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ACCEPTANCE AND PRACTICE TO COVID-19 VACCINATION AMONG RURAL POPULATION IN INDONESIA

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ABSTRACT

As one of the strategies to prevent and reduce the spread of COVID-19 since January 2021, the Indonesian Government has implemented a COVID-19 vaccination program. When this research was carried out in the first semester of 2022, the achievement of COVID-19 vaccination target was not yet reach the expected target due to many people were afraid and refused to be vaccinated. The research aims to determine the acceptance and practice of COVID-19 vaccination in rural communities located in Banyumas Regency, Central Java in 2022. This was a cross-sectional study based on electronic survey data distributed to residents (aged ≥ 15 years) of Tunjung Village, Jatilawang Sub-district between May 27, 1 - June 10, 2022. The study sample size was 211 respondents using the quota sampling technique. We used the Health Belief Model (HBM) as the theoretical framework. The research results show that the majority (69%) of respondents stated that they received the COVID-19 vaccination and around 79.6% of those who received it had received the COVID-19 vaccination. Chi-square statistical analysis shows that the variables gender, education, knowledge about COVID-19, knowledge about COVID-19 vaccination, perceived severity of COVID-19, perceived benefits of COVID-19 vaccination, and perceived self-efficacy towards COVID-19 vaccination are related. significantly impact acceptance of COVID-19 vaccination. Perception of self-efficacy towards COVID-19 vaccination is the strongest driving factor for acceptance (POR: 5.45). In the multivariate test, the most dominant variable influencing vaccine acceptance was the variable perception of self-efficacy towards vaccination after controlling for the knowledge variable. A significant relationship was obtained between receipt of COVID-19 vaccination and COVID-19 vaccination practices. It was concluded that acceptance of COVID-19 vaccination is closely related to the level of knowledge and attitudes towards COVID-19 and COVID-19 vaccination, and the higher acceptance encourages the practice of carrying out COVID-19 vaccination. It is recommended that to increase acceptance and practice of Covid vaccination it is necessary to increase the population's knowledge regarding COVID-19 and the COVID-19 vaccine by increasing education and promotion of the COVID-19 vaccination program through electronic media, especially television and social media.

Keywords: COVID- 19 vaccination, acceptance, practice

Introduction

The COVID-19 pandemic is a public health problem that has attracted world attention since 2020.[1,2] As of March 2, 2022, there were 437 million confirmed cases with 5.9 million deaths worldwide.[3] Meanwhile in Indonesia, the number of confirmed cases reached 5.6 million and resulted in 149 thousand deaths.[4] This has led Indonesia to become the country with the highest cases in the ASEAN region.[3,5]

In dealing with an infectious disease pandemic, there are various approaches to limit the spread of disease, where the scientific community has widely recognized that vaccination is a key health intervention as an effort to overcome the pandemic.[2] However, on the other hand, vaccine hesitancy has grown over the last few decades and is affecting vaccination coverage.[6] Vaccine hesitancy is a complex behavior, a context-specific phenomenon, and varies by time, place and vaccine type.[7,8] As such, the WHO declared vaccine hesitancy and refusal as one of the top ten health threats in 2019.[9]

On January 13, 2021, Indonesia's mass vaccination program officially began. With this program, the government hopes to reach the target goal of 70% or around 208,265,720 people.[10] In fact, until March 13, 2022, the program had not reached the planned target. The COVID-19 Vaccine Acceptance Survey in Indonesia conducted previously also showed that 65% of respondents were willing to accept the vaccine, 27% of respondents were hesitant about the vaccine and the remaining 8% refused the vaccine.[11] This 35% group then needs attention in encouraging the success of the vaccination program because people who are willing to accept are more likely to want to vaccinate against COVID-19.

Completeness of vaccine doses is more important because the effectiveness of vaccination is still high to prevent severe symptomatic patients and death from COVID-19. At the beginning of 2022, there were 5,013 COVID-19 patients who died, dominated by patients who had not completed their vaccination dose (69%).[12] Therefore, a smaller scope approach, such as a village, is needed to explore the reasons why people do not vaccinate.

In Banyumas Regency, the death rate due to COVID-19 also increased at the beginning of the year. As of March 2, 2022, the number of Banyumas residents who died from COVID-19 reached 67 people. Based on data from the Banyumas Health Office, the victims who died from COVID-19 were mostly people with comorbidities and incomplete vaccination doses.[13] As a research location, Banyumas Regency still has a population that must be sought to vaccinate against COVID-19.[14]

The Health Belief Model (HBM) theory is the most general framework for understanding human health behavior. In various previous studies, the health belief model (HBM) theory has been widely used to determine the description and factors that are considered to be related to the acceptance of a population in an area towards COVID-19 vaccination, including age, gender,

education, employment, income, knowledge of COVID-19, knowledge of COVID-19 vaccination, perceptions of susceptibility, severity, benefits, barriers and self-efficacy as well as cues to action include sources of information.[15–20] Through factors known to be associated with acceptance, it can also influence the tendency for higher COVID-19 vaccination practices.

There has been no research examining the acceptance and practice of COVID-19 vaccination. The Health Belief Model theory can serve as a useful theoretical framework not only to explore the motives of someone who is willing to vaccinate, but it is also important to know the reasons behind someone refusing to vaccinate. The main hypothesis of this model is that existing beliefs can predict future behavior. Thus when applied to disease prevention, it suggests that a person's willingness to prevent a disease combined with their expectation of a certain action (such as receiving a vaccine) can serve as a predictor of future behavior. The aim of this research is to determine the acceptance and practice of COVID-19 vaccination among residents in rural areas in Banyumas Regency, Central Java Province in 2022.

Methods

This study used a quantitative approach with a cross sectional survey method. The research location was in Banyumas Regency, Central Java Province with a focus on Tunjung Village, Jatilawang Sub-district. Data collection time was conducted between May 27 - June 10, 2022. The population in this study were residents of Tunjung village, Jatilawang sub-district (aged ≥ 15 years). Based on the sample calculation, the sample size was determined to be 211 respondents for 9,104 residents of Tunjung Village, Jatilawang District aged ≥ 15 years.

Quota sampling technique was used for selection of sample. Data collection uses an online questionnaire because it is one of the best methods and is also suitable in pandemic conditions where people must avoid gathering, close contact etc. for COVID-19 prevention. Statistical analysis uses the chi square test to see the relationship between independent and dependent variables, namely acceptance of the COVID-19 vaccine and the relationship between acceptance of the COVID-19 vaccine and vaccination practices. To get the most dominant factor, we conducted a multiple regression test.

Results

The results of research showed that there were more female respondents (64%) than male respondents (36%). The age range of respondents was between 15-86 years with an average of 37.07 years. Most respondents had a senior high school in education (37%), worked as laborers/employees/employees (30.8%) and most respondents had high incomes (51.5%). Meanwhile, the source of information that was first (56.4%) and most frequently (58.3%) used to find out information about COVID-19 was electronic media in the form of television or radio.

For the knowledge variable, the majority of respondents had good knowledge about COVID-19 (60.7%) and COVID-19 vaccination (59.7%). In terms of individual perception variables, the majority of respondents felt the vulnerability of COVID-19 (59.2%), felt the severity of COVID-19 (57.8%), felt the benefits of COVID-19 vaccination (53.6%), felt there were obstacles to vaccination COVID-19 (52.7%) and felt there was self-efficacy for COVID-19 vaccination (62.1%).

Table 1. Frequency Distribution of Respondents according to Demographic, Socio Psychological Characteristics, Knowledge, Individual Perceptions, and Information Sources in 2022

Variable	Frequency	Percentage
Sex		
Female	135	64,0
Male	76	36,0
Age		
15-29	70	33,2
30-44	65	30,8
45-59	65	30,8
60-74	9	4,3
≥ 75	2	0,9
Education		
Not Finished Elementary School	9	4,3
Elementary School	34	16,1
Junior High School	51	24,2
Senior High School	78	37
University	39	18,5
Employment		
Un Employed	20	9,5
Labor	65	30,8
Students	34	16,1
House Wife	54	25,6
Entrepreneur	12	5,7
Retired	2	0,9
Others	24	11,4
Income Category		
High	68	51,5
Low	64	48,5
Source of COVID-19 Information (the first tim		
Friends	8	3,8
Family	14	6,6
Printed media	1	0,5
Online media	26	12,3
Electronic media	119	56,4
Social media	33	15,6
Health Worker	7	3,3
Others	3	1,4
Source of COVID-19 Information (the most)		
Friends	35	16,6
Family	41	19,4
Printed media	13	6,2
Online media	68	32,2
Electronic media	123	58,3
Social media	102	48,3
Health Worker	42	19,9
Religious and Community Leaders	7	3,3
Others	3	1,4
Knowledge of COVID-19		
Good	128	60,7
Fair	83	39,3
Knowledge of COVID-19 vaccination		

Variable	Frequency	Percentage
Good	126	59,7
Fair	85	40,3
Perception of COVID-19 Vulnerability		
Perceived Vulnerable	125	59,2
Perceived Not Vulnerable	86	40,8
Perception of COVID-19 Severity		
Perceived Severity	122	57,8
Not Perceived Severity	89	42,2
Perception of Usefulness of COVID-19 vaccina		
Perceived Usefulness	113	53,6
Not Perceive Usefulness	98	46,4
Perception of Constraint to COVID-19 vaccina		
Perceived constraint	100	47,7
No perceived constraint	111	52,7
Perception of Self Efficacy to COVID-19 vaccin		
Perceived Has Efficacy	131	62,1
Perceived No Efficacy	80	37,9
Doses of Vaccination		
1 time	30	17,9
2 time	65	38,7
3 time	73	43,5
Reason for Not Taking COVID-19 Vaccination		
Not sure about safety	6	14
Not sure about effectiveness	7	16,3
Worry to side effect	14	32,6
Belief	3	7
Others	13	30,2

According to the variable acceptance and practice of vaccination, 69% said they were willing to receive the COVID-19 vaccine, 20% of them refused the COVID-19 vaccine and the remaining 11% said they had not decided. Of the respondents who received the vaccination, around 80% of respondents stated that they had received the COVID-19 vaccination, consisting of 17.9% 1 dose, 28.7% 2 doses and 43.5% had received 3 doses of the vaccine (1 booster). The 20% of respondents who answered that they had not been vaccinated most often said they were afraid of side effects (32.6%).

Table 2. Frequency Distribution of Respondents according to Acceptance and Practice of COVID-19 vaccination in 2022

Variable	Frequency	Percentage
Acceptance COVID-19 vaccination		
Accepted	145	69
Refuse	42	20
Not Decided	24	11
Practice of COVID-19 vaccination		
Vaccinated	168	80
Not yet vaccinated	43	20

Next, we tested the relationship between the independent variables and the dependent variable of receipt of COVID-19 vaccination with the results presented in the following table:

Tabel 3. Relationship between Respondents' Characteristics, Knowledge and Perceptions to Acceptance of COVID-19 vaccination in 2022

Independent Variable	Acceptance of COVID-19 vaccination				Total		P-value
	Accepted		Not Accepted/Not Decided				
	n	%	n	%	n	%	
Sex							
Female	100	74,1	35	25,9	135	100,0	0,031
Male	45	59,2	31	40,8	76	100,0	
Age							
Old	72	64,3	40	35,7	112	100,0	0,180
Young	73	73,7	26	26,3	99	100,0	
Knowledge							
High	89	76,1	28	23,9	117	100,0	0,011
Low	56	68,7	66	31,3	94	100,0	
Employment							
Work	68	67,3	33	32,7	101	100,0	0,766
Do not wok	77	70	33	30	110	100,0	
Income							
High	51	75	17	25	68	100,0	0,842
Low	49	76,6	15	23,4	64	100,0	
Education Level							
High	103	80,5	25	19,5	128	100,0	<0,001
Low	42	50,6	41	49,4	83	100,0	
Knowledge of COVID-19 Vaccination							
Good	99	78,6	27	21,4	126	100,0	<0,001
Fair	46	54,1	39	45,9	85	100,0	
Perception of Vulnerability to COVID-19							
Perceived Vulnerable	90	72	35	28	125	100,0	0,230
Not Perceived Vulnerable	55	64	31	36	86	100,0	
Perception of COVID-19 Severity							
Perceived Severity	93	76,3	29	23,8	122	100,0	0,007
Not Perceived	53	58,4	37	41,6	89	100,0	
Perception of Usefulness of COVID-19 vaccination							
Perceived Usefulness	92	81,4	21	18,6	113	100,0	<0,001
Not Perceive Useful	53	54,1	45	45,9	98	100,0	
Perception of Constraint of COVID-19 vaccination							
No constraint	70	70	30	30	100	100,0	0,767
Perceived constraint	75	67,6	36	32,4	111	100,0	
Perception of Self Efficacy to COVID-19 vaccination							
Perceived	108	82,4	23	17,6	131	100,0	<0,001
Not perceived	37	46,3	43	53,8	80	100,0	

The chi square test results show that there is a significant relationship between the variables gender (p-value: 0.031), education (p-value: 0.011), knowledge about COVID-19 (p-value: <0.001), knowledge about COVID-19 vaccination (p-value: <0.001), perceived severity of COVID-19 (p-value: 0.007), perceived benefits of COVID-19 vaccination (p-value: <0.001), and perceived self-efficacy for COVID-19 vaccination (p-value: <0.001) with receipt of COVID-19 vaccination. Meanwhile, the variables are age (p-value: 0.180), employment (p-value: 0.766), income (p-value: 0.842), perceived vulnerability to COVID-19 (p-value: 0.230) and perceived barriers to COVID-19 vaccination (p-value: 0.767) is known to have no significant relationship with receipt of COVID-19 vaccination. To find out the most dominant variable, we carried out a multiple regression test with the following results.

Table 4. Modeling of Factors Associated with Acceptance of COVID-19 vaccination

Independent Variable	Acceptance of COVID-19 vaccination				Total		P-value	OR	95% CI Lower-upper
	Accepted		Not Accepted/Not Decided						
	n	%	n	%	n	%			
Sex									
Female	100	74,1	35	25,9	135	100,0	0,35	1,39	0,7-2,78
Male*	45	59,2	31	40,8	76	100,0			
Education									
High	89	76,1	28	23,9	117	100,0	0,11	1,75	0,88-3,51
Low*	56	68,7	66	31,3	94	100,0			
Knowledge on COVID-19									
High	103	80,5	25	19,5	128	100,0	0,00	2,91	1,46-5,81
Fair*	42	50,6	41	49,4	83	100,0			
Knowledge on COVID-19 vaccination									
High	99	78,6	27	21,4	126	100,0	0,47	1,32	0,63-2,82
Fair*	46	54,1	39	45,9	85	100,0			
Perception of COVID-19 Severity									
Perceived Severity	93	76,3	29	23,8	122	100,0	0,69	1,16	0,57-2,39
Not Perceived*	53	58,4	37	41,6	89	100,0			
Perception of Usefulness of COVID-19 vaccination									
Perceived Usefulness	92	81,4	21	18,6	113	100,0	0,24	1,60	0,74-3,49
Not Perceive Useful*	53	54,1	45	45,9	98	100,0			
Perception of Self Efficacy to COVID-19 vaccination									
Perceived	**108**	**82,4**	**23**	**17,6**	**131**	**100,0**	**0,00**	**3,62**	**1,73-7,59**
Not perceived*	37	46,3	43	53,8	80	100,0			

* comparison

The result of multivariate regression test as shown in the Table 4, the most dominant variable influencing vaccine acceptance is the variable perception of self-efficacy towards vaccination after being controlled by the knowledge variable regarding COVID-19, which is 3.6x higher in the perception of feeling the effect of COVID-19 vaccination compared to those who do not feel it.

Table 5. Relationship between Receipt of COVID-19 vaccination and COVID-19 vaccination Practices in 2022

Acceptance to COVID-19 vaccination	Practice to COVID-19 vaccination				Total		P-value
	Vaccinated		Not yet vaccinated				
	n	%	n	%	n	%	
Accepted	129	89	16	11	145	100,0	
Note Accepted/ Not Decide	39	59,1	27	40,9	66	100,0	<0,001
Total	168	79,6	43	20,4	211	100,0	

As presented in Table 5, it can be seen that there is a relationship between acceptance of COVID-19 vaccination and practice of COVID-19 vaccination (p-value: <0.001).

Discussions

As an effort to reduce the increasing spread and impact caused by the COVID-19 pandemic, the Indonesian Government is implementing a COVID-19 vaccination program with a target of

being completed within fifteen months. However, until March 2022, this target had not been achieved. Complete vaccination doses are essential because the effectiveness of COVID-19 vaccination is still high in preventing patients from experiencing severe symptoms and even death. Even though residents in the research area are aware of the existence of the COVID-19 vaccination program, there are still many residents who have not been vaccinated. So it is important to know the acceptance and practice of COVID-19 vaccination among residents in both rural and urban areas throughout Indonesia.

The main finding of this research is that around 69% of the respondents studied received the COVID-19 vaccine. Other studies that have similar acceptance rates are Saudi Arabia (64.7%) and the UK (64%).[17,21] While the results of this study are better than Turkey (49.7%) and Hong Kong (42.2%), they are still lower than China (91.3%).[19,22,23]

Even though the majority of respondents in this study stated that they received the COVID-19 vaccine, it is still a significant health problem that 31.3% of respondents have not decided or refused to get the COVID-19 vaccine. This condition is also felt by the United States because around 40% do not intend to get the COVID-19 vaccine.[16] Findings [24] show that people from areas severely impacted by COVID-19 have higher vaccination intentions. This is not in line with this research which was conducted after the peak of the third wave of COVID-19 in Indonesia when the highest record of daily confirmed cases was reported at 64,718, but the proportion receiving the COVID-19 vaccine was much lower compared to other countries where the number of COVID-19 cases was small.[25] Lack of education, a lot of misinformation, reluctance to vaccines and inadequate promotion are some of the factors causing slow increases in vaccination acceptance.[26] So it is important to carry out outreach regarding the COVID-19 vaccination program and eradicate misinformation regarding COVID-19 and COVID-19 vaccination.

Acceptance of COVID-19 vaccination in this study was found to be significantly related to several factors. In terms of socio-demographic characteristics, gender and education were significantly associated with receipt of COVID-19 vaccination. These findings are in line with.[26–28] Female respondents were found to have a higher level of acceptance of COVID-19 vaccination. Likewise, research in India revealed higher acceptance among women than men.[26] According to [29] the female population can be more easily convinced than men to vaccinate in order to achieve herd immunity.

The education variable has a significant relationship with receipt of COVID-19 vaccination. These results are in line with previous research.[26–28] Research [28] also shows that individuals with higher education have a higher chance of receiving COVID-19 vaccination. The higher rate of vaccine acceptance among the group of highly educated individuals can be attributed to the majority having better exposure to COVID-19 and COVID-19 vaccine knowledge. As a result, they have a better impression of vaccination when compared to lower education groups.

Knowledge about COVID-19 and COVID-19 vaccination is associated with receipt of COVID-19 vaccination. These findings regarding COVID-19 knowledge are in line with research results.[30] Meanwhile, these findings contrast with [31], which revealed that knowledge about COVID-19 was not significantly correlated with receipt of COVID-19 vaccination. The relatively high level of knowledge can be attributed to the active participation of a well-educated population, who then responded positively when an outbreak occurred by obtaining knowledge from valid sources.[32] As with this study, the majority (55.5%) of respondents with higher education can be attributed to good knowledge about COVID-19. A study in China reported that knowledge has a direct impact on attitudes.[33] Meanwhile, a lack of knowledge and awareness generally leads to an attitude of ignorance and inappropriate practices.[32]

In individual perceptions, which are components of the HBM theory, it shows that perceptions of severity, benefits and self-efficacy have a significant relationship with acceptance of COVID-19 vaccination. Perceived severity of COVID-19 with statistically significant acceptance of COVID-19 vaccination was also found in research.[24,28] The study revealed that the severity a person feels increases their chances of receiving vaccination. The HBM theory explains that the perception of the severity of an infection or disease triggers a person's attitude to undertake treatment efforts.[34]

Perceived benefits of COVID-19 vaccination were also found to have a significant relationship with acceptance of COVID-19 vaccination. A study conducted in Lebanon, Hong Kong and Iraq in 2021 and 2022 found that the perceived benefits of the vaccine were a significant predictor of receiving vaccination.[15,19,20] The HBM theory developed by Rosenstock, 1974 also explains that the higher the belief in the effectiveness or benefits obtained from reducing the threat of a disease, the more preventative action will be taken, in this study, receiving vaccination. Then the perception of self-efficacy towards COVID-19 vaccination which has a significant relationship with acceptance of COVID-19 vaccination is also found in research results.[35,36]

In this study, perceptions of vulnerability and barriers were not found to have a significant relationship with acceptance of COVID-19 vaccination, which is in line with research.[16,24,26] Meanwhile [15,19,36] found that perceived barriers were significantly related to acceptance of COVID-19 vaccination. Variables such as age, occupation, income were also not found to have a significant relationship with receipt of COVID-19 vaccination in this study.

With regard to signals for action, the source of information that was widely used by respondents in this study when they first learned about COVID-19 and most often used to search for information related to COVID-19 was through electronic media in the form of television or radio. This finding can be explained by the results of a Kominfo survey which shows that, based on region, the percentage of rural residents (50.39%) who already have a smart phone or smartphone

is lower than in urban areas (83.04%).[37] This then makes the accessibility of information related to COVID-19 still limited and still relies on electronic media such as TV and radio.

Another main finding is that this study shows that acceptance of COVID-19 vaccination and COVID-19 vaccination practices have a statistically significant relationship. However, surprisingly, the research results also revealed that the percentage of practice of COVID-19 vaccination was higher than the percentage of acceptance of COVID-19 vaccination. Around 80% of respondents stated that they had practiced COVID-19 vaccination with only an acceptance percentage of 69%. This finding can be interpreted as meaning that there are residents who refuse vaccination but carry out vaccination. Based on further research, it is known that the motivation for residents who refuse to vaccinate is so that they can receive Direct Village Fund Cash Assistance (BLT DD) with one of the requirements being that they have been vaccinated. This shows that along with government assistance programs, it needs to be accompanied by education about vaccines and the COVID-19 vaccination program so that the population has knowledge and awareness of good health.

To the best of our knowledge, this is the first study on the acceptance and practice of COVID-19 vaccination among rural population in Indonesia. However, there are several limitations in this study. First, this study used a relatively small sample size and the proportion of each age group was uneven, especially in the elderly group. Second, the use of the internet with a smartphone or laptop to conduct the survey, making residents who do not have access to the internet and similar electronic devices unable to participate. Third, this study did not analyze the relationship between trust in information sources and acceptance of COVID-19 vaccination on the grounds that this study only analyzed the information sources most often used to seek information about COVID19. Fourth, this research does not analyze the reasons why someone accepts, has not decided and refuses vaccination. Finally, this research only uses a quantitative approach so that respondents' answers lack detail and depth. Soit needs to be developed through Focus Group Discussions (FGDs) and in-depth interviews that are built as multi-dimensional measures.

Conclusion

The research results can be concluded that the level of knowledge of respondents regarding COVID-19 and COVID-19 vaccination is mostly good. However, it turns out that acceptance of COVID-19 vaccination among rural residents can be said to be relatively still not optimal (69%). The variable perception of self-efficacy towards vaccination is the most dominant variable related to acceptance of vaccination. Research also shows that receipt of COVID-19 vaccination is significantly associated with COVID-19 vaccination practices.

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Conflict of Interest

The author declared that the author had no conflict of interest.

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