



# An analysis of Corona Virus Disease (Covid-19) vaccine acceptance in Gowa Regency

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## Abstract

One of the indicators of vaccination success as an effort to overcome COVID-19 can be seen from how many people participate. This study aims to analyze the acceptance of COVID-19 vaccine using Indonesian SARS-CoV-2 seroprevalence survey data. This study was an analytic observational study with cross sectional study design. The total number of samples was 847 samples. Data collection technique used purposive sampling. The data used was the SARS-CoV-2 seroprevalence survey data. Data analysis used STATA program 14.0 version with multiple logistic regression. The differences were found in vaccine acceptance based on occupation ( $p < 0.001$ ). However, it was not with age, gender, knowledge, attitudes, support from healthcare workers and family support. The results of the multivariate analysis showed that occupation ( $p < 0.001$ ), gender ( $p = 0.001$ ) and age ( $p = 0.024$ ) were variables that related to COVID-19 Vaccine Acceptance. Occupation is a variable that related to reasons for COVID-19 vaccine acceptance. This may be related to government policies and mobilization factors. On the other hand, age and gender also determine COVID-19 vaccine acceptance. The government should pay attention to COVID-19 vaccine acceptance for people who are not bound at work and unemployed.

**Keywords:** Covid-19 Vaccine Acceptance, Age, Gender, Occupation, Family Support, Healthcare Workers.

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Doi # <https://doi.org/10.62877/36-IJCBS-24-25-19-36>

## 1. Introduction

The pandemic caused by Corona virus began to appear in the form of respiratory syndrome and known as Severe Acute Respiratory-Syndrome (SARS), a disease that came from China and began to spread from Hong Kong. Then, followed 10 years later by a disease which was also caused by Corona virus with respiratory syndrome known as Middle East Respiratory Syndrome (MERS) which become endemic in the Middle East regions especially in Saudi Arabia. At this time, a disease also appears that caused by Corona virus called Severe Acute Respiratory Syndrome Corona Virus 2 (SARS-CoV-2) [1]. Globally, there were 538,321,874 confirmed cases of COVID-19 until 22 June 2022 and the total number of death cases was 6,320,599 with CFR of 1.2%. America is still the highest case contributor with total of 85,332,271 cases and followed by India with 43,331,645 cases as well as Brazil with 31,754,465 cases [2]. Indonesia

is one of countries which affected by COVID-19 pandemic. The number of confirmed positive cases of COVID-19 throughout Indonesia has reached 6,046,467 people. While those who died due to Corona virus were 156,240 people with CFR of 2.6%. DKI Jakarta Province is in the first place with 1,226 cases and South Sulawesi Province is in the ninth place [3]. Positive cases infected with COVID-19 in South Sulawesi Province reached 143,338 cases as June 22 2022. Patients who died due to corona virus were 2,464 people and 140,627 people were declared cured. Makassar City is a city with the highest number of confirmed cases in South Sulawesi Province for 64,318 people, while Gowa Regency is a regency with the most confirmed cases throughout South Sulawesi Province [4]. Data from Gowa Regency Health Office reported that the number of confirmed cases in Gowa regency has reached 11,277 cases. 132 people died due to

COVID-19 and 13 were active positive (being treated) as well as 11,132 people were declared cured [5].

Demographic characteristics are characteristics that individual has as a thing that differentiate in Public. Individual characteristics can be a factor that affects individual's perceptions of a health problem including those that related to COVID-19 vaccination. In addition, demographic characteristics also affect health behavior and the use of health service [6]. Vaccine comes from the word 'variolae vaccinae' (cowpox). This term was created by Edward Jenner (who developed the vaccine concept and created the first vaccine) [7]. In 1881, in honor of Jenner, Louis Pasteur proposed that the term should be expanded to cover protective inoculation vaccine has made great progress and saved many life [8]. Vaccine can prevent or fight certain diseases. Due to the rapid spread of COVID-19, it has infected many people around the world and has made a commitment to build immunity through vaccination. The COVID-19 pandemic is a global emergency, so vaccination should be produced quickly. It takes years for vaccine to be made. One of the key components to overcome and create herd immunity to reduce the possibility of endemic cases in the future is the use of safe and effective vaccine [9]. This immunity is determined by the proportion of population that has specific immunity to the disease. In general, the level of immunity is always less than 100%, Considering the possibility that there are members of population who are susceptible because they have not accepted immunization or because they are new residents [1]. In addition, vaccination does not only provide protection to those who are vaccinated. But for another society which is by reducing the spread within the population. The spread of SARS-CoV-2 can infect from human to human. transmission from human to human can be stopped with herd immunity which is the benefit of vaccine [10]. Based on Covid-19 vaccination scope in Gowa Regency, it shows that the scope rate for doses 2 and 3 (booster) are still very low where the scope for dose 2 is 58.28% and dose 3 is 6.69%. So that attracted the interest of researchers to conduct study in finding out COVID-19 vaccine acceptance in Gowa Regency.

## 2. Methods

### 2.1. Research Design and Location

The type of research used in this study was observational analytic study with a cross sectional study design. The location of this research was conducted in Gowa Regency.

### 2.2. Sample of Research

There were 847 samples in this study in the form of questionnaire data from the SARS-CoV-2 seroprevalence survey. The sampling technique used was purposive sampling with inclusion criteria which is the age group > 5 years old according to the government program, the age group that had been recommended for vaccination and had complete data and questionnaire.

### 2.3. Instrument and Procedure

This research was a study that used secondary data from the results of SARS-CoV-2 Seroprevalence Survey conducted in Gowa Regency in March 2022. The data was in the form of questionnaire data that related to the variables which analyzed. Giving permission in conducting further

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analysis on the results of SARS-CoV-2 Seroprevalence Survey was obtained through a statement letter from the Department of Epidemiology, Faculty of Public Health, Hasanuddin University with number 13355/UN4.14.7.1/PT.01.00/2022 through Ethical approval from the Faculty of Public Health, University Hasanuddin number 9298/UN4.14.1/TP.01.02/2022.

### 2.4. Data Analysis

Data processing and analysis was carried out using the STATA 14 version program. It consists of univariate analysis for sociodemography and bivariate analysis using Chi-square and Fisher's exact tests. To find out which variable has a significant relation with COVID-19 vaccine acceptance and multivariate analysis using the Forward multiple logistic regression model to determine the factors that have the most influential factor on COVID-19 vaccine acceptance.

## 3. Results

Table 1 shows that in the age group, the most proportions were found in age of 30-49 group with percentage of 47.70%. It is 47.93% for male and 52.07% for women. Based on the occupation of most respondents in housewife are 209 respondents (24.68%). Table 2 shows that the highest proportion of respondents who accepted COVID-19 vaccine was in respondents aged < 45 years for female about 95.84%, working status about 97.45%, good knowledge about 95.01%, negative attitude about 95.65%, get support from healthcare workers about 94.94% and do not get family support 94.96%. Based on the results of Chi-square and Fisher's exact statistical tests, the factor that had a significant relation with COVID-19 vaccine acceptance was occupation ( $p < 0.001$ ). The variables that were not significantly related to COVID-19 vaccine acceptance were age ( $p = 0.117$ ), gender ( $p = 0.288$ ), knowledge ( $p = 0.269$ ), attitude ( $p = 1.000$ ), support from healthcare workers ( $p = 0.758$ ). and family support ( $p = 0.933$ ). Table 3 shows that there are 5 models that resulted from multivariate analysis. This is done by putting dependent variable and all independent variables. After the analysis was done, the researcher got variable that affects COVID-19 vaccine Acceptance in Gowa Regency namely occupation ( $p < 0.001$ ).

## 4. Discussions

In this study, the occupation variable has a significant relation with COVID-19 vaccine acceptance in Gowa Regency, South Sulawesi, Indonesia. It was found that >95% of those with working status and bound with government institutions (Civil Servant/Soldier/Police, Honorary Employee, private employe, Entrepreneur and farmer/fisherman) who received the COVID-19 vaccine compared to those with unemployed status (Housewife, unemployed, student and retired) (Table 2). This study is in line with what has found in Georgia which stated that occupation variable had a significant relation with COVID-19 vaccine acceptance [11]. COVID-19 vaccine acceptance in the society is strongly influenced by policies made by the government. Especially those who work in government institution that require Civil servant (ASN) and Non-Permanent Employee (PTT) to participate in the COVID-19 vaccination. Civil servant is included in the priority group for vaccine receivers after health workers, the elderly over 60 years and other public servants.

Through this notification letter for the acceleration of vaccination, it was signed by the minister of state apparatus empowerment and bureaucracy reform of Republic of Indonesia in the end of 2021 and sent to the Minister and head of state institution. The purpose of notification letter is to accelerate vaccination in government institutions. This is also applied to private institutions that require their workers to be vaccinated against COVID-19. In the circular letter of the industry ministry of the Republic of Indonesia Number 2 of 2022 regarding the Third Dose Vaccination / Vaccine booster for industrial workers and industrial areas. So that workers are required to immediately get the third dose after completing the first and second vaccines. That is why perhaps the COVID-19 vaccine acceptance in government institutions is more dominant. Another possible reason is the need for work-related mobilization. People who work have high mobilization. In Indonesia, the supervision of mobilization during COVID-19 pandemic has been tightened with the mandatory of COVID-19 vaccine. Engaging with the circular letter of Covid-19 Handling Task Force, the Ministry of Transportation has published circular letter Number 82 of 2022 about the Guideline for the Implementation of Travel for People with Transportation either domestically and abroad during Covid-19 Pandemic Period which started to apply on July 17 2022. One of updated policies is booster vaccine that become requirement for domestic travel for

people aged 18 years or over and for foreign trips such as religious pilgrimages. So that mobilization is the reason for COVID-19 vaccine acceptance. In addition, age and gender also affect COVID-19 vaccine acceptance. Aged <45 years old is more likely to receive COVID-19 vaccine than aged  $\geq$  45 years old. In line with what has been done in Kuwait, the highest COVID-19 vaccine acceptance was among aged <45 years old (67.1%) compared to those aged > 45 years old (32.9%) [12]. Respondents aged 18-40 years old tended to receive the vaccine because they had life considerations in the same house with their parents [13]. This study is similar to what has been conducted via online in seven European countries which shows that most of the reasons of vaccine acceptance are because they want to protect themselves and their family [14]. In this study, women received more the vaccine than men. This is in line with what has been done in Malaysia which showed that women received vaccines 62.8% more than men [15]. Female tends to be more concerned about environmental condition and its health. women have a tendency to behave well compared to men [16]. There are limitations in conducting further analysis of secondary data from the SARS-CoV-2 Seroprevalence Survey which is incomplete data that cannot be further analyzed. In addition, the researcher in the future should conduct an analysis of other variables including education, history of COVID-19 infection and comorbidity.

**Table 1:** Demographic characteristics of Respondent.

Characteristics of Respondent	Frequency (n=847)	Percentage (%)
<b>Age (Year old)</b>		
6-14	55	6.49
15-29	167	19.72
30-49	404	47.70
$\geq$ 50	221	26.09
<b>Sex</b>		
Male	406	47.93
Female	441	52.07
<b>Occupation</b>		
Civil Servant/Soldier/Police	134	15.82
Private Employee	52	6.14
Entrepreneur	115	13.58
Farmer/Fisherman	88	10.39
Labor	39	4.60
unemployed	46	5.43
Housewife	209	24.68
Student	78	9.21
Honorary Employee	81	9.56
Other	5	0.59

**Table 2:** Research Variables.

Research Variables	COVID-19 Vaccine Acceptance		P Value
	Yes, n (%)	Non (%)	
<b>Age (Years old)</b>			
<45	507 (95.84)	22 (4.16)	0.117
>45	297 (93.40)	21 (6.60)	
<b>Sex</b>			
Female	422 (95.69)	19 (4.31)	0.288
Male	382 (94.09)	24 (5.91)	
<b>Occupation</b>			
Civil Servant/Solider/Police	133 (99.25)	1 (0.75)	0.001
Private Employee	50 (96.15)	2 (3.85)	
Entrepreneur	111 (96.52)	4 (3.48)	
Famer/Fisherman	84 (95.45)	4 (4.55)	
Honorary Employe	37 (94.87)	2 (5.13)	
Unemployed	42 (91.30)	4 (8.70)	
Housewife	194 (92.82)	15 (7.18)	
Student	68 (87.18)	10 (12.82)	
Honorary	81 (100)	0 (0.00)	
Retired	4 (80)	1 (20)	
<b>Knowledge</b>			
Good	799 (95.01)	42 (4.99)	0.269
Enough	5 (83.33)	1 (16.67)	
<b>Behavior</b>			
Positive	76 (94.88)	41 (5.12)	1.000
Negative	44 (95.65)	2 (4.35)	
<b>Support From Health Workers</b>			
Support	751 (94.94)	40 (5.06)	0.758
Do not support	53 (94.64)	3 (5.36)	
<b>Family Support</b>			
Support	164 (94.80)	9 (5.20)	0.933
Do not support	640 (94.96)	34 (5.04)	

\*Fishers Exact Test

**Table 3:** Multivariate Analysis Results of COVID-19 Vaccine Acceptance.

Research Variables	Model 1		Model 2		Model 3		Model 4		Model 5	
	P	OR (CL95%)	P	OR (CL95%)	P	OR (CL95%)	P	CL (95%)	P	CL (95%)
Behavior (Positive)	0.94 2	0.943 (0.20-4.28)								
Support form family (Get support)	0.79 7	0.901 (0.40-1.98)	0.80 1	0.903 (0.41-1.98)						
Support form (Get Support)	0.61 0	0.721 (0.20-2.53)	0.60 5	0.718 (0.20-2.51)	0.62 8	0.736 (0.21-2.53)				
Knowledge (Good)	0.11 6	6.092 (0.63-58.02)	0.11 5	6.021 (1.64-56.04)	0.11 8	5.89 (0.63-54.52)	0.12 0	5.79 (0.63-53.29)		
Age (<45)	0.02 3	2.119 (1.10-4.05)	0.002	2.125 (1.11-4.05)	0.02 2	2.130 (1.11-4.05)	0.02 2	2.12 (1.11-4.054)	0.024	2.10 (1.10-3.99)
Sex (Female)	0.00 1	3.362 (1.64-6.87)	0.00 1	3.365 (1.64-6.87)	0.00 1	3.346 (1.64-6.82)	0.00 1	3.31 (1.62-6.74)	0.001	3.31 (1.63-6.72)
Occupation (Work)	0.00 0	7.81 (3.57-17.09)	0.00 0	7.82 (1.11-4.05)	0.00 0	7.81 (1.11-4.06)	0.00 0	7.66 (3.51-16.69)	0.00 0	7.32 (3.40-15.79)

## 5. Conclusions

Occupation is a variable that related to reasons of COVID-19 vaccine acceptance. This may be related to government policies and mobilizing factors. In addition, age and gender are the reasons for COVID-19 vaccine acceptance. The government should also pay attention to COVID-19 vaccine acceptance for people who are not bound at work and do not work.

## Acknowledgment

The researcher would like to thank to SARS-CoV-2 seropravalence research team from the Department of Epidemiology, Faculty of Public Health, Hasanuddin University as a unit which has provided the opportunity to conduct further analysis using data from Covid-19 Seroepidemiology Survey in Gowa Regency in 2022.

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