vaccinate COVID-19 in Pregnant Women in Manggarai Regency, East Nusa Tenggara, Indonesia

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ABSTRACT

Background: The COVID-19 vaccination has been recommended by WHO and the Ministry of Health of the Republic of Indonesia. Vaccination is carried out by pregnant women starting from the age of 13 weeks. Vaccines are expected to reduce the risk of pregnant women exposed to COVID-19. However, participation in receiving the COVID-19 vaccine in Manggarai Regency is still low. The purpose of this study was to analyze the factors that influence the willingness to vaccinate against COVID-19 in pregnant women in Manggarai Regency

Subjects and Method: This was an analytic observational study with a cross-sectional design approach. This study was conducted in Manggarai Regency, East Nusa Tenggara, from January to May 2022. The sample in this study was 65 pregnant women who had never been vaccinated against COVID-19 with purposive sampling technique. The dependent variable in this study is the willingness of the vaccine. The independent variables are knowledge about COVID-19, knowledge about COVID-19 vaccination, belief, safety, effectiveness and side effects of COVID-19. Data collection using questionnaires and data processing using logistic regression analysis

Results: Vaccination willingness was strongly influenced by mother's knowledge about COVID-19 in pregnancy (b=0.05; 95% CI= 0.01 to 0.73; p= 0.029), belief in the COVID-19 vaccine (b= 0.04; CI 95%= 0.01 to 0.76; p= 0.169), vaccination safety (b= 0.04; 95% CI= 0.01 to 0.64; p= 0.022). there was no significant effect, namely knowledge of vaccines (b= 0.20; 95% CI = 0.02 to 2.01; p=0.169) and vaccine effectiveness (b= 0.47; 95% CI= 0.05 to 0.46; p=0.516).

Conclusion: Vaccination willingness was strongly influenced by mother's knowledge about COVID-19 in pregnancy, belief in the COVID-19 vaccine and vaccination safety.

Keywords: COVID-19, vaccine, factor

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BACKGROUND

The World Health Organization (WHO) since April 2021 has recommended that all pregnant women receive the COVID-19 vaccine. The Indonesian government through the Ministry of Health will ensure that all pregnant women receive the COVID-19 vaccine immediately to protect mothers and babies from infection with the COVID-19 virus. Circular No. HK.02.01/I/2007/2021 regarding COVID Vaccination for Pregnant Women explains that vaccination for

pregnant women is included in special criteria.

Vaccination for pregnant women is given at 13 weeks of gestation and in the second (II) trimester of pregnancy. If pregnant women have comorbidities such as acute complications, the vaccine can be given. Provision of accelerated vaccination for pregnant women with high risk such as age over 35 years, having a body mass index above 40, comorbid diabetes and hypertension and pregnant women who are at high risk of exposure, especially pregnant women in the health service sector (Kemenkes RI, 2021).

The East Nusa Tenggara Provincial Government has implemented a vaccine for pregnant women since mid-August 2021. The Manggarai Regency Government in collaboration with the Indonesian Midwives Association (IBI) of the Manggarai Regency branch has also carried out vaccinations in September 2021 targeting all pregnant women in Ruteng City. However, only about 26% of pregnant women participated in the vaccination activity. Preliminary study conducted at one of the Puskesmas in Manggarai pregnant women who were willing to be vaccinated only about 105 out of 265 pregnant women. Until the end of 2021, vaccination for pregnant women in Manggarai Regency is only around 60%.

Various efforts have been made by the Regional Government so that pregnant women are willing to be vaccinated, namely by providing a condition that the family will not get direct cash assistance (BLT) if there are pregnant women in the family who are not vaccinated. In addition, pregnant women will not be assisted in giving birth if they do not get the COVID-19 vaccination. This shows that the willingness of pregnant women to take part in the COVID-19 vaccination is still low, so it is necessary to evaluate the achievement of the COVID-19 vaccination in pregnant women.

There are several factors that affect the speed of the vaccination process, namely first knowledge about COVID-19, vaccination, belief, safety, effectiveness and side effects of the covid-19 vaccine. Other factors that influence willingness to receive the COVID-19 vaccine are age, education level, occupation, as well as information or knowledge from social media and from health workers and fear of side effects from vaccination.

SUBJECTS AND METHOD

1. Study Design

This was a cross sectional study. The study was conducted in Manggarai Regency in East Nusa Tenggara, in 2021.

2. Population and Sample

The population in this study were all pregnant women who had not received the COVID-19 vaccination. The samples obtained were 65 pregnant women. Sampling by non-probability sampling with purposive sampling.

3. Study Variables

The dependent variable is the willingness to vaccinate. The independent variables are knowledge about COVID-19, knowledge about COVID-19 vaccination, trust, safety, effectiveness, and side effects of covid-19 vaccination.

4. Operational Definition of Variables

Knowledge is a result of curiosity through sensory processes, especially in the eyes and ears of certain objects. belief is an attitude or view of an individual towards an object.
Security is a state of being free from danger.
Effectiveness is a successful state of an action taken. A side effect is an adverse or harmful result of an action

5. Study Instruments

The research instrument used in this research is a questionnaire.

6. Data analysis

Data processing uses univariate, bivariate and multivariate analysis.

RESULTS

1. Univariate Analysis

Table 1 is the result of univariate analysis. Most pregnant women aged over 25 years (78%) are willing to be vaccinated (63%), the highest education is high school and college (71%) with most willing to be vaccinated (59%), many mothers work outside the home (38%) willing to be vaccinated by 58.2%, the most sources of information obtained about covid-19 came from midwives, nurses and doctors (52%) with a willingness to vaccinate at 35%.

Table 1. Sample Characteristics

Characteristics of Pregnant Women	Vaccination Willingness				Total	
	Willing	%	Not Willing	%	n=65	%
Age						
< 21 years	7	11.0	7	11.0	14	22.0
≥ 21 Years	41	63.0	10	15.0	51	78.0
Education						
< Senior High School	10	15.0	9	14.0	19	29.0
≥ Senior High School	38	59	8	12.0	46	71.0
Occupation						
Working Outside	38	58,2	7	10.8	45	69.0
Working at Home	10	10.0	10	10.0	20	31.0
Sources of Information						
Midwives, Nurses and Doctors	23	35.0	11	17	34	52.0
Public Health Center	7	11.0	3	4.0	10	15.0
Television	12	19.0	2	3.0	14	22.0
Village Government	6	9.4	1	1.6	7	11.0

2. Bivariate Analysis

The bivariate analysis in table 2 shows that there is an influence between mother's knowledge about COVID-19, mother's knowledge about COVID-19 vaccination, belief, safety, effectiveness and side effects of covid-19 vaccination in pregnant women on the willingness of COVID-19 vaccination in pregnant women

In the variable of knowledge of pregnant women about COVID-19 during pregnancy, around 74% have good knowledge with a willingness to be vaccinated against COVID-19 while pregnant as much as 68%. The results of the analysis using the Chi Square test showed that there was a significant relationship between mother's knowledge of COVID-19 during pregnancy and the willingness to vaccinate against COVID-19 with p<0.001; OR=35.7 (95% CI= 7.8 to 163).

The variable knowledge of pregnant women about the COVID-19 vaccination during pregnancy, around 69% had good knowledge with the willingness to be vaccinated against COVID-19 while pregnant as much as 56.7%. The results of the analysis using the Chi Square test showed that there was a significant relationship between mother's knowledge of COVID-19 vaccination during pregnancy and the willingness to vaccinate against COVID-19 with p=0.025; OR=3.7 (95% CI= 1.1 to 12.1).

The variable of mother's confidence about the covid-19 vaccination during pregnancy, around 74% believe in the COVID-19 vaccination and are willing to be vaccinated while pregnant as much as 65%. The results of the analysis using the Chi Square test showed that there was a significant relationship between mother's knowledge

of COVID-19 vaccination during pregnancy and the willingness to vaccinate against COVID-19 with p<0.001; OR=12.8 (95% CI=3.4 to 47.6).

The safety variable for COVID-19 vaccination during pregnancy, about 65%of pregnant women think that the vaccine is safe so 60.3% are willing to be vaccinated. The results of the analysis using the Chi Square test showed that there was a significant relationship between vaccination safety and willingness to vaccinate for COVID-19 with p<0.001; OR=20.2 (95% CI=4.7 to 85.5).

The variable of the effectiveness of the COVID-19 vaccination during pregnancy, around 69% of pregnant women think that the vaccine is effective so 59.2% are willing to be vaccinated. The results of the analysis using the Chi Square test showed that there was a significant relationship between vaccination safety and the willingness to vaccinate against COVID-19 with p<0.001; OR=19 (95% CI=4.8 to 75.4).

Variable side effects of COVID-19 vaccination during pregnancy, around 55.3% of pregnant women think that the covid-19 vaccine has side effects so that 32.2% are willing to be vaccinated. The results of the analysis using the Chi Square test showed that there was no significant relationship between the side effects of vaccination and the willingness to vaccinate against COVID-19 (OR=0.1; 95% CI= 0.01 to 0.5; p= 0.05).

Table 2. Results of Bivariate Analysis of Mother's Knowledge About Covid-19, Mother's Knowledge of COVID-19 Vaccination, Trust, Safety, effectiveness and side effects of Covid-19 vaccination in pregnant women

Variables	Vaccination Willingness				Total		OR	95% CI	p
	Willing	%	Unwilling	%	n=65	%			
Knowledge about Covid-19									
Good	44	68.0	4	6.0	48	74.0	35.7	7.8–163.	<0.001
Less	4	6.0	13	20.0	17	26.0			
Knowledge about Covid-19 Vaccine									
Good	37	56.7	8	12.3	45	69.0	3.7	1.1–12.1	0.025
Less	11	17.05	9	13.95	20	31.0			
Belief about Covid-19 Vaccine									
Belief	42	65.0	6	9.0	48	74.0	12.8	3.4–47.6	<0.001
Not Belief	6	9.2	11	16.8	17	26.0			
Safety about Covid-19 Vaccine									
Safe	39	60.3	3	4.7	42	65.0	20.2	4.7–85.5	<0.001
Not Safe	9	14.0	14	21.0	23	35.0			
Effectiveness about Covid-19 Vaccine									
Effective	41	59.2	4	19.8	45	69.0	19.0	4.8–75.4	<0.001
Not Effective	7	9.9	13	20.1	20	31.0			
Side Effects about Covid-19 Vaccine									
Occur	21	32.2	15	23.1	36	55.3	0.1	0.02–0.5	0.005
Not Occur	27	41.6	2	3.1	29	44.7			

Table 3 is the result of a multivariate test obtained by factors that influence the willingness to vaccinate for COVID-19 in pregnant women, namely knowledge about COVID-19 with p= 0.029, trust in COVID-19 vaccination with p=0.031 and safety of COVID-19 vaccination with p=0.022

Table 3. Multivariate Analysis of Factors Affecting Willingness to Vaccinate COVID -19 in Pregnant Women in Manggarai Regency

Variable	b	95% CI		p
		Lower Limit	Upper Limit	
Knowledge about COVID-19	0.05	0.01	0.73	0.029
Knowledge about COVID-19 Vaccine	0.20	0.02	2.01	0.169
Belief about COVID-19 Vaccine	0.04	0.01	0.76	0.031
Safety about COVID-19 Vaccine	0.05	0.01	0.64	0.022
Effectiveness of COVID-19 Vaccine	0.47	0.05	0.46	0.516

DISCUSSION

Knowledge about COVID-19 during pregnancy has a strong and positive effect on the willingness to vaccinate against COVID-19 in pregnant women. The results of this study indicate that the odds ratio is 35.7, which means that mothers with good knowledge have a tendency to vaccinate 35.7 times more than mothers with less knowledge about COVID-19. Studies have shown an increased risk of severe COVID-19 if pregnant women become infected compared to non-pregnant women of the same age. Maternal exposure to COVID-19 is closely associated with an increased likelihood of premature birth, undergoing caesarean section, admission to the intensive care unit (ICU), mechanical ventilation, and death (Centeno-Tablante et al., 2021).

Good knowledge of a mother about COVID-19 during pregnancy has an impact on her decision to vaccinate during pregnancy. Good knowledge of pregnant women is influenced by appropriate information from health workers, the media and also from the village. Mother's knowledge is also influenced by age and education level. Ekadipta (2021), shows that education has an influence on knowledge about COVID-19 in the Greater Jakarta area. This study is in line with research conducted (Untari et al., 2022), which proved that the knowledge of pregnant women, which is influenced by the level of education and occupation of pregnant women about COVID-19, is closely related to the mother's willingness to vaccinate against COVID-19.

The results of this study indicate that there is a relationship between mother's knowledge about COVID-19 vaccination and willingness to vaccinate. Mothers with good knowledge have an impact on vaccination willingness to be 3.7 times greater than mothers with less knowledge. Vaccination is an effort made to reduce symptoms in pregnant women when exposed to COVID-19. A mother who has been vaccinated does not mean that she will not be exposed to the COVID-19 virus forever. To date, there is no effective antiviral treatment for COVID-19 except by vaccination. Pregnant women are strongly recommended to get vaccinated with encouragement and assistance from health workers. If pregnant women with a history of complications can easily consult a health care provider (Rasmussen and Jamieson, 2021). The results of this study are in line with Simmons et al. (2022), most pregnant women have doubts and do not want to be vaccinated during pregnancy because they have less knowledge about vaccination. Pregnant women who have good knowledge are willing to be vaccinated during pregnancy.

The belief of pregnant women in the COVID-19 vaccine has a positive and strong influence on the willingness to vaccinate. Mothers who believe that the COVID-19 vaccine is 12.8 times more willing to vaccinate than mothers who have distrust of vaccination. Around 13% of Indonesians do not believe in the COVID-19 vaccination.

Many respondents do not believe that COVID-19 (SARS-CoV-2) is real or that it is possible to spread and threaten public health. Several respondents stated that the pandemic was a product of propaganda, conspiracy, hoax, and/or a deliberate attempt to spread fear through the media for profit. This reason makes some people reluctant to get vaccinated (Kemenkes RI, 2021). Cui et al. (2022) show that most pregnant women who are willing to be vaccinated have the belief that by vaccinating the mother and family they will be safe from COVID-19 and will provide immunity to the baby in the womb.

The results of this study prove that there is a positive and strong relationship between pregnant women who believe that the COVID-19 vaccine is safe and their willingness to vaccinate against COVID-19. Pregnant women who feel that vaccines are safe are 20 times more likely to carry out vaccinations than mothers who feel that vaccines are not safe. Research conducted in Saudi Arabia, most pregnant women are willing to be vaccinated but there are still pregnant women who refuse to vaccinate for reasons of fear and worry about the safety of vaccinations that can have an impact on fetal development in the womb (Ghamri et al., 2022).

Recommendations from the Society for Maternal-Fetal Medicine and the American College of Obstetricians and Gynecologists (ACOG) have stated that vaccines should be offered to pregnant and lactating women based on the risks they are exposed to and that mRNA-based vaccines are considered low risk. According to the World Health Organization (WHO), community readiness in the form of hesitation in receiving vaccines is defined as behavior with delays in receiving or refusing vaccines even though services are available (WHO, 2021).

The results of this study prove that the effectiveness of vaccination has a significant and strong effect on the willingness to vaccinate. Pregnant women who think that vaccines are effective in reducing the risk of COVID-19 are more than twice as likely to carry out the COVID-19 vaccination.

Data shows that a person who receives the COVID-19 mRNA vaccine during pregnancy reduces the risk of severe illness from COVID-19 for the mother who is pregnant. A recent study compared pregnant women who received the COVID-19 mRNA vaccine to be more effective at minimizing the risk of severe illness from COVID-19 compared to pregnant women who did not receive the COVID-19 mRNA.

The results of this study are in linewith Naqvi et al. (2022), where the majority of pregnant women who believe the COVID-19 vaccine is very effective are willing to be vaccinated. Pregnant women who refuse to be vaccinated have the characteristics of a low level of education.

The results of this study indicate that there is no effect between the side effects of vaccination and the willingness to vaccinate pregnant women. The different acceptance of each pregnant woman with regard to vaccination as a result of different physiological changes of each pregnant woman. There are mothers who are afraid and doubtful about the side effects caused by vaccination both on the placenta and fetus and lack of time to conduct further research on the side effects of covid-19 vaccination. Research conducted by Egloff et al. (2022) differs from the results of this study. The study proved that mothers who were willing to be vaccinated had no fear of the side effects of COVID-19. Some of the side effects that may be found and are temporary are discomfort at the injection site, fatigue and migraines (Leik et al.,2021).

AUTHOR CONTRIBUTION

Silfia Angela Norce Halu completed the discussion, coordinated with other writers and submitted articles. Nur Dafiq and Maria Sriana Banul prepared the introduction and collected data. Dionesia O. Laput and Reineldis E. Trisnawati designed the research method and analyzed the data.

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CONFLICT OF INTEREST

There are no conflicts of interest

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