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Overview of COVID-19 Vaccination Status in Patients Infected with COVID-19 at the Royal Prima General Hospital Medan

Lavenia Tri Setiani[1*], Wienaldi[2], Wika Hanida Lubis[2]

[1]Medical Education Student, Faculty of Medicine, Dentistry and Health Sciences, Universitas Prima Indonesia, Medan, Indonesia
[2]Faculty of Medicine, Dentistry and Health Sciences, Universitas Prima Indonesia, Medan, Indonesia

ARTICLE INFO

Keywords:
Vaccination
COVID-19
Clinical degree

***Corresponding author:**
Lavenia Tri Setiani

E-mail address:
laven2505@gmail.com

All authors have reviewed and approved the final version of the manuscript.

https://doi.org/10.37275/ehi.v4i1.66

A B S T R A C T

Since the start of the COVID-19 pandemic, attempts have been made to provide acquired immunity against COVID-19. Monitoring and evaluating the efficacy and safety of the COVID-19 vaccine is an important process that must always be carried out in order to optimize the control of the spread of COVID-19 infection. This study aimed to provide an overview of the status of COVID-19 vaccination in patients infected with COVID-19 at the Royal Prima General Hospital, Medan, Indonesia. This study was a descriptive observational study. A total of 100 subjects participated in this study. Data analysis was performed using SPSS version 25 in a univariate manner. The majority of patients who have been vaccinated against COVID-19 only experience mild symptoms of COVID-19. The majority of vaccine brands used by confirmed COVID-19 patients are Sinovac. The majority of patients who have received 2 doses of vaccination are still at risk of being infected with COVID-19. The majority of patients who received the COVID-19 vaccination experienced a low clinical degree when infected with COVID-19.

1. Introduction

Since the start of the COVID-19 pandemic, attempts have been made to provide acquired immunity against COVID-19. Prior to the manufacture and authorization of the COVID-19 vaccine, there was well-established knowledge of the structure and function of the coronavirus that accelerated the ability to manufacture vaccines. After sharing genetic sequencing data and the global pharmaceutical industry's key commitment to tackling COVID-19, vaccine production started. The high efficacy of various COVID-19 vaccines in preventing symptomatic COVID-19 infection was found in a large-scale phase III trial. During the entire development path of these vaccines, several steps were evaluated, including the safety and acceptable toxicity of the vaccines, duration of protective immunity, stability characteristics of each vaccine, heat stability, and storage conditions outside the required temperature range, injection-like delivery systems, oral dosing schedules and nasal for COVID-19 vaccines (single-dose or multiple-dose regimens), and possible vaccine side effects.[1-4]

So far, billions of vaccine doses have been ordered by various countries, and about half of these doses are purchased by high-income developed countries. Vaccination is prioritized for those who have the highest risk of complications, such as the elderly, health workers, and people with chronic diseases such as heart disease, cancer, and diabetes. Two different vaccine doses may work better to protect against

COVID-19 and trigger a stronger immune response. For example, mixing and matching the two-dose COVID-19 vaccines from Pfizer-BioNTech and AstraZeneca elicited a strong immune response against the coronavirus but targeted different parts of the virus surge. The vaccine is so far suitable for people aged 18 and over, but recent research by Pfizer in youth ages 12 to 15 shows it is effective for this age group and has no significant side effects. The Pfizer-BioNTech COVID-19 vaccine has been approved for this age group, and they can now receive it. As of June 19th, 2021, approximately 21% of the world's population had been vaccinated with at least one dose, but only 0.8% of people in low-income countries had received at least one dose of the COVID-19 vaccine. Indonesia is one of the countries with fairly good COVID-19 vaccination coverage. As of December 31st, 2022, 204,026,564 people have received the first dose of the vaccine, and 174,771,880 people have been fully vaccinated; 68,537,551 of them had been inoculated with a booster or third dose, while 1,169,962 had received the fourth dose. Jakarta has the highest percentage of the fully vaccinated population, with 103.2%, followed by Bali and Daerah Istimewa Yogyakarta at 85.35% and 82.9%, respectively.[5-10]

Monitoring and evaluating the efficacy and safety of the COVID-19 vaccine is an important process that must always be carried out in order to optimize the control of the spread of COVID-19 infection. This study is one of the efforts to evaluate and monitor the COVID-19 vaccination process in Indonesia. This study aimed to provide an overview of the status of COVID-19 vaccination in patients infected with COVID-19 at the Royal Prima General Hospital, Medan, Indonesia.

2. Methods

This study was a descriptive observational study. A total of 100 research subjects participated in this study. The inclusion criteria in the form of patients infected and confirmed with COVID-19 who were treated at the Royal Prima General Hospital, Medan, Indonesia, from February to August 2022; COVID-19 patients who have received vaccine doses 1 and 2 and patients who agree to participate in this study. This study was approved by the medical and health research ethics committee at the Faculty of Medicine, Universitas Prima Indonesia, Medan, Indonesia.

This study presents data describing the clinical degree of COVID-19 experienced by research subjects, presenting the type of vaccine that has been used by research subjects, and the vaccination status of dose 1 or the complete dose. Further data analysis was carried out with the help of SPSS version 25 software. Data analysis was carried out in a univariate manner in order to present the data frequency distribution of each research test variable.

3. Results and Discussion

Table 1 shows that out of 100 patients with confirmed COVID-19, none had a severe clinical degree. The majority of patients who have been vaccinated against COVID-19 only experience mild symptoms of COVID-19. Table 2 shows that the majority of vaccine brands used by confirmed COVID-19 patients are Sinovac. Table 3 shows the status of the COVID-19 vaccination when the patient is confirmed to have COVID-19. The majority of patients who have received 2 doses of vaccination are still at risk of being infected with COVID-19.

Table 1. Distribution of the degree of clinical symptoms of COVID-19 patients who have been vaccinated.

No	Patient symptom degree	Frequency	Percentage %
1	No symptoms	13	13
2	Mild symptoms	65	65
3	Moderate symptoms	22	22
Total		100	100

Table 2. Distribution of vaccine types used by COVID-19 patients.

No	Vaccine types	Frequency	Percentage %
1	Sinovac	58	58
2	Moderna	29	29
3	Pfizer	8	8
4	AstraZeneca	5	5
Total		100	100

Table 3. Distribution of vaccination status when diagnosed with COVID-19.

No	COVID-19 confirmed status	Frequency	Percentage %
1	Dose 1	31	31
2	Dose 2	69	69
Total		100	100

Although a causality study was not carried out in this study, it appears that the COVID-19 vaccination is believed to be quite effective in preventing clinical deterioration in patients infected with COVID-19. However, the results that are quite surprising can be seen in Table 3, where the majority of patients who have received the full dose of vaccination still have the potential to be infected with COVID-19. These two data presentations are interesting to study and examine further. Table 2 shows that the Sinovac vaccine brand is a brand that is widely used by patients in Indonesia. Sinovac is a vaccine developed from the inactivated SARS-CoV2 virus. Based on various studies, the efficacy of the Sinovac vaccine is at 51% - 65%. This means that the Sinovac vaccine is able to provide protection for 51% to 65% of subjects who have been vaccinated. This certainly explains the reason for the potential for COVID-19 infection in patients who have received two doses of the vaccine. However, that does not mean there are no benefits at all from the COVID-19 vaccination process. The COVID-19 vaccine shows the potential to trigger the body's natural immunity against exposure to the SARS-CoV2 virus so as to provide the immune system with readiness to deal with COVID-19 infection. The readiness of the immune system against SARS-CoV2 infection reduces the morbidity and mortality of infected patients.[11-15]

4. Conclusion

The majority of patients who received the COVID-19 vaccination experienced a low clinical degree when infected with COVID-19.

5. References

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