

The Analysis of Community Availability for Covid-19 Vaccine in Banda Aceh City

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Abstract

Vaccines are considered as an effort to reduce the spread of COVID-19, but in some circles there are still doubts about the effectiveness of the vaccine. In Indonesia, Aceh and West Sumatra are the 2 provinces with the lowest vaccine receipts with acceptance rates still below 50%. Objective: To determine the relationship of factors (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action) on the availability of the COVID-19 vaccine. Research Methods: Using a cross-sectional method with a research sample of 439 respondents. Statistical analysis used in the form of chi square test and logistic regression test using a computer program. Research Results: From the results of the chi square test, it was found that there was a relationship between susceptibility, severity, benefits, barriers, and cues to the readiness of the COVID-19 vaccine with ($p \leq 0.05$). Conclusion: The most dominant factor related to the public's willingness to the COVID-19 vaccine in this study was the perceived benefit.

Keywords

willingness; vaccines; covid-19; health belief model; Banda Aceh



I. Introduction

First COVID-19 it was discovered in Wuhan, China at the end of December 2019 and has spread rapidly throughout the world including Indonesia. Currently in the world, COVID-19 cases for the November 2021 period were recorded at 262,178,403 total cases with 5,215,745 deaths, while in Indonesia there were total COVID-19 cases as many as 4,249,323 (480 new), with total deaths of 19,143,592 and 4,096,194 confirmed recovered (WHO, 2021). Sihombing (2020) state that Covid-19 pandemic caused everyone to behave beyond normal limits as usual. The outbreak of this virus has an impact especially on the economy of a nation and Globally (Ningrum, 2020). The problems posed by the Covid-19 pandemic which have become a global problem have the potential to trigger a new social order or reconstruction (Bara, 2021).

Currently the best method for controlling the virus is to adopt widespread preventive measures such as social distancing, wearing masks when in public, and frequent hand washing (Bults et al., 2011). An approved COVID-19 vaccine is also seen as one of the requirements that can open up more permanent community interactions around the world (BostockB, 2020).

By the end of the summer of 2020, more than 150 COVID-19 vaccines are under development worldwide, with several in phase 3 clinical trials (Soucheray, 2020b). Most experts predict an approved COVID-19 vaccine will not be available to the general public until sometime in 2021 (Soucheray, 2020a). There is some speculation that the Food and Drug Administration (FDA) may issue an Emergency Use Authorization (EUA) permitting

the use of the vaccine

A COVID-19 vaccine has been announced as one of the keys to ending the pandemic and several agencies are currently accelerating development of clinical trials of a COVID-19 vaccine (UK Government, 2020). In the United States, it is estimated that only two-thirds of people will be vaccinated against COVID-19 (Cohen E. Fauci, 2020). Parents' hesitation to vaccinate their child is associated with safety concerns (Dubé et al., 2013). Positive public opinion and confidence in the accelerated development of a COVID-19 vaccine is critical to vaccine success (Fadda, Albanese, & Suggs, 2020).

The President of the Republic of Indonesia has taken a policy by forming a national team with the aim of accelerating the realization of the COVID-19 vaccine. The result of decision no. 18/2020 which was published on September 3, 2020 with the determination to form a team to develop a vaccine which is also supervised by the coordinating minister in the economic sector. On October 6, 2020, the President of the Republic of Indonesia signed regulations and issued regulations regarding vaccines and the implementation of vaccinations to suppress the spread of COVID-19 in the community. The Ministry of Health and UNICEF have made an agreement regarding the provision of vaccines that are easily accessible to the public (The Ministry of Health, NITAG, UNICEF, 2020).

In September 2020 the Ministry of Health, UNICEF, ITAGI and WHO conducted a survey to measure public willingness to receive online vaccines in 34 provinces in Indonesia with a total of 115,000 respondents, based on a survey of Aceh and West Sumatra is the lowest province for COVID-19 vaccine availability <50% compared to other provinces such as West Papua 70% and Nusa Tenggara 70% (Ministry of Health RI Director General of P2P, 2020).

Because there is no previous research and this research is one part of the research that examines the Community's Willingness to the COVID-19 Vaccine in Banda Aceh City, the researchers want to know the Banda Aceh City community's willingness to the COVID-19 vaccine based on the MR immunization research conducted by the Health Service. Aceh in 2019 with a MR immunization coverage rate for infants in Aceh of 53% which is still in the low category (Aceh Health Office, 2019), and in Thaib's research in 2016 the complete basic immunization coverage rate at the Children's Clinic RSIA Banda Aceh City was 83, 5% which is still far from the national target of 90% (Thaib, Darussalam, Yusuf, & Andid, 2016), so the researchers assume that the community's willingness to vaccines in Banda Aceh is still low.

II. Review of Literature

2.1 Vaccine

Vaccines contain parts of microbes or whole microbes that have been killed or weakened so they don't cause illness. When the immune system encounters this harmless version of the germ, it quickly clears it from the body. In other words, vaccines deceive the immune system but at the same time teach the body an important lesson about how to beat its opponents (Department of health and human services, 2008). Based on the Decree of the Minister of Health of the Republic of Indonesia No. HK. 01. 07 / MENKES / 9860 / 2020 stipulates The types of vaccines to be used in Indonesia are the Red and White Vaccine, AstraZeneca, Sinopharm, Moderna, Pfizer Inc and BioNTech, Sinovac Biotech Ltd (Ministry of Health, 2020).

2.2 COVID-19 Vaccine Availability

Based on Kelman's theory of three changes, which are often used to understand the function of social influence on attitude change, they consist of (compliance), identification (identification), internalization (internalization), willingness to occur when a person receives influence from other people or other groups. Willingness is part of an action or a person's behavior in an effort to take an action (Kelman, 1985).

III. Research Methods

This study uses an analytical research design to determine the relationship between two variables with an observational approach (cross sectional), this study only observes and measures variables at a certain time. Data analysis was carried out after the data processing was carried out. Data analysis in this study was carried out with a quantitative approach, namely univariate analysis and bivariate analysis.

IV. Discussion

4.1 Results

This research was conducted in the city of Banda Aceh with community respondents from the city of Banda Aceh aged 17-55 years in August 2021 with 439 respondents, data obtained using a google form questionnaire. This study consisted of 5 dependent variables consisting of perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cues to action and one independent variable in the form of willingness to the COVID-19 vaccine. The results of this study consist of statistical analysis: Univariate, Bivariate, and Multivariate Analysis as follows:

a. Univariate Analysis

Univariate analysis is an analysis carried out with the aim of knowing the frequency distribution of each variable, both independent and dependent variables. The results of the univariate analysis are presented in the following table:

Table 1. Frequency Distribution of Respondents' Characteristics in Banda Aceh City

Variable	<i>f</i>	%
Districts		
Baiturahman	45	10.3
Kuta Alam	42	9.6
Meuraxa	43	9.8
Shia Kuala	81	18.5
Lueng Bata	48	10.9
Kuta King	37	8.4
Banda Raya	48	10.9
New Jaya	45	10.3
Ulee Kareng	50	11.4
Age		
Late teens 17-25 years old	196	44.6
Early adulthood 26-35 years old	172	39.2
Late adult 36-45 years	52	11.8
Early seniors 46-55 years old	19	4.3
Gender		
Man	231	52.6
Woman	208	47.4

Education		
Bachelor	198	45.1
senior High School	226	51.5
junior high school	13	3.0
SD	2	0.5
Work		
civil servant	58	13.2
entrepreneur	208	47.4
Farmers/Fishermen	15	3.4
Student/Student	86	19.6
Etc	72	16.4
Income		
3,165,031	279	63.6
3,165,031	160	36.4

Based on table 1, it shows that the highest proportion of respondents in the Banda Aceh City sub-district is in Syiah Kuala sub-district as much as 18.5% followed by Ulee Kareng sub-district as much as 11.4%, Lueng bata and Banda Raya sub-districts as much as 10.9%, Jayabaru sub-district and Baiturrahman with a proportion of 10.3%, then Meuraxa sub-district with a proportion of 9.8%, Kuta Alam sub-district with a proportion of 9.8% and the lowest is in Kuta Raja sub-district as much as 8.4%.

The age group of respondents in this study is the highest age group of late teens (17-25 years) as much as 44.6%, followed by the early adult group (26-35 years) as much as 39.2%, in the late adult group (36-45 years).) as much as 11.8% and the least in the early elderly age group (46-55 years) as much as 4.3%.

Based on gender, the highest respondent in this study was male with a proportion of 52.6% and the lowest proportion of female sex was 47.4%. The category based on education with the highest proportion is high school education as much as 51.5%, followed by respondents with undergraduate education as much as 45.1%, then respondents with junior high school education as much as 3.0% and the lowest in elementary education as much as 0.5%. In this study, respondents with the highest proportion work as entrepreneurs as much as 47.4%, followed by respondents with student/student jobs as much as 19.6%, then respondents with civil servant jobs as much as 13.2% and the lowest with fishermen jobs with as much as 3.4%. The proportion of respondents' income category is not too much different, respondents with income 3,165,031 higher are 51.0% and respondents with income 3,165,031 lower are 49.0%. Respondents in Banda Aceh City who were willing to take the COVID-19 vaccine were 74.5% while the respondents who were not willing to take the COVID-19 vaccine were 25.5%.

Table 2. Distribution of Factors Affecting Public Willingness to Vaccines

Variable	f	%
Vaccine Availability		
Ready	327	74.5
Not willing	112	25.5
Vulnerability		
felt	368	83.8
Not Felt	71	16.2
Severity		
felt	342	77.9
Not Felt	97	22.1
Benefit		
felt	312	71.1

Not Felt	127	28.9
Resistance		
felt	133	30.3
Not Felt	306	69.7
Action Cues		
felt	303	69.0
Not Felt	136	31.0

Based on table 2 above, in this study, 74.5% of the people of Banda Aceh City who are willing and have carried out the COVID-19 vaccine. The community's response to the COVID-19 vaccine tends to be higher, while people who are not willing and have not done the COVID-19 vaccine are 25.5% lower. The proportion of people who feel there is a perceived vulnerability is 83.8%, while people who do not feel a vulnerability are 16.2%.

On the perceived severity the proportionThe highest in the form of people who feel the severity is as much as 77.9% while people who do not feel the severity are felt lower by 22.1%, as for the benefits felt by people who feel the benefits are higher as much as 71.1% while people who do not feel the severity there is a lower benefit of 28.9%,

On the perceived obstacles, the community tends to be higher, not feeling the absence of perceived obstacles as much as 69.7%, while the people who feel that there are perceived obstacles are lower as much as 30.3%, and on the cues of action, people who feel the presence of cues to act are higher as much as 69. .0% while people who do not feel any signs of action are 31.0% lower.

b. Bivariate Analysis

1. Relationship of Perceived Susceptibility to COVID-19 Vaccine Availability

Perceived susceptibility is a perception where individuals feel themselves vulnerable to a disease and try to do prevention as early as possible. Analysis of the relationship of perceived susceptibility to the availability of the COVID-19 vaccine is presented in table 4.3 below:

Table 3. Relationship of Perceived Vulnerability to Availability of a COVID-19 Vaccine

Vulnerability	Willingness				Total (%)	OR	95 % CI	P-Value
	Not Ready	%	Ready	%				
Not felt	28	39.4	43	60.6	71 (100)	2,202	1,290 - 3,758	0.003
hurt	84	22.8	284	77.2	368 (100)			
Total	112	25.5	327	74.5	439 (100)			

The results of the analysis of the relationship between the perceived vulnerability of the community to the availability of the COVID-19 vaccine, it was found that there were as many as 284 (77.2%) people of Banda Aceh City who felt vulnerable and were willing to carry out the COVID-19 vaccine. Meanwhile, 84 people (22.8%). From the results of this statistical test, a p value = 0.003 can be concluded, it can be concluded that there is a difference in the proportion of perceived susceptibility to the COVID-19 vaccine availability (there is a significant relationship between felt by the availability of a COVID-19 vaccine). From the results of the analysis, it was also obtained that the value of OR = 2.202 means that the

people of Banda Aceh City who feel vulnerable have a 2.202 times more chance of being willing to take the COVID-19 vaccine compared to people who do not feel vulnerable.

2. Relationship of Perceived Severity to COVID-19 Vaccine Availability

Perceived severity is a perception where the individual feels himself threatened by a disease and seeks to prevent it as early as possible. The results of the analysis of the relationship between perceived severity and the availability of the COVID-19 vaccine can be seen in table 4.4 as follows:

Table 4. Relationship of Perceived Severity to Availability of a COVID-19 Vaccine

Severity	Willingness				Total (%)	OR	95% CI	P-Value
	Not Ready	%	Ready	%				
Not felt	37	38.1	60	61.9	97 (100)			
hurt	75	21.9	267	78.1	342 (100)	2,195	1.354 - 3,559	0.001
Total	112	25.5	327	74.5	439 (100)		-	

Based on table 4, the results of the analysis of the relationship between the perceived severity of the community and the availability of the COVID-19 vaccine were obtained as many as 267 (78.1%) people of Banda Aceh City who felt that there was a perceived severity of being willing to take the COVID-19 vaccine. Meanwhile, 75 (21.9%) of the people who feel the severity are not willing to carry out the COVID-19 vaccine. From result statistical test obtained p value = 0.001 then it can be concluded that there is a difference in the proportion of perceived severity with the availability of the COVID-19 vaccine (there is a significant relationship between the perceived severity and the availability of the COVID-19 vaccine). From the results of the analysis that has been carried out, it is also obtained that the value of OR = 2.195 means that the people of Banda Aceh City who feel there is a severity have 2,195 times more likely to have the opportunity to be willing to take the COVID-19 vaccine compared to people who do not feel the severity.

3. The Relationship of Perceived Benefits to the Availability of a COVID-19 Vaccine

Perceived benefit is a perception in which the individual feels that he or she has a positive/negative impact from a preventive action to be taken. Table 4.5 below is an analysis of the relationship between perceived benefits and the availability of the COVID-19 vaccine.

Table 5. The Relationship of Perceived Benefits to the Availability of the COVID-19 Vaccine

Benefit	Willingness				Total (%)	OR	95% CI	P-Value
	Not Ready	%	Ready	%				
Not felt	46	36.2	81	63.8	127 (100)			
hurt	66	21.2	246	78.8	312 (100)	2,117	1.346 - 3,328	0.001
Total	112	25.5	327	74.5	439 (100)		-	

Based on the results of the Multivariate analysis in table 4.8, it shows that the perceived benefits have the closest relationship with OR 1.624, which means that people who feel there are benefits are 1.624 times more likely to have the opportunity to be willing to take the COVID-19 vaccine compared to people who do not feel any benefits, followed by People who feel a perceived vulnerability with an OR of 1,611 in other words, people who feel a perceived vulnerability are 1,611 times more likely to be willing to take the COVID-19 vaccine compared to people who do not feel a vulnerability.

On the variable of obstacles felt by people who feel there are perceived barriers to carrying out the COVID-19 vaccine with OR achievements 1,559 means that people who do not feel any perceived obstacles are 1,559 times more likely to have a COVID-19 vaccine compared to people who feel there are perceived barriers, followed by a signal to act variable with an OR value of 1,427 in other words, people who feel a signal to act 1,427 times are more likely to be willing to take a COVID-19 vaccine compared to people who do not feel any signs of action.

In the perceived severity variable with an OR value of 1,404, in other words, people who feel a perceived severity are 1,404 times more likely to have the opportunity to be willing to take the COVID-19 vaccine compared to people who do not feel any perceived severity. So from the results of the Multivariate analysis in this study, it can be concluded that the most dominant factor is perceived benefits with the achievement of an OR value of 1.624 with a significant P-Value value of 0.048, which means that there is a very significant relationship between the perceived benefits and the community's willingness to the COVID-19 vaccine.

4.2 Discussion

a. Willingness

In this study, the willingness of the people of Banda Aceh for the COVID-19 vaccine was very good, this was evidenced by the findings of 76.4% of people who were willing to take the COVID-19 vaccine, but 23. , 6%. The high level of community willingness to the COVID-19 vaccine cannot be separated from the role of the government and health workers who have been very good in educating the public about the benefits and the need for a COVID-19 vaccine as early as possible.

Indriyanti's 2021 research, which is in line with this research, which states that the majority of respondents as much as 89% are willing to take the COVID-19 vaccine and 2.6% are not willing to carry out the COVID-19 vaccine, in other words, the level of respondents' willingness to get the COVID-19 vaccine is very good. This is evidenced by the high level of willingness of respondents to vaccines (Indriyanti, 2021).

In the study of Febriyanti et al., 2021, it was also found that the majority of respondents were willing to take the COVID-19 vaccine because respondents felt the many benefits that were obtained by taking the COVID-19 vaccine, and respondents felt that vaccination would increase their body's resistance to COVID-19 exposure. The level of knowledge of the respondents in this study was very good about the COVID-19 vaccine, as indicated by the high level of vaccine acceptance.

In this study, it shows that there is a very significant relationship between perceived severity and the willingness of the people of Banda Aceh City to the COVID-19 vaccine with $p = 0.001$ and OR 2.195 to carry out the COVID-19 vaccine compared to people who did not feel there was any severity. In this research, it was found that the majority of the people of Banda Aceh City had felt the severity of COVID-19 so that they could encourage themselves to carry out vaccines. COVID-19 cases and people feel that their activities will be disrupted if they are infected with COVID-19.

This study is in line with the research of Melkamu et al., 2021 which states that perceived severity is one of the significant factors with treatment self with p-value 0.05 and OR 2.46 in other words respondents who feel the perceived severity is 2.46 times more likely to do self-care (Melkamu, Berhe, & Handebo, 2021).

In the research of Myers et al., 2011 also found that respondents have a significantly correlated intention with a high attitude to carry out the swine flu vaccine associated with a positive attitude on the perceived severity variable which is high with a p-value of 0.001 (Myers & Goodwin, 2011).

Another study that is in line with this study is the study conducted by Higuchi et al., 2018 which stated that there was a significant relationship between the perception of pneumonia severity on the direct advice of family doctors and the intention and behavior of pneumococcal vaccination among parents in Japan with a p-value of 0.038. (Higuchi, Narumoto, Goto, & Inoue, 2018).

b. Benefits Felt

In this study, a significant relationship was found between the perceived benefits and the willingness of the people of Banda Aceh City for the COVID-19 vaccine with a p value = 0.002 and OR 2.117, it can be concluded that the people of Banda Aceh City who felt the benefit of 2.117 had a higher chance of being willing to take the COVID vaccine. -19 compared to people who are not willing to vaccinate against COVID-19.

This study is in line with the research of MCS Wong et al., 2020 which stated that the majority of respondents in their research felt that there were benefits of the vaccine with OR 1.22, 95%CI 1.01-1.48, p-value 0.037 significantly indicated that respondents received the vaccine because they felt there was a perceived benefit from the vaccine and respondents considered COVID-19 as a serious matter (MCS Wong et al., 2020).

In the study of Alhalaseh et al., 2020 which is in line with this study stated the perceived benefit of the influenza vaccine was the most significant predictor of intention to administer the influenza vaccine to health workers. The benefits of this extraordinary vaccine are felt by health workers themselves, as well as their patients, it is believed that the perceived benefits are the main driving force for health workers to carry out influenza vaccines (Alhalaseh, Fayoumi, & Khalil, 2020).

The people of Banda Aceh City feel many benefits by taking the COVID-19 vaccine apart from being able to protect themselves, taking the COVID-19 vaccine can also prevent themselves from being absent from work, this is because some workplaces have required their employees to get the COVID-19 vaccine in the hope of getting infected Less COVID-19. This study is in line with the research of Harianja et al., 2021 which stated that the perceived benefits had a significant relationship with individual attitudes towards receiving the COVID-19 vaccine in the future, which stated that the majority of individuals were willing to vaccinate because individuals felt that the vaccine had the many benefits are not only beneficial for themselves but also beneficial for the people they care about (Harianja & Eryando, 2021).

c. Perceived Barriers

This study shows that there is a significant relationship between the perceived obstacle variable and the willingness of the people of Banda Aceh City to the COVID-19 vaccine with p = 0.002 and an OR value of 2.026. Willing to carry out the COVID-19 vaccine compared to people who do not feel there are obstacles, people who do not feel there are obstacles with a proportion of 78.8% are willing to carry out COVID-19 vaccines, while people who feel there are obstacles with a proportion of 35.3% are not willing to vaccinate COVID-19.

This research is in line with the research of Ni Norman Ayu Adiningsih 2021 which stated that the perception of low barriers to vaccines was 5.73 times more likely to receive the COVID-19 vaccine. People who have a low perception of barriers occur because the majority of people easily access places where COVID-19 vaccines are received and people are not afraid of needles (Ni Norman Ayu Adiningsih, 2021). In the research of Shahar et al., 2017 also found that respondents who do not feel there are obstacles are more likely to be willing to take the influenza vaccine (Shahar, Mendelson, & Ben Natan, 2017).

In the study of Mahmud et al., 2017 stated that there was a significant relationship between cues of action, so that in line with this study, a p value of 0.001 and OR 2.77 were found, in other words, respondents who felt a signal to act were 2.77 times willing to take the COVID-19 vaccine. 19. Respondents who are willing to take the COVID-19 vaccine may be because they have received positive support information and have also heard that the majority of people who have taken the COVID-19 vaccine have not experienced serious effects after getting the vaccine (Mahmud et al., 2021).

In Huynh's study, 2021 stated cues to action were significantly related to vaccine acceptance with an OR of 3.2, 95% CI: 1.7–5.8, $p < 0.001$. This result can be explained because the COVID-19 pandemic is a relatively new phenomenon, which people do not fully understand, plus the introduction of vaccines tends to be faster than other vaccines. In addition, there is still a lot of unclear information circulating about COVID-19 which leads to misinformation and can affect people's beliefs and intentions to vaccinate. Thus, there is a need for clear and detailed interventions that focus on cues of action from health worker recommendations to promote vaccine acceptance, encourage positive perceptions and beliefs about vaccination by providing comprehensive information on vaccine safety and effectiveness, and develop strategies to increase knowledge about COVID-19 through mass media messages (Huynh, 2021).

d. Most Dominant Factor

In this study, the perceived benefit is the most dominant factor with an OR of 1,624, so it can be concluded that the people of Banda Aceh City who feel there are benefits from the COVID-19 vaccine are 1,624 times more likely to be willing to take a COVID-19 vaccine compared to those who do not feel the benefits of doing so. COVID-19 vaccine.

The people of Banda Aceh City already understand very well the benefits of the COVID-19 vaccine, the majority of respondents think that by vaccinating themselves the chance of being infected with COVID-19 will decrease and respondents feel that taking the vaccine will increase their immune system, the respondents also feel they have.

There are many advantages and positive impacts of the COVID-19 vaccine, the community feels the benefits by vaccinating not only for health but also in the management of office ADM, universities, etc. So that makes the perceived benefits become the most dominant factor in this research.

The results of this study are supported by Puspasari in 2021 which shows that perceived benefits are the most dominant factor influencing the acceptance of COVID-19 vaccination in Indonesia with an OR value of 11.883 and $p = 0.005$ (Anggraeni Puspasari, 2021). In Shmueli's research of 2021 respondents who feel there are benefits from vaccines will be more likely to be willing to vaccinate because they feel by vaccinating themselves and others will be more protected from COVID-19, and it is also reported that vaccination compliance depends on the perception of risk for personal benefits (Shmueli, 2021).

The results in the study of Guidry et al., 2020 showed a high significant predictor of perceived benefit to COVID-19 vaccine intention. This relationship is consistent with the health behavior change theory, specifically the health behavior change theory predicts that more positive and more subjective attitudes that favor vaccine behavior will result in a

stronger intention to be vaccinated, and the HBM predicts that those who perceive a benefit are more likely to be vaccinated willing to be vaccinated (Guidry et al., 2020a).

V. Conclusion

Based on the exposure of the research results above, the conclusions in this research have answered the research objectives as follows:

1. The majority of the people of Banda Aceh City are willing to carry out the COVID-19 vaccine.
2. There is a relationship between perceived susceptibility to the community's willingness to get a COVID-19 vaccine.
3. There is a relationship between perceived severity and public willingness to get a COVID-19 vaccine.
4. There is a relationship between perceived benefits and the public's willingness to the COVID-19 vaccine.
5. There is a relationship between perceived barriers and the public's readiness for the COVID-19 vaccine.
6. There is a relationship between the signal to act and the public's willingness to get a COVID-19 vaccine.
7. The dominant factor related to the public's willingness to the COVID-19 vaccine is the perceived benefit.

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