

Association between Community Perception and Willingness to Vaccinated Against COVID-19 in Surakarta, Central Java, Indonesia

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ABSTRACT

Background: Covid-19 has been declared a pandemic since March 2020 until now, so the government requires the provision of a covid-19 vaccine for all people. The government's vaccination campaign has received various responses from the public, some people accept and some reject the Covid-19 vaccine. This study aims to determine the relationship between public perception of the acceptance of the COVID-19 vaccine in Surakarta.

Subjects and Methods: The cross sectional study was conducted in Surakarta. A sample of 65 people aged >12 years was selected by random sampling. The dependent variable was the willingness to receive the covid-19 vaccine. The independent variable was perception. Data was collected by online questionnaire (google form). Data were analyzed by chi square test.

Results: There is a relationship between public perception of vaccination and acceptance of the covid-19 vaccine (OR=5.45 ; 95% CI= 2.57 to 11.53 ; p<0.001)

Conclusion: There is a significant relationship between perceptions related to vaccines and people's willingness to receive the COVID-19 vaccine.

Keywords: covid-19, acceptance, knowledge, rejection, vaccination

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BACKGROUND

Coronavirus Disease 2019 (Covid-19) is a disease caused by the Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2). Discovered in December 2019 in Wuhan, China. This virus infects the respiratory tract which can cause mild, moderate, or severe symptoms. The main symptoms that can arise are fever (temperature > 38°C), cough,

and difficulty breathing. The death rate caused by the virus varies, depending on the infected population, regulations implemented by the government and the availability of laboratory tests (Ministry of Health, 2020).

The Ministry of Health of the Republic of Indonesia has opened data on COVID-19 cases as of September 6, 2021, which is quite

high. Positive confirmed cases of Covid-19 in Indonesia reached 4,133,433 people with a cure rate of 3,850,689, and a death rate of 136,473 people. Central Java is the province with the largest number of cases in Indonesia, namely 751 people. Data as of September 6, 2021 states that the total vaccine target has reached 208,265,720 people, with a total of 67,827,361 people for the first dose of vaccine, 38,849,803 people for the second dose of vaccine, and 722,837 for the third dose of vaccine (Ministry of Health of the Republic of Indonesia, 2021).

Vaccines are one of the efforts made to prevent infectious diseases, so it is necessary to develop vaccines to be more effective at weakening corona virus infections (Makmum et al., 2020). According to the Regulation of the Minister of Health of the Republic of Indonesia Number 84 of 2020, the criteria for the group of vaccine recipients are: medical personnel, government sector workers, community/religious leaders, public sector workers, teachers/lecturers, and the general public other than pregnant and lactating women and those with a history of comorbidities. The importance of this Covid-19 vaccination has prompted the government to carry out a vaccination campaign in various areas, including the city of Surakarta.

A massive vaccination campaign has been carried out, but there are still certain groups of people who refuse to vaccinate. People who refuse vaccination have many reasons, ranging from health problems to religious reasons (Whitehead and Perry, 2020). The variety of community backgrounds and the circulation of information about the increase in deaths or casualties due to vaccines raises its own concerns (Makmum et al., 2020). People are worried that the body is not good at handling vaccines and will instead attack people who

have been vaccinated which can lead to illness and death (Enggar Furi H, 2020).

The World Health Organization (2020) states that people's willingness to receive vaccinations can be increased by creating a supportive environment, utilizing people who have a positive influence and increasing community motivation. Some of the efforts that can be done are the formation of a positive mindset, the existence of rewards and socialization. However, research on public perception needs to be done first to determine the right program to increase vaccination outcomes.

SUBJECTS AND METHOD

1. Study Design

This was a cross sectional study conducted in Surakarta, from July to October 2021.

2. Population and Sample

The population of this research is the people in Surakarta. The sample is people aged > 12 years who have not or have received the COVID-19 vaccine in Surakarta as many as 130 people. The sample was selected by random sampling.

3. Variable

The dependent variable is the willingness to receive the COVID-19 vaccine. The independent variable is perception.

4. Instrument

In view of the pandemic conditions, data collection was carried out electronically via a google form on the questionnaire (bit.ly/isiKuisisionerVaksin). The consent form for participation in the survey is stated in the online questionnaire that is distributed.

5. Research Ethics

This research has obtained a research permit obtained from the Surakarta Health Office with the number 070/0792/IX/2021.

6. Data Analysis

Data analysis was univariate and bivariate. The test used is the chi square test.

RESULTS

A. Univariate Analysis

1. Characteristics of Respondents

Table 1 showed that most of the study subjects were at age 20-40 years old (52%), attained senior high school (70%), and students (62%).

Table 1. Study subjects characteristics

Characteristics	n	Percentage
Age Group (Year)		
<20	47	36%
20-40	67	52%
>40	16	12%
Background Education		
Junior high school	11	8%
Senior high school	91	70%
Diploma	12	9%
Graduate	13	10%
Masters	9	2%
Occupation		
Student	81	62%
Housewife	13	10%
Private employee	9	7%
Others	27	21%
Vaccination Status		
Done	65	50%
Not yet	65	50%

2. Frequency Distribution of Respondents' Perceptions

Table 2. Frequency Distribution of Respondents' Perceptions

No	Perception	Total	Percentage
1	Good	61	47%
2	Poor	69	53%

B. Bivariate Analysis

1. The Relationship between Vaccine Safety Perceptions and Public Willingness to Receive Vaccines

Table 3. Relationship between Vaccine Safety Perceptions and Public Willingness to Receive Vaccines

Vaccine Safety Perception	Vaccination Status				Total		OR	p
	Not yet		Done		N	%		
	N	%	N	%				
Poor	34	52%	13	20%	47	36%	4.39	<0.001
Good	31	48%	52	80%	83	64%		

Based on the analysis, it was shown that the perception of good vaccine safety increased the willingness/status to have received the COVID-19 vaccine by 4.39 times than the

perception of poor vaccine safety and was statistically significant (OR= 4.39; 95% CI= 2.01 to 9.56; p <0.001).

2. The Relationship between Perceptions of Effectiveness and Need for Vaccines on Public Willingness to Receive Vaccines

Table 4. The Relationship between Perceived Effectiveness and Vaccine Needs on Public Willingness to Receive Vaccines

Perception of Vaccine Effectiveness and Needs	Vaccination Status				Total		OR	p
	Not yet		Done		N	%		
	N	%	N	%				
Poor	43	66%	26	40%	69	53%	2.93	0.003
Good	22	34%	39	60%	61	47%		

Based on the results of data analysis, perceptions of effectiveness and need for good vaccines increased willingness/ status to have received COVID-19 vaccine by 2.93

times than perceptions of effectiveness and poor need and were statistically significant (OR= 2.93; 95% CI= 1,44 to 5.99; p=0.003).

3. Relation of Receipt of Vaccination Requirements and Schedule to Community Willingness to Receive Vaccines

Table 5. Relation of Receipt of Vaccination Requirements and Schedule to Community Willingness to Receive Vaccines

Admission Terms and Schedule	Vaccination Status				Total		OR	p
	Not Yet		Done		N	%		
	N	%	N	%				
Poor	49	75%	26	40%	75	58%	4.59	<0.001
Good	16	25%	39	60%	55	42%		

Based on the results of the analysis, acceptance of a good vaccine requirement and schedule increased the willingness/ status to have received a COVID-19 vaccine

by 4.59 times than acceptance of a poor vaccine requirement and schedule and was statistically significant (OR= 4.59; 95% CI= 2 .17 to 9.74; p<0.001).

4. The Relationship of the Positive Value of the Community to the Willingness of the Community in Receiving Vaccines

Table 6. The Relationship of Community Positive Values on Community Willingness to Receive Vaccines

Positive Values of Society	Vaccination Status				Total		OR	p
	Not yet		Done		N	%		
	N	%	N	%				
Poor	49	75%	26	40%	75	58%	1.66	0.158
Good	16	25%	39	60%	55	42%		

Based on the results of the analysis, the positive value of a good community increased the willingness/status to have received the COVID-19 vaccine by 1.66 times

than the positive score of a poor community but statistically not significant (OR= 1.66; 95% CI= 0.82 to 3.34; p= 0.158).

5. Relationship between Perceptions of Legitimacy and Vaccination Authorities on Public Willingness to Receive Vaccines

Table 7. The Relationship between Perceptions of Legitimacy and Vaccination Authorities on Public Willingness to Receive Vaccines

Perception of Vaccine Legitimacy and Authority	Vaccination Status				Total		OR	p
	Not yet		Done		N	%		
	N	%	N	%				
Poor	36	55%	20	45%	56	43%	2.79	0.005
Good	29	45%	45	69%	74	57%		

Based on the results of the analysis of perceptions of legitimacy and authority of a good vaccine, it increased the willingness/status to have received the COVID-19 vaccine by 2.79 times than the perception of legitimacy and authority of a bad vaccine and was statistically significant (OR= 2.79; 95% CI= 1, 36 to 5.73; p=0.005).

DISCUSSION

A. Public Perception Regarding Vaccination

1. The relationship between vaccine safety perceptions and public willingness to receive vaccines

Based on the research that we have done, there is a significant relationship regarding the perception of vaccine safety on people's willingness to receive the vaccine (p<0.001). The results of this study were strengthened by previous researchers who stated that there was a relationship between vaccine safety and public perception of the COVID-19 vaccine (Al-Metwali et al., 2021). The results of this study are in line with the results of the Ministry of Health survey (2021), which is about 8% rejecting and 27% expressing doubts about the COVID-19 vaccine. The public's refusal and doubts were motivated by low confidence in vaccine safety (30%).

Another study explains that respondents have believed in the benefits of the COVID-19 vaccine, which is able to boost the immune system and so that it can fight when

exposed to the disease. But with the existence of negative issues about vaccines, some respondents did not agree to be vaccinated. In addition, the lack of public understanding about the purpose, benefits of vaccination, and what effects will be caused if not vaccinated can be another reason people do not want to be vaccinated (Widayanti & Kusumawati, 2021).

2. The Relationship between Perceptions of Effectiveness and Need for Vaccines on Public Willingness to Receive Vaccines

In this study, 47% of respondents had a positive perception of the COVID-19 vaccine and 53% had a negative perception. Good perception will affect willingness to participate in vaccination (p< 0.05). Meanwhile, the bad perception about COVID-19 vaccination stems from a lack of education from health services. Perception has a significant relationship with willingness to be vaccinated. Knowledge affects perception, therefore it is necessary to provide comprehensive and equitable information to all circles of society (Ma'rifati, 2021).

The World Health Organization (2020) states that people's willingness to receive vaccinations can be increased by creating a supportive environment, utilizing people who have a positive influence and increasing community motivation. Therefore, efforts are needed to form a positive mindset, rewards and socialization are needed to increase vaccination acceptance in the community.

3. Relation of requirements and schedule of vaccination relation to community willingness to receive vaccines

The results of the research that we have done show a significant relationship between acceptance of the requirements and vaccination schedule on people's willingness to receive the vaccine ($p < 0.001$). This was obtained from 130 respondents, 42% had a positive perception of the requirements and vaccination schedule, while 58% of respondents had a negative perception ($p < 0.001$).

A survey from the Ministry of Health of the Republic of Indonesia (2021) shows that as many as 65% of the public are willing to accept the COVID-19 vaccine if it is provided by the Government, while 8% of them refuse, the remaining 27% express doubts about the Government's plan to distribute the COVID-19 vaccine. The highest willingness to receive vaccines was seen in the provinces of Papua, Java, and Kalimantan, while the level of willingness to receive vaccines was lower in several provinces in Sumatra, Sulawesi, and Maluku. West Papua Province has the highest level of acceptance (74%) compared to all other provinces, while Aceh Province has the lowest (46%) (World Health Organization et al., 2020).

Based on the schedule and location of reception, more than a third (35%) of the population wished to be vaccinated at the community health center. Practicing doctors, midwives, and private hospitals are the second source choice (33%) to obtain the COVID-19 vaccine. About 20% of respondents want to be vaccinated in their office or workplace. There is also a high demand for vaccination in other places, such as in homes, apartments, shopping centers, private laboratories, village halls, and places of worship such as mosques and temples (World Health Organization et al., 2020).

4. The relationship of the positive value of the community to the willingness of the community in receiving vaccines

Based on the research that has been done, it was found that there was no significant relationship between the positive attitude of the community towards the willingness to take the vaccine ($p > 0.05$). Another study, Tasnim (2021) also stated that in Kendari, good public perception affects willingness to receive vaccinations. In addition, the poor perception of Covid-19 vaccination is caused by the lack of health services providing education to the public (Astuti et al., 2021). A study by Linda et al., (2021) and Yang et al. (2021) revealed different results that there was a positive relationship between community values and vaccine acceptance.

A previous study conducted in China, found similarly, high vaccine acceptance (83%) was dominated by a high perceived benefit assessment (Lin et al., 2020). Another study conducted in Indonesia showed a relationship between perceived benefits and vaccine acceptance. In this study, perceptions were described in 2 ways, namely vaccination was felt to reduce infection/ complications and vaccination reduced anxiety. These two things are considered to be significantly related by statistics and the OR values respectively are 9.3 and 11.9, meaning that people with a high perception of benefits will have a greater chance of being vaccinated than those who are not (Achadi et al., 2021).

5. The relationship between perceptions of legitimacy and vaccination authorities on public willingness to receive vaccines

Based on research data that has been carried out, as many as 16 people (24%) of the total respondents who have been vaccinated and 45 people (69%) of the total respondents who have not been vaccinated indicate that bad perceptions about vaccines in the community are still high. The results of this

study are in line with the results of the previous survey, which was around eight percent refused and 27% expressed doubt about the COVID-19 vaccine, but some agreed with the government's policy because they already knew the benefits of the corona vaccine (Gandryani & Hadi, 2021). The public also hopes that political leaders can set an example, for example, by being the first to be vaccinated before mass vaccination is carried out (Ministry of Health of the Republic of Indonesia, 2021).

B. The relationship of public perception on receipt of the Covid-19 Vaccine

Based on the results of the bivariate test, the result ($p < 0.05$) means that there is a relationship between public perception of vaccine acceptance. The results of previous study by Elhadi et al. (2021) and Jiang et al. (2021) also stated that there is a relationship between knowledge and public acceptance of the COVID-19 vaccine.

Knowledge is one of the factors that influence a person's perception and behavior in receiving the covid-19 vaccine (Abu Hammour et al., 2021). Education level and age also have a relationship with a person's knowledge. found that the older and higher the level of education, the more knowledge a person will have (Olaimat et al., 2020). In addition, social factors also have an influence on one's knowledge. Knowledge improvement aims for the success of the vaccination program which is achieved through public awareness of the importance of vaccination for public welfare in general (Notoatmodjo, 2012).

AUTHOR CONTRIBUTION

Annita Viesta Nirmala Dewi, Alya Ayu Kharisma, Nailah Salma Inas, Chusna Habiba, Okti Indriyani, Caroline Dharmawan, Syarifah Jihadillah, Grant Mujahidah, Kharisma Trisiadewi, Nabila Ramadhani,

Revi Gama Hatta Novika, Nurul Jannatul Wahidah helped prepare research questionnaires, conducted data collection, statistical testing and analysis, as well as writing scripts.

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CONFLICT OF INTEREST

There is no conflict of interest in this study.

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