

## VACCINATION COVERAGE AND TRANSMISSION OF COVID-19 IN PALEMBANG

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### ABSTRACT

The COVID-19 pandemic has been going on for more than 2 years, and the vaccine is believed to eliminate the great danger of exposure to SARS-CoV-2. There is currently little understanding of the relationship between SARS-CoV-2 infection, and protection by vaccines. The descriptive research with an observational study is an ecology design approach that examined the PCR confirmed COVID-19 cases and the coverage immunization. Total sampling data was collected via secondary data and was analyzed with temporal graphics. The first dose vaccination coverage was 54,63%, while the second dose was 46,53%. There were 30.320 confirmed cases during the study and the Ilir Barat 1 district with the highest number. Despite the under-coverage of vaccines percentage, daily confirmed cases have decreased when the coverages reach 35%. Vaccination must be implemented in most of the society to achieve immunity protection against SARS-CoV-2 infection.

**Keywords:** Immunization; Infection Rate; SARS-CoV-2; South Sumatra

### 1. Introduction

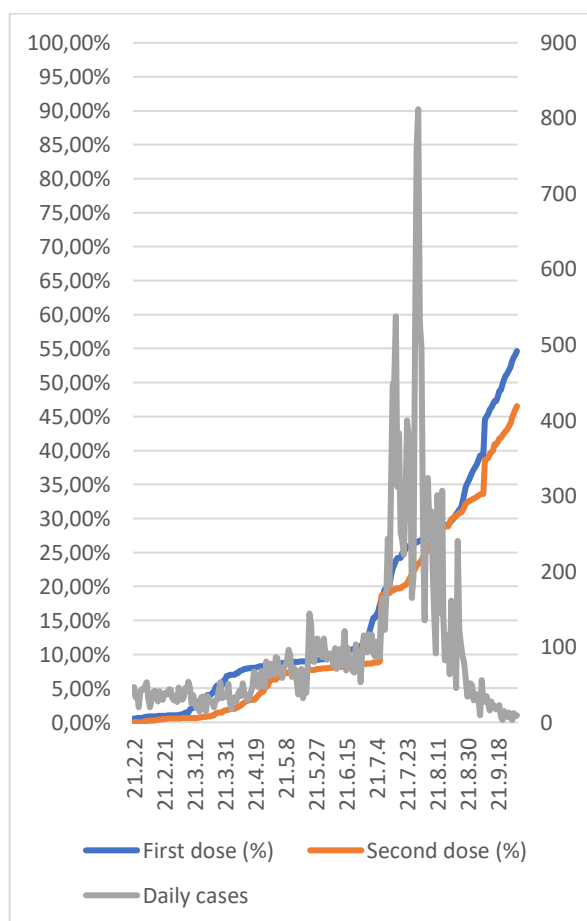
The COVID-19 epidemic started in the Chinese city of Wuhan towards the end of December 2019 and has since spread rapidly to Thailand, Japan, South Korea, Singapore, and Iran in the early months (1). The COVID-19 has been going on for more than 3 years, and after the contribution of the vaccine a year later after the pandemic is expected to provide community immunity and be sufficient to overcome the pandemic (2). The government increases adequate health system capacity, as well as strategies to increase vaccine trust and acceptance to increase vaccine coverage (3). There is currently little understanding of the relationship between SARS-CoV-2 infection, response antibodies, and protection by vaccines (4). The study aims to describe the vaccination coverage and the incidence of COVID-19 transmission in Palembang City.

### 2. MATERIAL AND METHODS

The descriptive research with an observational study is an ecology design approach. The independent variable of this study was the PCR confirmed COVID-19 cases and the dependent variable was the coverage of first and second immunization. Total sampling data was collected via secondary data in the public domain (5), and confirmed by the Public health office. The results of the study were analyzed by univariate and temporal graphics.

### 3. RESULT

The Indonesian vaccination campaign that started in early 2021 by the president, was followed by the Governor of South Sumatra province on February 2nd, 2021 (Figure 1). The total vaccination coverage at the first dose (54,63%) is higher than the second dose (46,53%). Despite most of the people of Palembang city had not been vaccinated, daily confirmed COVID-19 cases decrease when the second dose coverage reaches 35%. A total of 30.320 confirmed cases was confirmed in every 18 districts. The district with the most COVID-19 cases was Ilir Barat I with 3,959 confirmed cases (13.06%) while the lowest was Kertapati District with 574 cases (1.89%) (Table 1).



**Figure 1.** Vaccination accumulative coverage (left bar) and daily confirmed COVID-19 cases (right bar)

**Table 1.** The incidence of transmission of COVID-19 based on districts (n=18)

Districts	Case number	Percentage (%)
Iilir Barat I	3.959	13,06%
Sukarami	3.513	11,59%
Kalidoni	2.992	9,87%
Sako	2.540	8,38%
Alang Lebar	2.375	7,83%
Iilir Timur I	1.980	6,53%
Kemuning	1.780	5,87%
Iilir Timur II	1.774	5,85%
Iilir Timur III	1.355	4,47%
Plaju	1.296	4,27%
Jakabaring	1.249	4,12%
Seberang Ulu II	1.170	3,86%
Sematang	913	3,01%
Borang		
Iilir Barat II	809	2,67%
Bukit Kecil	703	2,32%
Seberang Ulu I	699	2,31%
Gandus	639	2,11%
Kertapati	574	1,89%

#### 4. DISCUSSION

The coverage of the COVID-19 vaccination in the first dose and the second dose has not yet reached the government's target of 70% (Kementerian Kesehatan RI 2021). Most of the people who have not been vaccinated may be because they still doubt the effectiveness of the COVID-19 vaccine, and are still afraid of the possible side effects of the vaccine (7). The low coverage rate could also be because of the vaccine availability (8). Obstacles in achieving the expected coverage and herd immunity can be caused by doubts and misinformation about vaccines, also vaccine scarceness due to high demand from all around the world (9). The low rate of transmission of COVID-19 is associated with medium vaccine coverage. The vaccine used in Palembang was CoronaVac<sup>®</sup> (Sinovac), which had 63.5% efficacy (10). All approved COVID-19 vaccines have been providing substantial statistics evidence to support the continuing global public health endeavor to immunize the whole population against the virus (11). The vaccine efficacy gap expanded in the first dosage, but after two doses, despite the dominant Delta variant of concern had very minor variations in vaccine efficacy (12). The Alpha variant is a more infectious strain than the virus's parent strain (13), thus the Delta form is likewise 60% more transmissible than the Alpha variant (14). The reproductive rate of 6 causes the herd immunity should be roughly 85% greater than the Alpha variety since it is 60% more transmissible (15). Initiatives should have been devoted to enhancing vaccination uptake among susceptible groups by administering two doses of the vaccine despite the SARS-CoV-2 variant of concern.

There are limitations in the study. The pharmacology intervention, such as the herd immunity examination was not examined while could play a role as the decline of the cases happen after peak wave. Another factor of non-pharmacology intervention, such as social restriction during the high wave, was heavily put thus allowing vaccine coverage bias to occur.

## 5. CONCLUSION

The vaccination coverage during the study period for doses 1 and 2 was lower than the expected percentage. Despite the low coverage of vaccines to the people, cases of daily confirmed COVID-19 cases decrease when the coverages reach 35%. Vaccination must be spread across the majority of society in order to acquire immune protection against SARS-CoV-2 infection.

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