

DETERMINANTS OF COVID-19 VACCINE ACCEPTANCE IN SUMATRA BARAT PROVINCE

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Abstract: The COVID-19 vaccination is carried out to reduce the morbidity and mortality due to COVID-19, reduce the transmission of COVID-19, and achieve herd immunity. The objective of this study was to determine the relationship between socio-demographic factors and information exposure with the acceptance of COVID-19 vaccine in the community in West Sumatra Province in 2021. This study uses cross-sectional study design. An online questionnaire was distributed to obtain participants ≥ 18 years old in West Sumatra Province who had never received the COVID-19 vaccine. A total of 266 participants completed the questionnaire form. The acceptance of COVID-19 vaccine was moderate (56,4%). The results showed that there was significant relationship between age (p-value = 0.049) and marital status (p-value = 0.025) with COVID-19 vaccine acceptance. Unmarried people were more likely to accept the COVID-19 vaccine than people who were married / widowed. There was no significant relationship between sex, education, occupation, chronic disease, COVID-19 pasted disease and exposure to information with COVID-19 vaccine acceptance. It is necessary to provide valid and reliable information regarding the COVID-19 vaccine and campaigns that COVID-19 vaccine is needed for all ages.

Keywords: COVID-19, vaccine acceptance, socio-demographic

Introduction

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is a new type of coronavirus that causes Coronavirus Disease 2019 (COVID-19) (Kementerian Kesehatan RI, 2020b). The SARS-CoV-2 virus belongs to the Coronavirus family, which are a large family of viruses that cause respiratory infections in humans, ranging from the flu to more serious disease outbreaks (Kementerian Kesehatan RI, 2020a). Then on January 30, 2020 WHO declared COVID-19 a Public Health Emergency of International Concern (PHEIC) and declared a pandemic on March 11, 2020 (PDPI *et al.*, 2020).

In Indonesia, 2 cases were reported on March 2, 2020, as the first COVID-19 cases in Indonesia. Then the number of cases continues to grow over time until now. As of April 7, 2021, before this research was conducted, the number of confirmed cases of COVID-19 infection in Indonesia reached 1,552,880 cases with deaths reaching 42,227 people, so that the case fatality rate due to COVID-19 in Indonesia was 2.7%. Based on age characteristics, the highest number of positive confirmed cases was in the 31-45-year age group (29.5%). However, 48% of the number of deaths due to COVID-19 in Indonesia are in the >60 -year age group. Based on gender characteristics, there was no significant difference in the number of confirmed positive cases for women: 51%, for men: 49%. However, the number of deaths from COVID-19 in men (56.9%) was higher than the number of deaths in women

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(43.1%). By region, the province with the highest number of confirmed cases was DKI Jakarta with a total of 388,338 cases (25.1%); then followed by West Java Province (16.5%); and Central Java Province (11.1%) (Kementerian Kesehatan RI, 2021b).

Efforts to prevent COVID-19 that can be done include practicing social distancing, wearing masks, maintaining good air exchange in the room, avoiding crowds, washing hands with soap, and vaccinating (World Health Organization, 2020). The COVID-19 vaccination aims to reduce the morbidity and mortality due to COVID-19, reduce the transmission of COVID-19, and achieve herd immunity so that they remain productive, both socially and also economically (Kementerian Kesehatan RI, 2021a). Vaccination programs are only can be successful if there is a level of high acceptance and coverage. To achieve this, it is very important to understand the public's perception of risk regarding COVID-19, the COVID-19 vaccine acceptance, and trust in media sources reporting on COVID-19 (Malik *et al.*, 2020).

The coverage of COVID-19 vaccination in Indonesia until December 2, 2021, is 67.80% of the total vaccination target for the first vaccination and 46.88% for the second vaccination. The coverage consists of Health Human Resources, public officers, vulnerable communities, and the general public, aged 12-17 years and the elderly. While the vaccination coverage in West Sumatra Province was recorded at 55.52% of the provincial target (Kementerian Kesehatan RI, 2021c). It was found that the acceptance of the COVID-19 vaccine in West Sumatra Province was the second lowest in the willingness to receive the COVID-19 vaccine in Indonesia, which was 47% after Aceh Province (46%) (Kementerian Kesehatan RI *et al.*, 2020).

Research conducted by Malik *et al* (2020) found that 60% of respondents who did not finish high school said they would receive the COVID-19 vaccine and respondents who did not have jobs reported receiving lower COVID-19 vaccines than people who worked or retired (Malik *et al.*, 2020).

This study aims to determine the relationship between socio-demographic factors and information exposure with the acceptance of the COVID-19 vaccine in the community in West Sumatra Province in 2021.

Materials and Methods

This study uses cross-sectional study design. This research was conducted in West Sumatra Province from May to December 2021. The sample in this study was part of the community aged 18 years and over who have never been vaccinated against COVID-19 and lived in West Sumatra Province. From the calculation results, the minimum sample is 266 respondents. The sampling technique used is random sampling. Data was obtained through filling out an online questionnaire on the Google Form platform. This research has received ethical approval from the Ethics Committee of the Faculty of Public Health, Andalas University.

Results and Discussion

Respondents Characteristics

The characteristics of respondents in terms of sex, education, occupation, marital status, chronic disease, COVID-19 pasted disease and information exposure described in Table 1.

Table 1: Respondents Characteristics

Variable	n	%
Sex		
Female	184	69.2
Male	82	30.8
Education		
<= High school	170	63.9
> High school	96	36.1
Occupation		
Do not have work	52	19.5
Have a work / student	214	80.5
Marital status		
Married / widowed	98	36.8
Unmarried	168	63.2
Chronic disease		
No	237	89.1
Yes	29	10.9
COVID-19 pasted disease		
Yes	18	6.8
No	248	93.2
Exposure to information		
The traditional media only	31	11.7
Social media only	18	6.8
Traditional and social media	217	81.6
COVID-19 vaccine acceptance		
No	116	43.6
Yes	150	56.4
Total	266	100.0

It was found that most of the respondents were female (69.2%). Most of the respondents in this study were high school graduates or under (63.9%). Most of the respondents have a work / student (80.5%). Most of the respondents are unmarried (63.2%). Most of the respondents did not have a chronic disease (89.1%). Only a few respondents had a positive history of COVID-19 (6.8%). Most of the respondents in this study obtained information related to the COVID-19 vaccine through traditional and social media (81.6%). From the analysis, it was found that vaccine acceptance in West Sumatra was moderate (56.4%).

Factors Associated with Acceptance of the COVID-19 Vaccine in Sumatra Barat Province

Bivariate analysis was carried out between sociodemographic factors (age, sex, education, occupation, marital status, chronic disease, COVID-19 pasted disease and exposure to information on the COVID-19 vaccine acceptance).

Table 2: Relationship between age and COVID-19 vaccine acceptance

Age	Median	Min-max	SD	p-value
No	25	19-72	12.38	0.049
Yes	23	18-82	11.64	

It is found that the median age of the respondents who did not accept the vaccine was 25 years. While respondents who accept the vaccine the median was 23 years. It is known that there is a significant age difference between respondents who accept the vaccine and respondents who did not accept the COVID-19 vaccine.

Table 3. shows that there is a significant relationship between marital status and the acceptance of COVID-19 vaccine (p-value = 0.025; OR = 1.837; 95% CI = 1.1-3.04). There was no significant relationship between the variables of sex, education, occupation, chronic disease, COVID-19 pasted disease, and exposure to information in the acceptance of the COVID-19 vaccine in West Sumatra (p-value > 0.05).

Table 3: Factors associated with COVID-19 vaccine acceptance in Sumatra Barat Province

Variable	COVID-19 vaccine acceptance				p-value	OR 95% CI
	No		Yes			
	n	%	n	%		
Sex						
Female	82	30.8	102	38.3	0.736	1.135
Male	34	12.8	48	18.0		(0.67-1.92)
Education						
<= High school	71	26.7	99	37.2	0.420	0.813
> High school	45	16.9	51	19.2		(0.49-1.34)
Occupation						
Do not have work	18	6.8	34	12.8	0.193	0.627
Have a work / student	98	36.8	116	43.6		(0.33-1.18)
Marital status						
Married / widowed	52	19.5	46	17.3	0.025	1.837
Unmarried	64	24.1	104	39.1		(1.10-3.04)
Chronic disease						
No	103	38.7	134	50.4	1.00	0.946
Yes	13	4.9	16	6.0		
COVID-19 pasted disease						
Yes	5	1.9	13	4.9	0.247	0.475
No	111	41.7	137	51.5		(0.16-137)
Exposure to information						
Traditional media only	18	6.8	13	4.9	0.110	
Social media only	10	3.8	8	3.0	0.069	0.493
						(0.23-1.06)
Traditional and social media	88	33.1	129	48.5	0.220	0.546
						(0.21-1.44)

In a study conducted by Syed Alwi, et. al. (2021) in Malaysia found that the highest rate of acceptance of the COVID-19 vaccine was in the 18–29-year age group. Meanwhile, hesitancy to be vaccinated against COVID-19 differed greatly across age groups, with the highest hesitation seen in the age group 60 years and over. In addition, this study also found that there was a difference in vaccine acceptance between the married/divorced group and the unmarried group, where the level of the COVID-19 vaccine acceptance in the unmarried community was higher than other groups (Syed Alwi et al., 2021).

In this study, it was found that there was no significant relationship between sex and COVID-19 vaccine acceptance. The results obtained are in accordance with the study conducted in Central Sulawesi Province where the study reported that there was no difference in the willingness to be vaccinated against COVID-19 between female with male sexes (Ichsan et al., 2021). This study differs from several other studies that have obtained that sex is associated with receiving the COVID-19 vaccine where male have a better acceptance rate than female (Mondal et al., 2021). In addition, in another study, female were 2.7 times more likely to have a negative perception of the COVID-19 vaccine than male (Wulandari et al., 2021). Female were significantly associated with concerns about the side effects of the COVID-19 vaccine. Male is better intention to be vaccinated was also associated with male spending more time outside the home than female for both work and other matters. This allows male to be more worried about contracting COVID-19 and have a higher interest in getting vaccinated than female (Askarian et al., 2020).

In this study, it was found that education level and occupation were not related to COVID-19 vaccine acceptance, in line with other studies conducted during the pandemic in China and research conducted in Saudi Arabia (Al-Mohaithef & Padhi, 2020; Wang et al., 2020). The results of this study contradict other studies which found that education and occupation were two factors that influenced respondents' willingness to be vaccinated against COVID-19. It was explained that education is related to the knowledge and perceptions of respondents which also influences their decision making in accepting or refusing the COVID-19 vaccine (Syed Alwi et al., 2021).

Previous research conducted by Li, et al (2021) found that people who married were less willing to be vaccinated. The study also explains that the level of knowledge has an important role in willingness to receive the COVID-19 vaccination. Therefore, it is necessary to take steps such as providing targeted education to community groups with low willingness or willingness to vaccinate, increasing trust in the government, and providing vaccination guarantees to be able to increase vaccination coverage for at-risk groups (Li et al., 2021).

In the study conducted by Harapan, et al (2020), they reported that there was a significant relationship between marital status and vaccine acceptance. However, the study explained that the level of acceptance of the COVID-19 vaccine in the community would be influenced by the effectiveness of the vaccine. Acceptance was relatively high when the vaccine had very high effectiveness (95%) and decreased when the vaccine was only 50% effective. In addition, as the acceptance of this vaccine is associated with the perceived risk for COVID-19, it is also important to increase the perception of risk in society (Harapan et al., 2020).

From the results of the analysis, it was found that chronic disease and COVID-19 pasted disease were not associated with vaccine acceptance in respondents. The results obtained are the same as previous

studies (Askarian *et al.*, 2020). However, in another study, it was stated that respondents with chronic diseases and respondents with a positive history of previous COVID-19 had better vaccine acceptance (Akiful Haque *et al.*, 2021). Those who had been diagnosed with COVID-19 have experience of being infected and are better informed so that they have a correct understanding of vaccines (Agustiningsih *et al.*, 2022; Utama *et al.*, 2021).

This study found that information exposure was not related to the COVID-19 vaccine acceptance in West Sumatra. However, it should be noted that any source of information, especially social media, can provide untrue and misleading information to users or recipients. This is in line with the research conducted to see the effect of fake news on social media on the decision of the Indonesian people to carry out the COVID-19 vaccine. The study explained that untrue news affects willingness to accept the COVID-19 vaccine. People will think twice about receiving vaccinations after seeing the simulation of giving fake news on social media (Marbella *et al.*, 2021).

A person's final decision to be vaccinated against can be influenced by different factors over time, especially as the number of people vaccinated in the environment increases (Lazarus *et al.*, 2021). An increase or decrease in the number of confirmed cases and deaths from COVID-19 can also affect a person's intention to be vaccinated (Motta, 2021). According to Omar (2021) the differences in acceptance, rejection or doubt about being vaccinated against COVID-19 in various regions and countries can be related to differences in socio-demographic characteristics, health characteristics, human behaviour, knowledge of vaccines, control over misinformation, trust in the health system, the types of vaccines available, concerns about side effects, and the level of confidence in the benefits of the vaccine (Omar & Hani, 2021). In other words, many factors need to be considered that can influence a person's decision to receive the vaccine or not.

Conclusion

The results showed that the acceptance of the COVID-19 vaccine in the community in West Sumatra Province was moderate. Based on the results of the bivariate analysis, it was found that there was a significant relationship between the variables of age and marital status on the acceptance of the COVID-19 vaccine. There was no significant relationship between the variables of sex, education, occupation, chronic disease, COVID-19 pasted disease, and exposure to information on the acceptance of the COVID-19 vaccine in the community in West Sumatra Province.

Vaccination as an effort to prevent the transmission of COVID-19 will be successful if herd immunity in the community is achieved properly. Thus, public awareness and active role in vaccination is needed. For this reason, providing valid and reliable information about the COVID-19 vaccine is needed for all ages and all walks of life.

Acknowledgements

The authors thank the Faculty of Public Health, Andalas University, who has supported the implementation of this research through the DIPA FKM UNAND 2021 funding.

Declaration of Interest Statement

The authors declare that they have no conflict of interests.

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