The Relationship Between Covid-19 Vaccination And The Incidence Of Covid-19 At The Hospital Putri Hijau Hospital, Medan

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Abstract.

Vaccination is the process of entering vaccines to stimulate the body's immune system, as a preventive effort in reducing morbidity and mortality caused by the coronavirus. Putri Hijau Hospital in Medan City, which participated in the second dose of Covid-19 vaccination, confirmed that the respondents who were still affected by Covid-19 needed to be developed, so in particular knowing the number of cases of Covid-19 that appeared in respondents who had been infected. received a second dose of vaccination. The purpose of this study was to see whether there was a relationship between vaccination and the incidence of Covid-19 at Putri Hijau Hospital in Medan.This type of research uses a quantitative approach method by using a questionnaire distributed through the Google Form platform on a smartphone to store all the answers that have been filled in by the respondent based on the questionnaire guidelines that have been made previously with the target of respondents who have vaccinated the second dose of Covid-19.The results showed that from 100 respondents there were 28 male patients (28%) and 72 female patients (72%). Judging from the age of most patients at the age of 15 to 25 years. There were 8 people and 92 people who were not exposed. With the symptoms of Covid-19, such as fever, cough, sore throat, and loss of sense of smell. This is because the respondents had antibodies that were formed slightly after vaccination, were active outside the home, did not apply health protocols and maintained their immune system so that they were exposed to Covid-19.

Keywords: *Antibody, Covid-19, Hospital, Vaccine, and Relationship.*

I. INTRODUCTION

Coronavirus is a new type of virus that was first detected in the city of Wuhan in December 2019, the covid-19 pandemic has infected all countries in the world and is caused by the SARS-CoV-2 virus (Severe Acute Respiratory Syndrome Coronavirus-2) into an event that threatens public health in general and has attracted worldwide attention on 30 January 2020, WHO has designated the covid-19 pandemic as a public health emergency of international concern [1], [2]. The prevalence of covid-19 in Indonesia is quite high, because community mobility is very high and the population is quite dense [2], [3]. The Indonesian government has implemented several regulations and socialisation to prevent the spread of covid-19 by 3M, namely using masks, washing hands, and maintaining distance [4].In addition, the government will restrict community activities due to the high number of corona cases from 11 to 25 January 2021, not using the term Large-Scale Social Restrictions or PSBB, the Government has now chosen to use a new term in social restrictions due to the corona pandemic, namely the implementation of restrictions on community activities (PPKM) [5]. Vaccines are biological products containing antigens that are administered to induce immunity. Vaccination is the process of inserting vaccines to stimulate the body's immune system, and also as a preventive effort in reducing morbidity and mortality rates to prevent those caused by the covid-19 virus. The Covid-19 vaccination programme was launched in January 2021 [6], [7].The purpose of vaccination is to build immunity to a group. Determination of vaccines in the decision of the Minister of Health Number 9860 of 2020 vaccines produced by PT Biofarma, AstraZeneca, China National Pharmaceutical Group Corporation (Sinopharm), Moderna Pfizer Inc and BioNTech, and Sinovac Biotech.

The vaccine given in the first vaccination programme was Sinovac, which is still a new vaccine [8], [9].Immunity begins to form from the 7th day after the first dose of vaccination is received, by the 28th day of the second dose of injection, antibodies have formed at 1-2 weeks after the second vaccination. The World Health Organization states that the success rate in people who have been vaccinated twice reaches 51-84% where those who have been vaccinated do not experience severe covid symptoms if they are identified as

positive for Covid-19 [10], [11].Medan City is one of the red zones where cases are increasing day by day. The symptoms caused by people infected with covid-19 are fever, dry cough, fatigue, aches and pains, nasal congestion, headache, sore throat, diarrhoea, loss of sense of taste and smell, rashes on the skin, discolouration of fingers and toes, difficulty breathing, chest pain and pressure, loss of ability to move and speak. The covid-19 virus can be spread from asymptomatic people or commonly referred to as (OTG) so it is very difficult to treat [10], [11], [12], [13]. One of the hospitals in Medan City, namely Putri Hijau Medan Hospital, also participated in carrying out the second dose of covid-19 vaccination. Where based on this study, the characteristics of the respondents studied were people who were exposed to covid after the second dose of vaccine and were willing to become respondents, so the researchers chose Putri Hijau Medan Hospital to be used as a research site.

II. METHODS

This study is a descriptive study, where data collection uses a questionnaire. Researchers gave questionnaires to those who had received the second dose of vaccination who had been selected as respondents and had agreed to fill out the questionnaire provided. The questionnaire filling was carried out from July-August 2021 at Putri Hijau Hospital Medan. Completion of the questionnaire was carried out to collect data that was considered important to obtain valid and reliable data on the variables measured. The questionnaire is structured with a set of statements and questions for respondents to answer [14], [15].

Inclusion dan Exclusion Criteria

Inclusion criteria: respondents who have received the second dose of vaccine who are still affected by covid, have a smartphone and understand how to fill out the questionnaire. willing to fill out a questionnaire via google form, at least 18-60 years old.

Exclusion criteria: respondents who have not been vaccinated, do not have a smartphone, do not want to fill out the questionnaire completely, and are not willing to become respondents.

Research stage

The research was conducted in several stages

1. Collecting theories related to Covid and the incidence of Covid-19.
2. Prepare a questionnaire as material for research.
3. Entering the questionnaire into the google form contained in the smartphone to be filled in by the respondents.
4. Preparing to collect data, the researcher first explained about his research and the researcher asked his willingness to fill out the questionnaire.
5. Establishing communication between researchers and subjects.
6. The data collected was analysed using SPSS

III. RESULT AND DISCUSSION

Characteristics of Respondents

Based on the results carried out by researchers with respondents who have carried out the second dose of vaccine, the data obtained by researchers are 100 people who are willing to become respondents regarding the vaccinations that have been carried out by the respondents. Characteristics of respondents based on gender, age, education and occupation.

Table 1. Characteristics of Respondents

Respondent Characteristics	Amount	Percentages
Gender		
Male	28	28%
Female	72	72%
Total	100	100%
Education		
Student	50	50%
Scholar	30	30%
Magister	20	20%

Total	100	100%
Age (years)		
18-25	56	56%
26-45	33	33%
55-60	11	11%
Total	100	100%
Jobs		
Self-employed	56	56%
Not working	44	44%
Total	100	100%

Based on the results of this study, that the characteristics of the research subjects of the Covid-19 vaccination relationship according to gender were 100 people, and those who were male were 28 people (28%) and female were 72 people (72%), in this case it can be concluded that the majority of respondents in this study who had received the second dose of vaccine were more female. Researchers saw that female respondents and their sense of anticipation had a greater desire to vaccinate. The reasons given varied, ranging from the requirement to work for the company to personal awareness of each respondent. Because the enthusiasm for this vaccination has a very positive impact, it has increased the number of people, especially women, for Covid-19 vaccination. This may be because women are more compliant and easily accept the positive perception that the vaccine is a preventive measure for the Covid-19 virus.Research [16], [17] in Kendari states that the public's perception of the covid-19 vaccine is quite good at 59% and 14% have a good perception of vaccination. A good perception of vaccination greatly influences a person's willingness to vaccinate, especially in women. Then in research [18] which states that 63% of respondents have positive perceptions of vaccines and the rest have negative perceptions. Beliefs have a relationship with a person's willingness to be vaccinated.

Stating that to increase willingness to accept vaccination, what can be done is to utilise positive influencers and increase community motivation to achieve Herd Immunity [10]. Because efforts in forming a positive mind set are needed to increase acceptance and willingness to vaccinate. The better a person's positive news about the Covid-19 vaccine, the more they will agree to take the Covid-19 vaccination. Based on the last education of the respondents in the study, most of them were students, namely 50 people (50%), 30 undergraduates (30%), and 20 masters (20%). In this case, it can be concluded that the majority of recipients of the second dose of vaccine are students because they often travel to crowded places and interact with many people.Based on the age of the respondents in this study, almost all of them are mature adults, namely early adulthood, both physiologically, psychologically, and cognitively. This is the age group that participates in the most vaccination activities due to in-depth knowledge of vaccination. Vaccination as a preventive measure in the prevention of Covid-19 is the most highlighted thing by the 18 until 25 year old group. They get this information from social media to news that convinces the group to take part in vaccination activities.The more mature a person's age, the more life experiences he will have, the easier it is to accept behaviour and will be more mature in thinking because this age is the most productive age and the most ideal age in playing a role, especially the formation of health activities (Tatowo, 2003). According to (Hurlock, 2007) said that age affects a person in terms of knowledge, the older a person is, the more knowledge and experience he has.

The results of this study indicate that early adulthood is a period when a person is considered to have knowledge about the importance of Covid-19 vaccination. So that at this time it is very important to take part in vaccination to reduce the number of Covid-19 exposure. During the current pandemic, it is hoped that more and more people in Medan City will participate in the Covid-19 vaccination programme. With this mature age, it is expected that the vaccinated behaviour is still required to carry out health protocols as before receiving the vaccine, namely wearing a mask when travelling, washing hands and maintaining distance from people who are around. Based on occupation, it is also grouped into 2 groups, namely respondents who work as self-employed, 56 people (56%) and respondents who do not work 44 people (44%).This is similar to the characteristics of respondents based on age. The information they get from social media to news obtained from the respondent group, namely workers, get an understanding of vaccination that

inspires their desire to participate in vaccination activities for workers who are outside the home so that each of them carries out vaccinations that have been prepared based on directions from the company where they work which requires vaccination and is one of the requirements for working in the office so that when they get covid the symptoms they feel are not too severe, in people who do not work this is because of the advice of their own families.

Vaccines Used by Respondents

Based on the research, the vaccines received by each respondent were obtained.

Table 2. Name of vaccines received by respondents

Description	Amount	Percentages
Sinovac	87	87%
AstraZeneca	5	5%
Moderna	8	8%
Total	100%	100%

Based on table 2, it can be seen that the results of the study of the most vaccines received by respondents were the Sinovac vaccine as many as 87 people and the AstraZeneca vaccine as many as 5 people and as many as 8 people who received moderna vaccine injections. In Indonesia, the government has chosen the Sinovac vaccine to be used for the Indonesian people because the vaccine meets the standards of safety, effectiveness and quality. This selected vaccine must have elements of safety, efficacy and quality that are guaranteed by BPOM [6].The sinovac vaccine has been proven by a series of tests starting from preclinical testing, phase one, phase two and phase three clinical trials. The sinovac vaccine uses an inactivated virus platform, which is a virus that has been killed or weakened so that the virus does not contain live viruses and does not replicate. This compound serves to stimulate the immune system and increase the response to the vaccine. This method aims to make the virus used in the vaccine not cause illness but still trigger or stimulate the body's immunity to form antibodies against a virus [6].

The efficacy of the Sinovac vaccine in Indonesia is only around 65.3%. This value is lower than Turkey 91.25% and Brazil 78% this vaccine is able to provide a three times lower risk of experiencing symptomatic covid-19 (confirmed case). The Second vaccine used by respondents, AstraZeneca, is known as the Oxford vaccine produced by the UK. The vaccine does not contain the killed coronavirus, but uses a chimpanzee adenovirus vector. The vaccine utilises a more sophisticated, modified method to form antibodies. The AstraZeneca vaccine is the most widely used vaccine worldwide AstraZeneca has received licences from BPOM and MUI so that the vaccine can be used [7]. The vaccine is effective at the age of 18 years to the elderly. The best efficacy of the AstraZeneca vaccine is 63.09% in the second dose after a 12-week interval from the first dose. People who received this type of vaccine were less likely to be exposed to covid-19 than people who did not receive the vaccine. This research is in line with literature studies in 33 countries [7].

Respondents' knowledge about Covid-19 vaccination

Respondents' knowledge of covid-19 vaccination is described below.

Table 3. Distribution based on knowledge

Questions	Amount	Percentages
1. Do you know the purpose of the vaccination programme?	98	98%
2. Do you think vaccination is a prevention of the covid-19 virus that aims to increase a person's immunity?	95	95%
3. Do you know the name of the vaccine?	92	92%

Based on table 3, it can be concluded that most respondents who have filled out the questionnaire have a good level of knowledge obtained in this study, which is very good, namely a total of 98 with a % 98. Because in question number 1 as many as 98 people answered yes where the respondents knew correctly the purpose of the vaccination programme. Based on question number 2, the respondents knew that vaccines are prevention from viruses that aim to increase the immune system, from question number 2, 95 with a % 95 were obtained. Based on question number 3, they knew the name of the vaccine they received at the time of vaccination.Knowledge is categorised into 2, namely good and bad. Factors that influence knowledge are

education, occupation and age, environmental factors, and social and cultural factors. Therefore, it can be said that knowledge is the basis for the formation of a person's behaviour [19], [20].Researchers believe that good knowledge about vaccines will influence intention to vaccinate, which is supported by the survey findings. This finding supports the research which found a significant relationship between knowledge and willingness to accept vaccines.

Behaviour of Respondents for Covid-19 Vaccination

Table 4. Distribution table based on respondents' behaviour

Questions	Amount	Percentages
1. Do you still follow health protocols after the vaccine?	100	100%
2. Do you advise family and friends to get vaccinated?		
3. Do you take any medication to reduce side effects after the vaccine?	99	99%
	20	20%

It was concluded that respondents who had filled out the questionnaire had good behaviour as many as 100 people who followed health protocols after vaccination, then 99 people advised family and friends to participate in the vaccination program and only 20 people took medicine to reduce side effects. Behaviour is the result of all kinds of experiences and human interactions with the environment [19], [20].

Post-immunisation adverse event

Table 5. Distribution table based on post-immunisation adverse event respondents

Questions	Amount	Percentages
1. Do you feel pain at the injection site?	69	69%
2. Is there a rash (reddish skin) on the arm?	9	9%
3. Have you had a fever after a few hours of this vaccine?	19	19%
4. Do you feel weak and sleepy after the vaccine injection?	70	70%
5. Has your physical activity been impaired after experiencing vaccine side effects?	26	26%

Based on table 5, it can be concluded that 100 respondents in question number 1, 69 people experienced pain where the vaccine was injected. In question number 2, 91 people experienced a rash on the arm after being injected. Question number 3 as many as 81 people had a fever after a few hours. In question 4, 70 people felt weak and sleepy after the vaccine injection. In question 5, 74 people experienced impaired physical activity. The KIPI that occurred in the results of this study fell into the mild and harmless category. The report received by the National Commission on Post-Vaccination Adverse Events (KIPI) is in accordance with the results obtained in this study, namely pain, fever, weakness, drowsiness, red rash on the arm where the injection was made and disturbed physical activity [21], [22].

Covid-19 Symptoms

Table 6. Distribution table of respondents based on covid-19 symptoms

Questions	Amount	Percentages
After the second dose of vaccine, did you experience the covid symptoms below:		
1. Muscle pain/body aches	53	53%
2. Weakness	42	42%
3. Fever	21	21%
4. Fever/Body temperature > 37.5 C	13	13%
5. Sleepy	67	67%
6. Flu/cold	9	9%
7. Throat pain	7	7%
8. Stool/Diarrhoea	5	5%
9. Loss of sense of taste	5	5%

Based on table 6 on covid symptom number one, 53 people had muscle pain or body aches, on symptom number two, 42 people were weak and tired, on symptom number three, 21 people had fever, 13 people, 67 people were sleepy, only 9 people had flu or cold, 7 people had sore throats, diarrhoea and only 5 people lost their sense of taste. Judging from the number of people affected by covid-19 after the second dose of vaccine in the previous table, this shows that the covid-19 vaccine does not 100% guarantee that someone is infected with the Covid-19 virus. Even though they have received a second dose of Covid-19 vaccine injection, a person must still apply the 3M health protocol (wearing a mask, maintaining distance, and washing hands).Warns that people who have had the second dose of vaccine can still experience 21 symptoms even though not everyone experiences these symptoms, so the Zoe application was created to make it easier for researchers to find out the common symptoms that appear when someone is exposed to Covid-19 after the second vaccine dose. Most of the symptoms are not on the official NHS covid-19 list. The official list of common symptoms is fever, cough and loss of sense of smell [23], [24]

Respondents Exposed to Covid-19 After Vaccination

Based on the research that has been carried out, there are respondents who have been vaccinated with the second dose of Covid-19.

Table 7. Respondents exposed to Covid after the second dose of Covid-19 vaccine

Description	Amount	Percentages
Respondents who affected by covid after the second dose of vaccine	8	8%
Respondents who did not affected by covid after the second dose of vaccine	92	92%
Total	100	100%

Based on table 6, it can be seen in the research results that only 8 respondents were exposed to covid after the second dose of vaccine and 92 were not exposed. In the table above there is a significant difference between people exposed to Covid after the second vaccine and people who are not exposed to Covid. This is because the 8 respondents may not have an immune system yet, let alone move outside the home and do not apply health protocols so that they are more susceptible to Covid-19. The new cause is happening now because there is a new wave in the Covid-19 pandemic, several countries have reported that there are new variants that have mutated to form new variants, namely Delta and Omicron, which have decreased the efficacy of the vaccine, decreased protective immunity induced by the vaccine, because the Delta variant is more contagious, thus increasing cases to do booster vaccinations. After being vaccinated, you must maintain your immune system, eat nutritious food and continue to apply the recommended health protocols. Because even after being vaccinated, a person can still be exposed to Covid-19 but it is much milder [25].

Relationship between age, gender, education and occupation with the incidence of Covid-19

The results of the calculation using chi square obtained a p value of 0.003 ($P < 0.05$) indicating that there is a relationship between age and the incidence of covid. From the previous discussion, the age factor is closely related and has a relationship with the incidence of covid-19 because elderly people experience a degenerative process so that they are vulnerable, decreased immunity and comorbidities result in weak conditions so that they are easily infected with covid-19 even though they have done the second dose of vaccination [26] In the results of the chi square calculation, the p value is 0.018 ($P < 0.05$), which means that there is a relationship between gender and covid. In research [26] also shows that those who are male are still exposed to covid even though they have the vaccine.

Based on this meta-analysis study, there is a relationship between gender and the risk of getting covid, it is known that men are more at risk of infection than women.While those who are female tend to comply with existing regulations because of the knowledge they have.The results of the chi square calculation obtained a p value of 0.002 ($P < 0.05$), namely there is a relationship between education and covid symptoms that people with minimal education find it difficult to receive information related to covid and in theory education will affect their level of knowledge [21]. The occupation obtained a p value of 0.005

indicates that there is a relationship with the incidence of Covid. According to the theory of Senatore V et al, 2020 because there is a risk of transmission that quickly increases in people who work both outdoors and indoors, because many individuals are in one room so that the interaction is quite close [27].

IV. CONCLUSION

This study was dominated by women 72% and men 28%. Based on age 18-25 years 56%, age 26-45 years 33%, age 55-60 years 11%. Based on education as much as 50% as a student, 30% undergraduate, and 20% master. Based on employment, 56% are self-employed and 44% are unemployed. There is a relationship between vaccination and the incidence of covid where 8 respondents were exposed to covid after vaccine one and vaccine two and 92 were not exposed. Symptoms of covid obtained include fever, cough, sore throat, and loss of sense of smell. This is because these respondents formed few antibodies after vaccination, were active outside the home, did not implement health protocols and maintain endurance so that they were exposed to Covid-19.

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