

Evaluation of Exposure to COVID-19 From Participants in the Complete Dose of Sinovac and AstraZeneca Vaccinations for Online Drivers

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Abstract: The type of this research is observational with a cross-sectional design using convenience sampling for all online drivers in Indonesia who have received the full dose of the Sinovac and AstraZeneca vaccine. To evaluate the comparison of the Sinovac vaccine and AstraZeneca vaccine on a driver online in Indonesia who has received the full dose of the Sinovac and AstraZeneca vaccine. It was found that the efficacy of the Sinovac and Pfizer vaccines was almost the same. Other factors affecting the side the effect and efficacy of vaccines are gender, age, and BMI, with the p-value of each variable <0.05. The following is the relationship between the type of vaccine, sex with a mean of 1.49, age with a mean of 24.27, and BMI with a mean of 22.3. For the side effects of the AstraZeneca vaccine and the Sinovac vaccine, the symptoms are almost the same.

1 INTRODUCTION

Covid 19 which emerged at the end of 2019 has become a threat to public health around the world. (Sutardi and Ramatillah 2022) Coronavirus is a large family of viruses that can cause illnesses ranging from mild, moderate to severe symptoms. WHO-, mentions that almost a year since the first report of cases of severe acute respiratory syndrome coronavirus-2 in Wuhan province in China, more than 57 million cases have been diagnosed, thus WHO declared coronavirus disease 2019 a pandemic on March 9, 2020. (Blum and Neumärker 2021) (WHO, 2020) In humans, it mainly infects cells in the airways lining the alveoli. SARS- CoV-2 will bind to the receptor and enter the cell. (Zhang et al. 2020) The ability of the virus to overpower the immune response determines the severity of the infection. Dysregulation of the immune system then plays a role in tissue damage in SARS-CoV-2 infection. (Susilo et al. 2020) Meanwhile, the first case was confirmed on March 2, 2020. To date, there is no effective drug to reduce the burden of infection and the pandemic. The Covid-19 pandemic will not only result in enormous mortality but will also continue to burden the burden of morbidity that severely disrupts communities pandemic was first announced on March 11, 2020,

indicating that the virus has infected many people in various countries.

Vaccines are biological products containing antigens that, if given to humans, will trigger the formation of antibodies and cause active immunity in certain diseases. One of them is the Sinovac vaccine and the AstraZeneca vaccine. Sinovac is an inactivated whole virus developed by Life Science, while AstraZeneca is a vaccine containing the gene encoding the full-length S Protein and is one of the vaccines developed by the University of Oxford (Kezia and Ramatillah 2022) (Araminda and Ramatillah 2022).

2 MATERIALS AND METHODS

This research was conducted with a quantitative approach using a prospective cross-sectional design study. The data collection technique was carried out using a survey method using google forms distributed offline and online to motorcycle taxi drivers who had been vaccinated with complete doses of Sinovac and AstraZeneca vaccines with a convenience sampling method. This research was conducted in the period August-October. The inclusion criteria were Online drivers over 18 years old who had received Sinovac

and AstraZeneca vaccines and were willing to be respondents in this study. The number of respondents in this study was 600 respondents (300 Sinovac and 300 AstraZeneca).

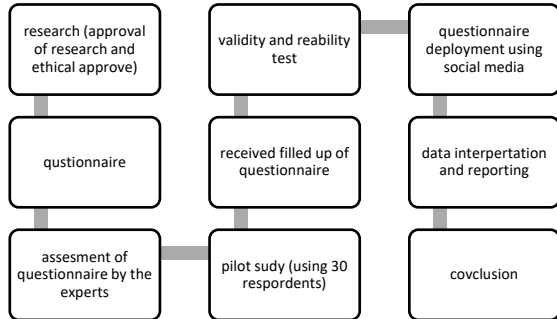


Figure 1: Research Framework.

2.1 Ethical Approval

As seen in fig. 1 this research was approved by the 17 august 1945 university Jakarta ethics committee with reference numbers: No.50/KEPK-UTA45JKT/EC/EXP/07/2022.

3 RESULT AND DISCUSSION

3.1 Results

The number of respondents from this study was 600 respondents who had received two (2) doses of the Sinovac vaccine and AstraZeneca vaccine and were included in the inclusion criteria. Respondents in this study received questionnaires through social media such as Facebook, WhatsApp, and Instagram.

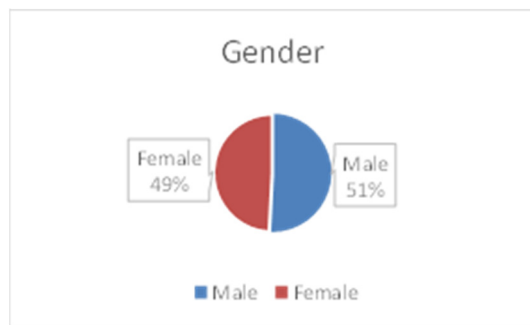


Figure 2: Participants based on gender.

Based on pictures 2 out of 600 respondents, 49% (295 respondents) were women and 51% (305 respondents) were a man. Based on research in Sumatra Selatan 440 respondents have completed the

questionnaire, 53,4% of respondents are female and 46,6% of respondents are male. (Argista 2021).



Figure 3: Participants exposed to Covid 19.

Based on pictures 3 out of 600 respondents, 25% (150 respondents) have been exposed to covid 19.

Table 1: Correlation between type of vaccine and exposure to Covid 19.

Kind of vaccine	Exposed to covid 19 /percentage %	P value
Sinovac	81/24,3%	
AstraZeneca	69/20,3	
Total p-value		0,352

Fisher test, #Chi-square test

Table 1, it is explained drivers online who were exposed to covid 19 and those who were most exposed from drivers online who received the Sinovac vaccine (24,3%). AstraZeneca vaccine efficacy based on the full-length encoding of the SARS-Cov-2 viral spike protein RDB will result in better protection. (Ghosh 2021) While in the Sinovac vaccine, the risk of exposure to Covid 19 was reduced by 65,3% compared to those who did not receive the Covid 19 vaccine.(Marwan 2021).

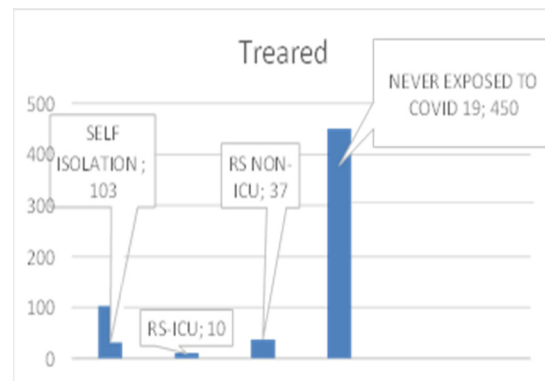


Figure 4: Treated.

It can be seen in table 4 that Covid 19 patients that there are 103 patients doing self-isolation, 10 being treated at the ICU hospitals, and 37 being treated at non-ICU hospitals.

Table 2: Correlation between type of vaccine and side effects and efficacy of the vaccine 1st.

Variables	Frequency/Percentage (%)		p-value
	Sinovac = 300	AstraZeneca = 300	
Side Effects of fever after the 1 st vaccination	90/30	131/43.6	0.001
Pain in the 1 st vaccination injection area	189/33	202/67.3	0.304
Side effects of coughing after the 1 st vaccination	16/5.3	31/10.3	0.032
Side effects of the flu after 1 st vaccination	28/9.3	38/12.6	0.240
Feel nausea after the 1 st vaccination	23/7.6	40/13.3	0.032
Feeling dizzy after the 1 st vaccination	73/24.3	109/36.3	0.002
Cholesterol levels increase after the 1 st vaccination	0	4/1.3	0.124

Table 3: Correlation between type of vaccine and side effect and efficacy of the vaccine 2nd.

Variable	Percentage/frequency (%)		P-value
	Sinovac= 300	AstraZeneca= 300	
Side Effects of fever after the 2 nd vaccination	59/19.6	112/37.3	0.000
Side effects of the flu after 2 nd vaccination	16/5.3	36/12	0.005
Feeling dizzy after the 2 nd vaccination	53/17.6	78/26	0.017
Loss of loss and taste after 2 nd vaccination	13/4.3	29/9.6	0.015
Experienced diarrhea after 2 nd vaccination	7/2.3	12/4	0.351

Table 4: Correlation between age and side effects of the vaccine after 6 months.

Variable	Frequency/percentage (%)	P value
	Age n:600, mean :24.27	
Have been exposed to covid-19 1-3 months after vaccination	56/33.6	0.507
Have been exposed to covid-19 4-6 months after vaccination	48/28.8	0.315
Current menstrual 1-3 months after vaccination	215/1,29	0.009
Current menstrual 4-6 months after vaccination	210/1.26	0.396
Feel easily tired 1-3 months after vaccination	88/52.8	0.002
Feel easily tired 4-6 months after vaccination	44/26.4	0.830
Feel pain in arm 1-3 months after vaccination	67/40.2	0.129
Bleeding 1-3 months after vaccination	2/1.2	0.194
Bleeding 4-6 months after vaccination	2/1.2	0.194
Experience heart disorder 4-6 months after vaccination	4/1.3	0.29
Cholesterol levels increase 1-3 months after vaccination	2/0.6	0.469

*Man-Whitney test, #Kruskal Wallis test

Table 5: Correlation between Gender and side effects of the vaccine after 6 months.

Variable	Frequency /percentage (%)	P value
	Gender n:600, mean :1.49	
Have been exposed to covid-19 1-3 months after vaccination	56/33.6	0.309
Have been exposed to covid-19 4-6 months after vaccination	48/28.8	0.003
Current menstrual 1-3 months after vaccination	215/1.29	0.000
Current menstrual 4-6 months after vaccination	210/1.26	0.000
Feel easily tired 1-3 months after vaccination	88/52.8	0.000
Feel easily tired 4-6 months after vaccination	44/26.4	0.051
Feel pain in arm 1-3 months after vaccination	67/40.2	0.120
Feel pain in arm 4-6 months after vaccination	24/14.4	0.185
Experience heart disorder 1-3 months after vaccination	4/1.3	0.332
Experience heart disorder 4-6 months after vaccination	4/1.3	0.331
Cholesterol levels increase 1-3 months after vaccination	2/0.6	0.163
Cholesterol levels increase 4-6 months after vaccination	2/0.6	0.163

*Mann – Whitney test, #Kruskal Wallis test

Table 6: Correlation between body mass index and side effects of the vaccine after 6 months.

Variable	Frequency /percentage (%)	P value
	BMI n:600, mean:22.3	
Have been exposed to covid-19 1-3 months after vaccination	56/33.6	0.305
Current menstrual 4-6 months after vaccination	210/1.26	0.324
Feel easily tired 1-3 months after vaccination	88/52.8	0.116
Feel easily tired 4-6 months after vaccination	44/26.4	0.356
Cholesterol levels increase 1-3 months after vaccination	2/0.6	0.033

*Man-Whitney test, #Kruskal Wallis test

Table 7: Correlation kind of vaccine and comorbid.

Variable	Percentage/ frequency	AstraZeneca = 300	P- value
	Sinovac = 300		
Cholesterol	7/3.1	2/0,6	0.176
Gout	12/4	1/0.3	0.003
Asthma	10/3.3	5/1.6	0.296
Rheumatic	4/1.3	1/0.3	0.373

3.2 Discussion

Correlation between type of vaccine and side effects and efficacy of the vaccine 1st. There is a significance between the type of vaccine and the side effects felt by the patient after receiving dose 1 where the result showed that the AstraZeneca vaccine had more side effects than Sinovac. It is known from a total of 600 respondents who received the AstraZeneca vaccine, that 43,6% felt the side effect of fever, 67,3% feel the effect of pain at the injection site, 10,3% feel the effect of coughing, 12,6% feel the effect of flu, 13,3% feel the effect of nausea, 36,3% feel the effect of dizzy, 1,3% feel the effect of the cholesterol level increase. The Indian Ministry of Health Secretary stated that common side effects of the AstraZeneca vaccine will disappear within 24 hours. According to the AstraZeneca company, the prophylactic use of Acetaminophen can reduce some symptoms. (Ghiasi et al. 2021). In a study conducted in England explained that the AstraZeneca vaccine achieved 75% effectiveness from 35 days after the first dose. (Bernal et al. 2021) but in each country in determining the criteria for signs and symptoms of COVID-19 referring to the provisions of WHO (Hidayani 2020).

Correlation between type of vaccine and side effect and efficacy of the vaccine 2nd. Table 3 explains the efficacy after being vaccinated with dose 2, AstraZeneca vaccine has a higher effect as in table 2, which is also compared to the Sinovac vaccine with an average p-value below 0.5. development and antibody levels increase significantly with each dose, in line with real-world data obtained from the UK which showed that the second dose increased protection against SARS- CoV-2 infection from 65% with dose 1 to 70% with dose 2 among recipients (Chau et al. 2022).

Correlation between age and side effects of the vaccine after 6 months. The data in table 4 explains that age affects the side effects of vaccines because as a person gets older, the antibodies decrease and vice versa. At a young age, someone has strong antibodies,

but some countries include a priority age criterion for receiving the Covid19 vaccine. (Voysey et al. 2021). A study by Muller et al, found that there was a lower frequency of neutralizing antibodies in the older population after vaccination compared to the younger population (Xiong et al. 2021).

Correlation between Gender and side effects of the vaccine after 6 months. Table 5 by gender shows that most respondents are male but in table 4 gender has nothing to do with Covid 19 vaccine. A study conducted in Malaysia used the chi-square test to investigate the possible relationship between gender and perception in receiving accurate and adequate vaccine-related information.(Elnaem et al. 2021) As for gender, the Covid 19 vaccination was similar between males and females. However significantly higher in males than females (Xiong et al. 2021).

Correlation between body mass index and side effects of the vaccine after 6 months. In table 6 it is explained that a BMI below 25 has a risk of the effects of the covid 19 vaccine. BMI (kg/m²) was taken from the general practice medical records, and we used the last measured BMI before study entry for everyone (Piernas et al. 2022). Because the p-value shows below 0,5. Based on a study conducted in Spain said that most of the side effects experienced were significantly higher in those who were not overweight compared to those who were overweight. (Iguacel et al. 2021). Negligence or underrepresentation of participants with higher weights can result in poorer outcomes of vaccine coverage for people with higher body weights and contribute to greater health inequities (Campbell et al. 2021).

Correlation kind of vaccine and comorbid. It can be seen in table 7 that the frequency of comorbid from driver online respondents shows that only 42 respondents (6%) have a comorbid history and 94% have no comorbid history. Vaccines are only given to healthy people. But as many as 6% of respondents have a history of comorbid. Because respondents who have a history of comorbid are usually more prone to having a good immune system, someone who has a history of comorbid diseases can still take part in the Covid 19 vaccination (Yulyani et al. 2022).

4 CONCLUSION

This study found that the efficacy of the Sinovac and AstraZeneca vaccines was almost the same for online drivers in Indonesia. Because it can be seen from the number of patients exposed to Covid 19 between Sinovac vaccine recipients and AstraZeneca vaccines inhibit the same. But the side effects of the

AstraZeneca vaccine are higher than the Sinovac vaccine. From the table above, it can also be seen that age and BMI can affect the efficacy of vaccination. for gender, the comparison is only slightly for the effect of vaccination.

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