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The Correlation of Pharmaceutical Services with the Incidence of Side Effects of Phase III COVID Vaccination Participants in RS Tingkat II Udayana

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Abstract---*Background Presiden Regulation No. 99 of 2020 requires Indonesian citizens to vaccinate against COVID-19 to prevent the transmission and severity of COVID-19. Pharmaceutical services are a tangible manifestation in realizing a comfortable and safe COVID-19 vaccination to reduce the risk of side effects Objective: This study aims to study the relationship of pharmaceutical services to the incidence of side effects of COVID-19 vaccination after III at RS Tingkat II Udayana. Method: The research design was a cross-sectional study which used an analytical survey The population in the study was all participants of the COVID-19 vaccine in June at RS Tingkat II Udayana as many as 500 people. The sample in this study used a total sampling technique. Data collection in this study used primary data. Data analysis is carried out univariately and bivariately. Results: Participants in the third phase of vaccination were dominated by AstraZeneca vaccination users 245 people (49%), no history of comorbidities 435 people (87%), vaccination participants had a normal BMI of 310 people (62%), a normal glucose level of 490 (98%), and normal tension of 450 people (90%). The results showed that patients were satisfied with pharmaceutical services related to handling side effects of fever, muscle pain and fatigue. Conclusion: The results show a significant relationship between pharmaceutical services to the incidence of side effects with a value of <0.05*
Keywords*---COVID-19, Pharmaceutical Services, Side Effects, Vaccination.*

Introduction

COVID-19 vaccination aims to reduce the transmission of COVID-19, reduce the morbidity and death rate due to COVID-19, achieve herd immunity in the community (herd immunity) and protect the community from COVID-19 to remain socially and economically productive. Herd immunity can only be formed if vaccination coverage is high and evenly distributed throughout the region. Prevention efforts through the provision of vaccination programs if assessed from an economic point of view, will be much more cost-effective, when compared to treatment efforts (Kim & Su, 2020; Gilat & Cole, 2020).

The vaccination program is the government's main program to prevent more severe cases of death. Presidential Regulation No.99 of 2020 concerning Vaccine Procurement and Vaccination Implementation in The Response to the COVID-19 Pandemic, the government targets vaccines to meet the coverage of at least 181.55 million people (70%) of the Indonesian population. In this case, the vaccination coverage of phase I reached 57.55% and phase II 15.07% (National KPC-19 and PE. 2020). Hospitals are health service institutions that provide plenary individual health services that provide inpatient, outpatient, and emergency services as well as vaccinations (PerMenKes 2010). RS Tingakat II Udayana is a hospital that is one of the health facilities in the city of Denpasar that is appointed to provide COVID-19 vaccination services. Hospitals are required to provide quality services that can reach the entire community. COVID-19 vaccination services in hospitals cannot be separated from pharmaceutical services (Chui et al., 2012; Gregório et al., 2016; van de Pol et al., 2019). Pharmaceutical Services is a direct and responsible service

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to patients related to Pharmaceutical Preparations to achieve definite results to improve the quality of patient life (Depkes RI, 2016), One of the purposes of the pharmaceutical standard is to improve the quality of pharmaceutical services in pharmacies and provide satisfactory services to consumers (Depkes RI 2016). Pharmaceutical services are included in minimizing drug side effects so that unwanted effects can be prevented (Dearnaley et al., 1999; Robert et al., 2005). The implementation of pharmaceutical services in vaccination must meet the criteria for rational use of drugs, including the accuracy of the selection of the type of vaccination, the accuracy of drug dosages, the presence or absence of side effects, the absence of counter-indications, the absence of drug interactions, and the absence of polypharmaceuticals (Depkes RI., 2016).

The success of vaccination is closely related to the belief of expressing concerns about the safety and effectiveness of vaccines, expressing distrust of vaccines, and questioning the halalness of vaccines. The most common reasons for COVID-19 vaccine refusal are related to vaccine safety and side effects (30%); doubts about the effectiveness of the vaccine (22%); distrust of vaccines (13%); concerns of side effects such as fever and pain (12%); and religious reasons (8%) (KemenKes, 2020).

Method

This study uses an analytical survey design with a cross-sectional approach. The population in the study was all COVID-19 vaccination participants who carried out COVID vaccination at RS Tingkat II Udayana. Sampling in this study used a total sampling technique. Data collection in this study was carried out from May to June 2022. Data analysis was performed univariately and bivariately using SPSS 17.

Result

Univariate analysis was carried out to obtain an overview of the characteristics of COVID-19 vaccination participants at RS Tingkat II Udayana, and obtained the following results;

1. Characteristics of Respondents

Table 1
Characteristics of respondents

Characteristics	Frequency	Percent
	N	%
Vaccine Schedule -		
Third Vaccine	500	100.0
Type of Vaccines		
Sinovac	30	6.0
AstraZeneca	245	49.0
Pfizer	80	16.0
Moderna	145	29.0
History of Comorbidities		
Yes	65	13.0
No	435	87.0
Types of Comorbidities		
No Comorbits	435	87.0
Hypertension	45	9.0
Diabetes	10	2.0
Respiratory pain	5	1.0
Cholesterol	5	1.0
IMT		
Light Skinny	30	6.0
Usual	310	62.0
Light Grease	110	22.0
Very Fat	50	10.0
Blood Pressure		
Usual	450	90.0

Hypertension	50	10.0
Glucose Level		
Usual	490	98.0
High	10	2.0
Total	500	100.00

Table 1. The results of the univariate analysis in this study were obtained, namely that all respondents had received the 3rd COVID-19 vaccine as many as 500 people (100%). Almost half of the respondents received the AstraZeneca type vaccine as many as 245 people (49%). Almost all respondents had no history of comorbidities as many as 435 people (87%). Most of the respondents who had comorbidities, namely hypertension, were 45 people (9%). Most of the respondents with the normal BMI category were 310 people (62%). Almost all respondents with normal blood pressure were 450 people (90%). Almost all respondents with normal blood sugar levels were 490 people (98%).

2. Incidence of Side Effects

Table 2
Incidence of side effects

Characteristics	Frekuensi	Percent
	N	%
Systemic Side Effects		
Sleepy	70	14.0
Muscle Pain	90	18.0
Fatigue	35	7.0
Headache	25	5.0
Feeling unwell	35	7.0
Fever	220	44.0
Vomiting	25	5.0
Total	500	100.00

In table 2. above, respondents experienced systemic side effects, namely fever as many as 220 people (44%), followed by muscle pain symptoms as many as 90 people (18%) and drowsiness events as many as 70 people (14%)

3. The Relationship Between Pharmaceutical Services in the Dimension of Reliability with Side Effects

Table 3
The relationship between pharmaceutical services in the dimension of reliability with side effects

Side Effects	Reliability Service				Total	p-value
	Less Satisfied		Satisfied			
	F	%	F	%		
Systemic Side Effects						
Sleepy	30	15.8	40	12.9	70	0.003
Muscle Pain	25	13.1	65	21.0	90	
Fatigue	25	13.1	10	3.2	35	
Headache	5	2.6	20	6.5	25	
Feeling Unwell	20	10.5	15	4.8	35	
Fever	75	39.5	145	46.8	220	
Vomiting	10	5.4	15	4.8	25	
Total	190	38.0	310	62.0	100.0	

Based on table 3. above shows that most respondents who are satisfied with pharmaceutical services on the dimension of reliability experienced side effects in the form of a fever as many as 145 people (46.8%). The results of statistical tests show that there is a relationship between pharmaceutical services on the dimension of reliability to systemic side effects with a p-value of 0.003 (<0.05)

4. The Relationship Between Pharmaceutical Services in the Dimension of Responsiveness with Side Effects

Table 4
The relationship between pharmaceutical services in the dimension of responsiveness and side effects

Side Effects	Responsiveness Service				Total	p-value
	Less Satisfied		Satisfied			
	F	%	F	%		
Systemic Side Effects						
Sleepy	35	18.5	35	11.2	70	0.000
Muscle pain	20	10.5	70	22.5	90	
Fatigue	25	13.2	10	3.2	35	
Headache	10	5.2	15	4.8	25	
Feeling Unwell	25	13.2	10	3.2	35	
Fever	70	36.8	150	48.3	220	
Vomiting	5	2.6	20	6.4	25	
Total	190	38.0	310	62.0	100.0	

Based on table 4. above shows that most respondents who are dissatisfied with pharmaceutical services in the dimension of responsiveness experienced systemic side effects in the form of fever in as many as 70 people (36.8%). Meanwhile, most respondents who were satisfied with pharmaceutical services on the responsiveness dimension experienced systemic side effects in the form of a fever as many as 150 people (48.3%). The results of statistical tests show that there is a relationship between pharmaceutical services in the dimension of responsiveness to systemic side effects with a p-value of 0.000 (<0.05).

5. The Relationship Between Pharmaceutical Services in the Dimension of Guarantee and Side Effects

Table 5
The Relationship Between Pharmaceutical Services in the Dimensions of Assurance and Side Effects

Side Effects	Assurance Service				Total	p-value
	Less Satisfied		Satisfied			
	F	%	F	%		
Systemic Side Effects						
Sleepy	45	20.5	25	8.9	70	0.003
Muscle Pain	40	18.2	50	17.8	90	
Fatigue	15	6.8	20	7.2	35	
Headache	15	6.8	10	3.6	25	
Feeling unwell	30	13.6	5	1.8	35	
Fever	75	34.1	145	51.8	220	
Vomiting	0	0.0	25	8.9	25	
Total	220	44.0	280	56.0	100.0	

Based on table 5. above shows that most respondents who are dissatisfied with pharmaceutical services in the guarantee dimension, most of the respondents who are dissatisfied with pharmaceutical services in the guarantee dimension experience systemic side effects in the form of a fever of as many as 75 people (34.1%). Meanwhile, most respondents who were satisfied with pharmaceutical services on the guaranteed dimension experienced systemic side effects in the form of a fever as many as 145 people (51.8%). The results of statistical tests show that there is a relationship between pharmaceutical services in the guarantee dimension to systemic side effects with a p-value of 0.003 (<0.05).

6. The relationship between pharmaceutical services in the dimension of empathy and side effects

Table 6
The relationship between pharmaceutical services on the dimension of empathy and side effects

Side Effects	Empathy Service				Total	p-value
	Less Satisfied		Satisfied			
	F	%	F	%		
Systemic Side Effects						
Sleepy	35	17.5	35	11.6	70	0.001
Muscle Pain	25	12.5	65	21.6	90	
Fatigue	15	7.5	20	6.7	35	
Headache	5	2.5	20	6.7	25	
Feeling Unwell	30	15.0	5	1.7	35	
Fever	85	42.5	135	45	220	
Vomiting	5	2.5	20	6.7	25	
Total	200	40.0	300	60.0	100.0	

Based on table 6. above shows that most respondents are dissatisfied with pharmaceutical services on the dimension of empathy). Most of the respondents who were dissatisfied with pharmaceutical services in the dimension of empathy experienced systemic side effects in the form of a fever as many as 85 people (42.5%). Meanwhile, most respondents who were satisfied with pharmaceutical services in the dimension of empathy experienced systemic side effects in the form of a fever as many as 135 people (45%). The results of statistical tests show that there is a relationship between pharmaceutical services on the dimension of empathy for systemic side effects with a p-value of 0.001 (<0.05).

7. The relationship between pharmaceutical services on the dimension of physical evidence and side effects table

Table 7
The relationship between pharmaceutical services on the dimensions of tangible service with side effects

Side effects	Tangible Service				Total	p-value
	Less Satisfied		Satisfied			
	F	%	F	%		
Systemic Side Effects						
Sleepy	30	16.2	40	12.7	70	0.002
Muscle Pain	20	10.8	70	22.2	90	
Fatigue	10	5.4	25	7.9	35	
Headache	5	2.7	20	6.4	25	
Feeling Unwell	25	13.5	10	3.2	35	
Fever	80	43.3	140	44.4	220	
Vomiting	15	8.1	10	3.2	25	
Total	185	37.0	315	63.0	100.0	

Based on table 7. above shows Most respondents who were dissatisfied with pharmaceutical services on the dimension of physical evidence experienced systemic side effects in the form of fever in as many as 80 people (43.3%). Meanwhile, most respondents who were satisfied with pharmaceutical services on the dimension of physical evidence experienced systemic side effects in the form of a fever as many as 140 people (44.4%). The results of statistical tests show that there is a relationship between pharmaceutical services on the dimension of physical evidence to systemic side effects with a p-value of 0.002 (<0.05).

Discussion

Participants in the third phase of the vaccine at Udayana level II Hospital mostly get the Astrazeneca vaccine (Earle et al., 2021; Khubchandani & Macias, 2021; Leng et al., 2021). Vaccine participants who received Aztrazeneca were

245 people (49%) and participants who received Moderna were 145 people (29%). The use of the Aztrazeneca vaccine is relatively safe in the adult age group in the absence of additional diseases (Ramasamy et al., 2021). The use of AstraZeneca in the age group over 65 years can increase the risk of post-vaccination immune-mediated thrombocytopenia (Andreas et al., 2021). This is following research that most users of the AstraZeneca vaccine have relatively no additional diseases due to normal BMI, blood glucose levels normal and normal hypertension (Kemenkes RI, 2020).

This study aims to discuss the systemic side effects of the third dose of the vaccine. It was found that the most felt by respondents after doing the third dose of the AstraZeneca vaccine which can be seen in table 2 of the vaccine side effects are muscle pain and fever with percentages of 18% and 44% while other systemic effects felt are drowsiness (14%), fatigue (7%), dizziness (5%), and vomiting (5%). These side effects that usually appear are mild, and can usually disappear within 1-2 days, these side effects can be treated by consuming paracetamol, proven mothers, aspirin or antihistamines adapted to the perceived side effects (Folegatti et al., 2020). This is following previous studies comparing side effects of vaccines based on viral vectors such as AstraZeneca with mRNA vaccines such as Pfizer/BioNTech, which describes recipients of the AstraZeneca vaccine will experience more systemic side effects while recipients of mRNA vaccines experience more local effects (Mulligan et al., 2020). In this study, no severe side effects were obtained and most of the side effects were mild side effects 93.4% and a small part were moderate side effects 6.6%

In pharmaceutical services from the reliability, responsiveness, assurance, empathy and physical evidence of the incidence of systemic side effects, most respondents were satisfied with the handling of the incidence of side effects of fever, muscle pain, and fatigue (Akbarov & Xabilov, 2021). This is because the importance of conveying information about the side effects of drugs can be conveyed properly. Research conducted by Putri (2017), states that counselling aspects such as how to use drugs, drug overwriting and drug side effects must be conveyed to patients to prevent the occurrence of drug use errors to increase patient satisfaction by minimizing the risk of side effects In pharmaceutical services from the department of reliability, responsiveness, assurance, empathy and physical evidence of the incidence of systemic side effects in the form of drowsiness and unwellness as respondents did not feel satisfied (Khidoyatova et al., 2022). The lack of pharmaceutical services to convey information related to the side effects caused results in patients feeling dissatisfied. According to (Zainafree & Respati, 2016), quality services must be able to provide clear information to patients regarding the health services carried out. If the guarantee of health services is good, it will affect patient satisfaction experiencing side effects after doing the COVID-19 booster vaccine is normal. Usually, some people after being vaccinated will experience soreness, muscle aches, nausea, dizziness, and fever.

Conclusion

The participants of the third phase of vaccination were dominated by AstraZeneca vaccination users 245 people (49%), no history of comorbidities 435 people (87%), vaccination participants had a normal BMI of 310 people (62%), normal glucose levels of 490 (98%), and normal tension of 450 people (90%). The results showed that patients were satisfied with pharmaceutical services related to handling the side effects of fever, muscle pain and fatigue. The results showed a significant relationship between pharmaceutical services and the incidence of side effects with a value of <0.05.

Suggestion

Pharmaceutical Officers of Udayana Level II Hospital are expected to maintain optimal pharmaceutical services to minimize the incidence of side effects of phase III COVID-19 vaccination.

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