

## HEALTH-RELATED QUALITY OF LIFE POST-SINOVAC VACCINE IN COMMUNITIES IN TAMPAN DISTRICT AND MARPOYAN DISTRICT, PEKANBARU CITY

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### ABSTRACT

Giving the Sinovac vaccine for Covid 19 can cause several side effects. The existence of side effects that occur, of course, affect their lives, including a decrease in activity, productivity and quality of life. This study aims to determine the HRQoL score in the community after the Sinovac vaccine in Tampan District and Marpoayan District, Pekanbaru City. The research method is analytic observational with a cross-sectional design. The research sample was people who received the first vaccine recorded at the Puskesmas in Tampan District and Marpoayan District, Pekanbaru City, which was selected by purposive sampling technique according to inclusion and exclusion criteria and obtained a sample of 100 respondents. The instrument is a questionnaire EQ5D5L and EQ-VAS. The study results showed that there was little problem with the dimensions of pain (37%) and usual activities (14%), with a score of 0,944 (EQ5D5L) and 0,975 (EQ-VAS). In conclusion, the HRQoL scores on EQ5D5L and EQ-VAS are close to 1, which means close to perfect. This research is expected to be a reference for stakeholders in selecting preventive therapy for Covid 19 and can be used as initial data for cost-utility analysis research.

**Keywords:** Sinovac vaccine; HRQoL; Communities

## 1. INTRODUCTION

Coronavirus Disease 19 (Covid-19) is an infectious disease caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) and is the newest type of virus that has never been identified in humans. Common symptoms when infected with COVID-19 include acute respiratory problems such as coughing, shortness of breath, and fever. The average incubation period is 5-6 days, with the longest incubation period in 14 days. In severe cases, it can cause pneumonia, acute respiratory syndrome, kidney failure, and even death ([Kementerian Kesehatan Republik Indonesia, 2019](#)). In less than a year, this infection case later became a pandemic globally, including in Indonesia. As of July 22, 2021, the number of confirmed patient cases in Indonesia was 2,983,830, with 79% recoveries and 2.6% deaths. In Riau Province, 84,802 cases are confirmed with 73.6% recoveries and 2.63% deaths ([KPCPEN, 2021](#)).

Knowledge related to Covid-19 is still limited. The primary priority to prevent transmission from spreading is physical distancing, using personal protective equipment (PPE), quarantine, and isolation. However, the absence of herd immunity in the population makes people vulnerable to Covid-19 infection. It underlies the rapid development of vaccines that have the potential to fight Covid-19 and are widely distributed to the public, including in Indonesia ([Zhang et al., 2021](#)). The vaccine will stimulate the body to produce specific antibodies with an anamnestic response if the body is exposed to this virus again. Indonesia uses the Coronavac/Sinovac and AstraZeneca vaccines. The work mechanism of the Sinovac vaccine is to use an inactivated virus to stimulate the immune system against the virus without risking a response to a serious disease.

The third phase of testing for the Sinovac Vaccine has been carried out in various countries. The final stage of trials in Turkey and Indonesia shows that the vaccine was 91.25% and 63.50% effective (Rusmiati, 2021).

Previous studies have reported that Sinovac doses are well tolerated over a short period of time in healthy adults. However, some side effects occur after giving the vaccine, including pain at the injection site (Zhang et al., 2021). Other reports mention that side effects can be divided into mild to moderate side effects, such as fever, muscle aches, headache, chills, and diarrhea. The side effects vary between individuals, and the duration of side effects also differs between individuals (WHO, 2021). In addition, the Sinovac vaccine can also cause Adverse Events Following Immunization (AEFI). At the same time, AEFIs start from mild, moderate, and severe degrees in administering stage I and II vaccines. In the first stage of vaccine administration, mild, moderate, and severe symptoms were 17.74%; 39.51%; and 0.80%, respectively. The results of mild, moderate, and severe AEFIs were 16.12%, 43.54%, and 2.41% for administering the second stage of the vaccine (Safira et al., 2021).

The side effects in some individuals affect their life, including a decrease in activity, productivity, and quality of life. Quality of life is an important consideration in various outcomes of the effectiveness of health services to determine the benefits of various medical options or options provided to the community. The quality of life describes the functional effects of the disease and the therapeutic consequences of the patient by the patient himself (S. Sari et al., 2020). Health-Related Quality of Life (HRQoL) is part of a person's quality of life that describes the functional effects of the disease and the consequences of therapy on the patient. HRQoL is a study that focuses on health service research and or quality of life (Andayani, 2013). HRQoL is a theory to explain and organizes measurements related to the evaluation of health status, attitudes, values, and perceptions of satisfaction and health levels in general by considering specific health conditions or public life from a person's perspective (Chouaid et al., 2013).

This study used the EQ-5D-5L questionnaire instrument to measure the community's quality of life after the Sinovac vaccination. This questionnaire is generic and is used to measure health profiles in general, simple, and easy to understand by respondents. The EQ-5D-5L questionnaire is valid and has a value set, which can be used to measure the utility needed to calculate QALY (Quality-Adjusted Life Years) in pharmacoeconomics using the CUA (Cost-Utility Analysis) method (Purba et al., 2017). Many studies on the quality of life in health using the EQ-5D-5L questionnaire have been conducted. However, research on the post-vaccination quality of life has not been found in Indonesia or Pekanbaru City, especially in Tampan and Marpoyan sub-districts. Therefore, measuring the quality of life score after the Sinovac vaccine in the community in the Tampan and Marpoyan sub-districts of Pekanbaru is necessary. This research is expected to be an evaluation material for policymakers or health workers regarding the use of the Sinovac vaccine and as an illustration for the community and health workers regarding the impact of HRQoL on people who use the Sinovac vaccine.

## 2. METHOD

This research is an analytic observational study with a cross-sectional research design. The population is people who live in Tampan District and Marpoyan District, Pekanbaru City who have received the first and second doses of the Sinovas vaccine. The sample in this study were people who had received the first and second doses of the vaccine recorded at the Puskesmas in Tampan District and Marpoyan District, Pekanbaru City. Determination of the sample uses a purposive sampling technique, with inclusion criteria, namely people who are willing to be respondents and people aged > 18 years. Exclusion criteria are people with incomplete data.

The number of samples is calculated using the Lemeshow formula:

$$\begin{aligned}
 n &= \frac{Z^2 \cdot 1 - \frac{\alpha}{2} \cdot P(1-P)}{d^2} \\
 &= \frac{(1,96)^2 (0,5)(1-0,5)}{(0,1)^2} \\
 &= \frac{(3,8416)(0,5)(0,5)}{(0,01)} \\
 &= 96 \text{ respondents} \sim 100 \text{ respondents}
 \end{aligned}
 \tag{1}$$

The calculation results show that the minimum sample used is 100 respondents who have met the inclusion and exclusion criteria, 50 in the Tampan District and 50 in the Marpoyan District.

### 3. RESULTS AND DISCUSSION

#### 3.1. Characteristics of Respondents

**Table 1** shows that 100 respondents have completed doses of the COVID-19 vaccine (first and second) at the Tampan District Health Center and Marpoyan Damai District Health Center; 62 patients were 18-40 years old, and 38 patients were 41-60 years old. The results of this study follow the research conducted at Imanuel Hospital Bandar Lampung, where mainly the age ranges for vaccination are 20-30 years and 30-40 years, with 34 respondents and 53 respondents, respectively. In contrast, the age range is 41-50 years and 51-60 years old are only 34 respondents and 3 respondents (Safira et al., 2021).

**Table 1.** Characteristics of Respondents

Variable	Category	Total	Percentage
Sex	Male	38	38%
	Female	62	62%
Age	Early adult (18 – 40 years old)	62	62%
	Middle adult (41 – 60 years old)	38	38%
Comorbidities	Yes	18	18%
	No	82	82%

The same results were carried out in previous studies, showing that the majority occurred in the age range of 20-30 years, with a total of 75 people from a total of 95 respondents (78.9%) (Lidiana et al., 2021). Therefore, the post-vaccine incidence is in the age range of 18-40 years because young respondents in the 18-40 age group have higher neutralizing antibody titers, which will decrease with age (Zhang et al., 2020). Regarding gender, women (62%) received more COVID-19 vaccines than men (38%). These study results are supported by Lidiana et al (2021), the majority of respondents are female, with 85 respondents (89.5%), and the rest are male. This study's frequency of female respondents was more due to women's greater attention to health (M. P. Sari et al., 2018).

Before being vaccinated, screening candidates for vaccination to see the presence or absence of comorbidities. It aims to ensure that the candidate for vaccination is in good health when vaccinated. Based on the data, 18 out of 100 respondents had comorbidities, and the remaining, 82 respondents, did not have comorbidities. The results of this study are supported by Lidiana et al (2021); the majority of respondents, 86 respondents (90.5%), did not have a past medical history.

#### 3.2. Health-Related Quality of Life on Society Post Sinovac Vaccine

Measurement of HRQoL in this study used the 5D 5L EQ questionnaire, which consisted of 5 domains and 5 levels of health status. **Table 2** presents the description of the HRQoL of the community after the Sinovac vaccine.

**Table 2.** Frequency of respondents in each domain EQ-5D-5L

Dimension	No Problems		Slight Problems		Moderate Problems		Severe Problems		Extreme Problems	
	N	%	n	%	N	%	N	%	n	%
	Mobility	100	100	0	0	0	0	0	0	0
Self-Care	100	100	0	0	0	0	0	0	0	0
Usual Activity	86	86	14	14	0	0	0	0	0	0
Pain/Discomfort	55	55	37	37	8	8	0	0	0	0
Anxiety/ Depression	95	95	5	5	0	0	0	0	0	0

The EQ-5D-5L consists of a system description and an EQ-Visual Analog Scale (EQ-VAS) section. The EQ-5D-5L description system is divided into five dimensions: the dimensions of mobility, self-care, usual activities, pain or discomfort, and anxiety or depression. The value of the EQ-5D index will be calculated based on the Indonesian value set that has been developed (Mursyid et al., 2019). Each dimension has five response levels: no problems (level 1), slight problems (level 2), moderate problems (level 3), severe problems (level 4), and extreme problems (level 5). In the EQ-VAS, respondents were asked to rate their overall state of health between 0-100 on a 20 cm vertical visual analogue scale, where 0 is the worst imaginable health state, and 100 is the best imaginable health state (EuroQol Research Foundation, 2019).

Table 2 shows that in the first dimension, the ability to walk found that all respondents after the covid 19 vaccine did not experience difficulties in walking and self-care; respondents had no difficulty bathing or dressing. Based on the activities, 86 respondents felt no difficulty doing the usual activities, and 14 respondents felt tricky doing the usual activities. Local side effects of the COVID-19 vaccine are pain, redness, and swelling at the injection site, while systemic side effects include fever, headache, muscle aches, and drowsiness (Zhang et al., 2020). The study found that 55 respondents did not feel pain/discomfort, and eight respondents felt quite pain/uncomfortable. Ninety-five respondents did not feel anxious/depressed (sad) after being vaccinated, but five felt minor anxiety/depression (sad) after being vaccinated. It is related to the news that spreads in the community regarding the safety of the covid vaccine and the side effects after being vaccinated, so several respondents feel a little anxiety/depression.

Table 3 presents the mean value of each EQ-5D utility value is 0.944, and the VAS value is 0.975. The two utility values are close to 1, which indicates perfect health, while the value 0 indicates the worst condition (Kementerian Kesehatan Republik Indonesia, 2017). The results of this study indicate that there is no difference between the EQ-5D-5L and EQ-VAS, where basically the results of these two measurements of quality of life must be in line (Purba et al., 2017). The quality of life for the people after getting the sinovac vaccine is close to perfect which indicates a good quality of life, this is due to the lower incidence of post-immunization follow-up to the sinovac vaccine. The statement is in accordance with previous studies where follow-up events after sinovac vaccine immunization were low, out of 150 people it could be seen that 77 people (18.7%) had no symptoms of post immunization adverse events. As for mild post immunization follow up symptoms such as pain at the injection site in 28 people (18.7%), muscle pain in 29 people (19.3%), fever in 10 people (6.7%), dizziness in 3 people (2%), weakness in 7 people (4.7%), increased appetite in 3 people (2%) and drowsiness in 9 people (6%) whereas for symptoms of follow-up events after severe immunization, namely shortness and seizures in 1 person (0.7%) after vaccination (Safira et al., 2021).

**Table 3.** Respondents' Utility Value

Utilities	Mean	Standard Deviation	Median	Minimum-Maximum
EQ-5D-5L	0,944	0.0668	1	0,815 – 1
EQ-VAS	0.9750	0.05	1	0,80 - 1

#### 4. CONCLUSION

This research concludes that the HRQoL score in the post-vaccination is 0.944 (EQ5D5L) and 0.975 (VAS), which means close to perfect health. This research is expected to be a reference for stakeholders in selecting preventive therapy for Covid 19 and can be used as initial data for cost-utility analysis research.

#### 5. CONFLICT OF INTEREST

The authors declare no conflict of interest in this research.

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