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Editorial Team

Indexing

All issues

Latest issue

Announcements

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Publications Ethics

Google Scholar Citations

Recruitment



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| RESEARCH ARTICLE

Overview of Knowledge and Acceptance of the DKI Jakarta Community on the Covid-19 Vaccination Program

Ayuda Nia Agustina¹ ✉ and Siti Utami Dewi²

^{1,2}Fatmawati Health Science Colleges, Indonesia

Corresponding Author: Ayuda Nia Agustina, **E-mail:** ayudania.agustina@gmail.com

| ABSTRACT

The spread of the Covid-19 virus has paralyzed various aspects, one of which is health. Scientists have succeeded in making a Covid-19 vaccine to prevent transmission of Covid-19 so that it can enter the endemic phase. Indonesia started the Covid-19 vaccination program in January 2021. DKI Jakarta is one of the centers for the spread of the Covid-19 virus and has participated in implementing the Covid-19 Vaccination program. During the implementation of the Covid-19 vaccination program, there was still a lack of public knowledge about the vaccination program carried out by the government, which resulted in the readiness and acceptance of the community varying. This study aims to determine the knowledge and acceptance of the people of DKI Jakarta regarding the COVID-19 Vaccine. The type of research used is descriptive quantitative with a cross-sectional design. Research respondents were selected using a purposive sampling technique by meeting the inclusion criteria that have been set as follows: Have an ID card and are domiciled in DKI Jakarta, aged 18-59 years, can use the internet, have not or have received the first dose of the covid-19 vaccine, and are willing to be respondents. The data collection tool is in the form of a questionnaire that identifies public knowledge of the COVID-19 vaccine and public acceptance of the vaccine. The questionnaire that identified knowledge about the covid vaccine was 18 questions and had multiple choices, namely true and false, while the questionnaire to identify public acceptance consisted of 12 statements with 5 answer choices. The number of respondents is as many as 345 people. Data was collected through a questionnaire distributed online via google form from April – July 2021. From 18 statements regarding knowledge of the covid-19 vaccine, data obtained 46.67% had good knowledge, 32.8% had sufficient knowledge, and 20.53% had less knowledge. While the picture of public acceptance is: 51.59% doubt the halalness of the vaccine, 43.19% feel the vaccine is not safe, 41.16% doubt the effectiveness of the vaccine, 33.9% feel there will be side effects of the vaccine, 30.14% are hesitant to injected with the vaccine, 35.94% doubted trusting the vaccine, and 42.03% believed there were other preventive measures against COVID-19 transmission. The results of this study indicate that education regarding the Covid-19 vaccine still needs to be improved. The government can use various kinds of social media, such as Instagram, WhatsApp, and TikTok, to educate the public.

| KEYWORDS

Covid-19 Vaccination; Knowledge; Community Acceptance

| ARTICLE INFORMATION

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1. Introduction

To deal with the COVID-19 pandemic, the Indonesian government has made various policies to protect the community from the transmission and impact of COVID-19, starting from large-scale social restrictions, including restrictions on learning in schools and colleges, workplaces, places of worship, public places, and transportation, social assistance, incentives for workers health, mask policies for all and policies for implementing health protocols in various places that continue to be echoed while waiting for vaccines (Suzanna, Natosba and Fatriansari, 2022).

Vaccines are one of the ways that are considered effective and economical to prevent infectious diseases. So it is necessary to make the development of vaccines to be more effective in weakening coronavirus infections. So far, more than 40 pharmaceutical companies and academic institutions around the world have launched their vaccine development programs against the COVID-19 virus (Shakeel).

The Government of Indonesia and also countries around the world are trying to develop and present the COVID-19 Vaccine and plan the implementation of immunization for its citizens. Vaccines do not protect individuals but also provide protection for people who cannot be immunized, for example, at a certain age or people with a disease certain. Vaccines do not cause disease. Vaccines that have been used in the community have been guaranteed safety and generally do not cause severe adverse reactions (side effects)

The first period of vaccination in Indonesia has been going on since January 2021, which was given to priority groups, such as health workers and public officials. Meanwhile, the rest will be carried out in the second period of vaccination which lasts until the end of 2021 (Cabinet Secretary of the Indonesian Public Re, 2021). In 2022, the administration of booster vaccines or the third dose for recipients of the second dose of vaccine has begun. As for according to World Health Organization (WHO) standards, each resident will take two injections or need dua a dose of vaccine. Seven types of COVID-19 vaccines can be used in the vaccination process in Indonesia. The seven vaccines are produced by Bio Farma, Astra Zaneqa, Shinopharm, Moderna, Novavax Inc, Pfizer Inc and BioNtech, and Sinovac Biotech (Secretary of the Republic of Indonesia Cabinet, 2021).

The Ministry of Health of the Republic of Indonesia, together with several organizations (II AGI, UNICEF, and WHO), conducted an online survey from 19 to 30 September 2020 to determine public acceptance of the COVID-19 vaccine. The survey involved more than 115,000 responses from 34 provinces in Indonesia. Based on the survey, it is known that 65% of respondents are willing to receive the COVID-19 vaccine if provided by the Government, and 8% of them refuse. 27% (Sidarta, and the rest expressed doubts about the Government's plans to distribute COVID-19 vaccines. Based on respondent data conducted by the Ministry of Health of the Republic of Indonesia together with the *Indonesian Technical Advisory Group on Immunization* (ITAGI) released in October 2020, it shows that there are still around 7.6% of people who refuse to be vaccinated, and 26.6% of people have not decided and are still confused (Ministry of Health of the Republic of Indonesia, ITAGI, UNICEF, 2020).

A recent survey conducted by *Saiful Mujani Research and Consulting* showed that only about 37% of residents are "expressly" willing to be vaccinated against COVID-19 if it is available. 17% of residents said they would not be vaccinated, and even 28% of residents said they were not afraid of contracting COVID-19. Most cited the possibility of side effects from the vaccine as a major concern, as well as a lack of confidence in the government regarding its safety and efficacy. Given that this vaccine is still relatively new and the concern about politicization that arises during the process of making this vaccine also increases people's hesitancy. Various myths and hoaxes circulating about the COVID-19 vaccine are one of the factors that encourage people's hesitancy to undergo vaccination (Febriyanti, Choliq, and Mukti, 2021).

So far, there has been no research that assesses the level of knowledge and public acceptance of the COVID-19 Vaccine in DKI Jakarta Province. This study aims to find out how the knowledge and acceptance of the COVID-19 Vaccine of the people of DKI Jakarta towards the program that has been launched by the Government of Indonesia as a form of prevention against COVID-19.

2. Method

The type of research used is descriptive quantitative with a *cross-sectional* design. Respondents to the study were selected using *purposive sampling* techniques by meeting the inclusion criteria that have been set as follows: Have an identity card or identity card, and domiciled in DKI Jakarta Province, aged 18-59 years, can use the internet, has not or has received the first dose of covid-19 vaccine, and is willing to be a respondent. The data collection tool is in the form of a questionnaire that identifies public knowledge of the covid-19 vaccine program in Indonesia and public acceptance of the vaccine. The questionnaire that identified knowledge of the covid vaccine was 18 questions and had 5 answer choices, while the questionnaire to identify public acceptance was 12 statements using the Likert scale.

Previous studies have shown that 38.9% of respondents indicated a penitentiary for the COVID-19 vaccine received.

$$n = \frac{Z\alpha^2 (pq)}{d^2} = 339 \approx 345$$

Figure 1. Estimation of Sample Count

The number of respondents is calculated using the formula in figure 1. where n is the sample size, p = proportion, $\alpha = 0.05$, $Z = 1.96$, and $d = 0.05$. A total of 345 respondents completed the questionnaire provided online. Data was collected through questionnaires made using *google forms* and distributed through WhatsApp groups from April to July 2021. The questionnaire contained 18 questions about the covid-19 vaccine program. The indicators measured in knowledge are: vaccine benefits, vaccine targets, vaccine indications, vaccine contraindications, vaccine screening, and vaccine injection effect. The questionnaire assessing vaccine acceptance contains indicators: safety of the covid-19 vaccine, vaccine effectiveness, side effects of the vaccine, willingness to be injected with the vaccine, trust against vaccines, religious beliefs, other ways to prevent contracting covid-19 in addition to vaccine administration, and the choice of the type of vaccine that allows it to be injected into the body.

3. Results and Discussion

Table 1 Characteristics of Respondents (n=345)

Variable	Category	n	%
Gender	Man	139	40,3
	Woman	206	59,7
Age	≤ 25 years	127	36,8
	≥ 25 years	218	63,2
Marital status	unmarried (single, divorced, left to die)	104	30,1
	marry	241	69,8
Religion	Non-Islam	126	36,5
	Islamic	219	63,5
Education	Primary and secondary education	203	58,8
	Higher education	142	41,2
Work	Not working	67	19,4
	Work	278	80,5

Table 2 Knowledge Level of DKI Jakarta Residents Against Covid-19 Vaccine (n=345)

	n	%
Less	71	20,5
Enough	113	32,8
Good	161	46,7

Table 3 DKI Jakarta Community Acceptance of the Covid-19 Vaccine (n=345)

Indicator	STS		TS		Nervous		S		SS	
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%
Halalness of covid-19 vaccines	47	13,62	49	14,20	178	51,59	46	13,33	25	7,25
Safety of covid-19 vaccines	56	16,23	149	43,19	64	18,55	40	11,59	36	10,43
Effectiveness of covid-19 vaccines	51	14,78	52	15,07	142	41,16	67	19,42	33	9,57
Covid-19 vaccine side effects	36	10,43	37	10,72	82	23,77	117	33,91	73	21,16
Willingness to be injected with covid-19 vaccine	67	19,42	57	16,52	104	30,14	71	20,58	46	13,33
Trust in covid-19 vaccines	52	15,07	76	22,03	124	35,94	49	14,20	44	12,75
Belief in other ways to prevent transmission of covid-19	13	3,77	29	8,41	69	20,00	145	42,03	89	25,80

In this study, more than half of the respondents were women (59.7%) compared to men (40.3%). Gender has an impact on acceptance status, attitudes, and overall vaccination outcomes. Women tend to be less vaccinated, but after vaccination, women tend to develop a more durable protective antibody response when compared to males. However, women also experience more frequent side effects caused by vaccines. Fake news about vaccine side effects also contributed to the refusal of vaccine administration by a large number of women's groups. If examined further, in a study conducted by the CDC in 2019 aimed at

observing the side effects of vaccines from 1990 to 2016, it was found that 80% of reports of Severe allergic reactions are more commonly reported by women. It was also mentioned that one of the reasons is that it is more likely that women report more cases of allergies than men because they tend to seek medical treatment when sick (Mazure, 2021). In a study conducted on 331 patients confirmed positive for COVID-19 in China, recovery cases between male and female patients were 36% and 65%, respectively. (Chen *et al.*, 2022) . Previous systematic reviews found that sex was the most frequently examined demographic variable in ten studies, and there was no consistent relationship between these variables. Education is also not related to the reception of vaccines. It is stated from previous studies that there is no difference between developing and developed countries in terms of vaccine acceptance. (Adams *et al.*, 2021) .

Age is not related to the reception of the vaccine. The priority group of vaccine recipients is residents domiciled in Indonesia who are ≥ 18 years old. Groups of residents under the age of 18 can be vaccinated if adequate vaccine safety data are available and *emergency use authorization* or issuance of a distribution permit number (NIE) from the Food and Drug Supervisory Agency (Kemenkes RI, 2020). COVID-19 patients do not know the age limit; it can occur in infants, children, adolescents, adults, and the elderly. The vulnerable population groups are infants, toddlers, children, and the elderly, especially if there are other comorbid factors such as hypertension and diabetes mellitus. The adult age group is the group that experiences this disease the most because it is the most productive at this age and has a high mobilization factor. In this study, respondents were in late adulthood (36-45). This is in line with the research that has been done.

The results of this study stated that the last level of education of most respondents was at the primary and secondary education levels, which was 58.8%, followed by higher education as much as 41.2%. In the research of Paul *et al.*, the level of education is one of the benchmarks for public acceptance of the COVID-19 vaccine, where 16% of the causes of respondents ' rejection are education level lower ones (Al-Qerem and Jarab, 2021). The research illustrates that with a higher level of education, people's knowledge will increase, so vaccine acceptance will be higher. Research conducted by Febriyanti *et al.* in the city of Surabaya stated that there is a significant relationship ($p = 0.000$) between knowledge and people's willingness to receive the COVID-19 vaccine (Febriyanti *et al.*, 2021). On the other hand, Pastoll states that knowledge is not only associated with a person's level of education but rather an understanding of something; motivation will be learning and adaptation to science and technology. Research in the United States shows that 47% of the population is hesitant and predisposed to refuse the COVID-19 vaccine, where education level factors show a significant correlation with such rejection (BioSpace, 2021). A survey conducted by the Ministry of Health, together with WHO and Unicef, regarding the acceptance of COVID-19 vaccines in Indonesia, gave the result that the highest vaccine acceptance rate was in provinces located on the islands of Papua, Java, and Kalimantan (Ministry of Health of the Republic of Indonesia, ITAGI, UNICEF, 2020). Another study conducted by Ichsan *et al.* (2021) showed that the factors that affect the willingness of people in central Sulawesi to receive the COVID-19 vaccination are age, education level, occupation, marital status, religion, and ethnicity.

Based on table 2, the level of knowledge of respondents, it is known that level of knowledge of DKI Jakarta in the implementation of the vaccine program is relatively good (46.7%); however, the results of this study also show that it is more than 50% of the people of DKI Jakarta have sufficient knowledge and lack of information on the covid-19 vaccine. This can be an input for the government to be more aggressive in conducting health socialization about vaccines person to person or through social media. To carry out the success of the COVID-19 Vaccine implementation in Indonesia, the public must first be exposed to information related to vaccines so that the level of perception and acceptance of the public is relatively high. Vaccines are effective interventions that can reduce the burden of disease globally. Based on Kartika's research, Suryati and Paradisa (2021), there is a relationship between knowledge and community readiness to receive the covid-19 vaccine in the Padang Laweh Health Center work area.

The vaccination program was developed as part of the global upaya to achieve herd immunity. However, a certain threshold of vaccination must be reached for success. Studies on the acceptance of COVID-19 vaccines have been conducted in different countries and population groups around the world to identify barriers to exist and develop evidence-based interventions to deal with them. This study evaluated the acceptance of the COVID-19 vaccine in DKI Jakarta only. Overall, the acceptance rate of the COVID-19 vaccine in DKI Jakarta is 33.8%; this finding follows the results of the WHO COVID-19 Vaccine Acceptance Survey in Indonesia, showing that the province of Java has an acceptance rate of high vaccines. (Ministry of Health of the Republic of Indonesia, ITAGI, UNICEF, 2020). Lasmita's research, Misnaniarti and Idris (2021) state that there is a significant relationship between family support and acceptance of COVID-19 vaccination.

DKI Jakarta's public acceptance of the covid-19 vaccine can be seen in table 3.3 indicators make people hesitant to receive the covid-19 vaccine, namely related to the halalness of the vaccine, the effectiveness of the vaccine, and trust in the vaccine. Public hesitancy over vaccines is an urgent issue for health authorities in all parts of the world. The population of DKI Jakarta is predominantly Muslim, and Islamic law can influence people's acceptance of vaccinations because of its conservatism. (Hope *et*

al., 2020). In the past, vaccine acceptance was a challenge because of fears that vaccines contained animal products that were considered haram (prohibited) in Islamic law. In 2001, WHO issued a statement based on the opinion of Islamic scholars that altered animal products are considered halal for medical use. The COVID-19 pandemic presents a similar situation where concerns about the halal status of vaccines have an impact on the acceptance of vaksin in Indonesian society. To reassure you, the Indonesian Ulema Council (MUI) issued a fatwa stating that the COVID-19 vaccine is halal for use (Majelis Ulama Indonesia, 2021). In line with the results of a survey conducted by the Ministry of Religion (2021), which showed that as many as 48.3% admitted that they doubted their halalness and 9.27% considered that vaccines COVID-19 is against religion. Then, the Fatwa of the Indonesian Ulema Council emphasized the halalness of the COVID-19 vaccine for use by adherents of the Islamic religion.

Side effects of vaccines are something that must be taken into account. Based on the study, 33.9% agreed with the presence of vaccine side effects. Effects commonly experienced by some people after getting the vaccine include pain, redness or swelling in the injection tempat, fatigue, headache, painful muscles, chills, fever, and nausea. In fact, these are normal signs that the body is building up protection against COVID-19. But usually, these signs will not become severe and will disappear within a few days. In other studies, the rejection of the COVID-19 vaccine was partly due to concerns about side effects such as fever and pain (12%), and religious reasons (8%) (Tlale *et al.*, 2022).

One of the reasons for people's rejection of vaccines is that they agree that there are other ways to prevent the transmission of covid-19 (42.03%). Respondents agreed that applying 3M does not require the body to be vaccinated; in addition, the consumption of herbal medicine can also prevent the transmission of covid-19. This indicates that education for the community needs to be improved, considering that the consensus of acceptance (*Attending / Attending*) is the next stage of knowledge (*knowledge*). Some information needs to be given to the public, such as the level of safety, effectiveness, halalness, vaccine emergency, and straightening out hoaxes about the COVID-19 Vaccine.

4. Conclusion

The study aims to determine the knowledge and acceptance of the people of DKI Jakarta regarding the COVID-19 Vaccine. The results of the study revealed that the people of DKI Jakarta have a high level of knowledge and acceptance related to the covid-19 vaccine. Improving public health education by health workers and authority figures is a viable strategy to increase vaccine acceptance. Reducing public concerns about vaccines is one of the strategies for increasing vaccine acceptance.

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