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Relationship between Knowledge, Attitude, and Student Organization toward COVID-19 Vaccination Coverage among Pre-Clinical Medical Students

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Abstract

Background: Refusal to vaccinate is an obstacle to the success of the COVID-19 vaccination program. The community wants health workers to provide insight into the importance of vaccination. Medical students who are often actively involved in community activities directly have a role in the success of the COVID-19 vaccination. This paper examines the relationship between pre-clinical medical student's knowledge, attitudes, and organization's history related to COVID-19 vaccination to provide recommendations for behavioral interventions and policies.

Objective: To determine the relationship between knowledge, attitude, and organizational history with the coverage of COVID-19 vaccination among respondents.

Methods: A cross-sectional online survey of 77 pre-clinical medical students at UM Surabaya using a simple random sampling technique. The questionnaire used belongs to researcher Chyntia Caroline (2021). The research was conducted from August to October 2022. Statistical analysis used SPSSv.26, $p<0.05$. The Spearman test was performed to determine whether or not there was any relationship between knowledge, attitudes, organization's history, and COVID-19 vaccination coverage.

Results: The level of student knowledge is categorized as "Sufficient", and student attitude is classified as "Good". The results of the Spearman test found that knowledge and an organization's history did not affect vaccination coverage ($p=0.6$ and 0.68). Attitudes affect vaccination coverage ($p=0.000$).

Conclusion: There is no relationship between knowledge and an organization's history. Meanwhile, good attitudes influence COVID-19 vaccination coverage. An awareness campaign should be focused on promoting positive attitudes toward vaccination.

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INTRODUCTION

A face-to-face survey in December 2021 conducted by the Indonesian Political Indicator released in January 2022 found that 54.8% of respondents did not agree with booster vaccination or dose 3[1]. Health workers and medical staff are considered the most trusted in guiding society, but they are still unsure whether to accept or refuse vaccines[2]. Medical students with a medical knowledge background are expected to be able to educate family, friends, and the community about the importance of COVID-19 vaccination[3].

Knowledge level and attitude influence acceptance of COVID-19 vaccination. Health workers and students are aware of the importance of the COVID-19 vaccination, and it can affect the acceptance of COVID-19 vaccination in the broader community, which is still hesitant to reject the COVID-19 vaccination program[4]. A study on the level of doubt in accepting the COVID-19 vaccination among health students at a university in America said that as many as 45% of dentistry faculty students and 23% of general medical faculty students were still unsure about receiving the COVID-19 vaccine[5]. This is different from a study conducted on students in China, who found that they had a high acceptance rate of the COVID-19 vaccine[6].

The amount of fake news spreading on the internet about the COVID-19 vaccine has influenced the public to accept the COVID-19 vaccination program. With a campaign to spread knowledge about the importance of COVID-19 vaccination, especially among those with a medical background, such as medical students, it is hoped that it will be able to increase broad public acceptance of the COVID-19 vaccination program.

Therefore, medical students were selected as respondents in this study. The students included in this study were pre-clinical medical students because they tended to be active in organizations that interact directly with the community. An organization is a consciously coordinated social unit consisting of two or more individuals with continuous actions to achieve a common goal[7]. Student organizations are a place to train their soft skills and potential[8].

A good level of knowledge can influence COVID-19 vaccination practices[9]. A positive attitude also correlates with vaccination in general[10]. Therefore, the author wants to examine whether there is a relationship between knowledge, attitudes, and organizational history toward vaccination coverage.

METHODS

This study uses observational analytic research using A cross-sectional online survey. The questionnaire instrument used belongs to researcher Chyntia Caroline[11]. The questionnaires were divided into two sections. The knowledge questionnaire consists of 10 questions using a multiple-question model. The attitude questionnaire consists of 11 questions with answers using a Likert scale (1=strongly agree, 5=strongly disagree)[11]. Organizational history was asked with the answer "ever" or "never". The Lemeshow formula determines the total of samples. Seventy-seven samples of pre-clinical medical students at Universitas Muhammadiyah Surabaya were obtained and passed the inclusion and exclusion criteria. The inclusion cri-

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teria are all pre-clinical students who are active at the Faculty of Medicine and willing to participate in the study. Exclusion criteria are respondents who are unwilling to complete the questionnaire and have contraindications to the COVID-19 vaccination. The knowledge category is considered ''good'' if it can answer the questionnaire correctly at a rate of 76-100%. The knowledge category is considered ''sufficient'' if it can answer 56-75% of the questions correctly. Knowledge is categorized as ''Lack'' if the respondents correctly answer 0-55% of the questions. Attitude is categorized as ''good'' if it scores 76-100% in answering the questions. Attitude is classified as ''sufficient'' if it scores 56-75%in answering the questions. Attitude is categorized as ''lack'' if it scores <56% in answering the questions. All respondents are guaranteed confidentially. The data was tested using the Spearman test with the SPSSv application. 26 with a *p-value* <0.05. A statement of ethical eligibility from the faculty with number 024/KET/II./AU/F/2022 has been obtained.

RESULTS

Table 1 shows most respondents had a ''sufficient'' level of knowledge, while Table 2 shows that most respondents had a ''Good'' attitude. The number of active respondents in the organization was higher (75%) than respondents who never joined the organization (25%). According to Table 4, 13% of respondents have taken ''Dose 2''. Meanwhile, 87% of respondents have taken ''Dose 3''. A bivariate analysis using Spearman test results (Table 5) obtained *a p-value* of 0.6, which means there is no significant correlation between knowledge and COVID-19 vaccination coverage. Table 6 shows a Spearman test result obtained p-values of 0.001 (>0.05), indicating a correlation between attitude and COVID-19 vaccination coverage. Spearman test was used to test the correlation between the organization's history and COVID-19 vaccination coverage, and a p-value of 0.68 was obtained, which means there is no correlation between the organization's history and COVID-19 vaccination coverage among respondents.

Table 1. Frequency of respondents' knowledge level

Knowledge's level	Frequency (n)	Percentage(%)
Lack	15	20
Sufficient	38	49
Good	24	31
Total	77	100

Table 2. Distribution of respondents' attitude level

Attitude's level	Frequency (n)	Percentage (%)
Lack	0	0
Sufficient	5	6
Good	72	94
Total	77	100,0

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Table 3. Distribution of respondents' organizational history

Organizational history	Frequency (n)	Percentage (%)
Never	19	25
Active	58	75
Total	77	100

Table 4. Distribution of respondents' COVID-19 vaccination coverage

Vaccination coverage	Frequency (n)	Percentage (%)
Never	0	0
Dose 1	0	0
Dose 2	10	13
Dose 3	67	87
Total	77	100

Table 5. The correlation between knowledge level and vaccination coverage

Knowledge's level	Vaccination coverage						p-value
	Dose 2		Dose 3		Total		
	(n)	(%)	(n)	(%)	(n)	(%)	
Lack	2	3	5	6	7	9	0.6
Sufficient	3	4	26	34	29	38	
Good	5	6	36	47	41	53	
Total	10	13	67	88	77	100	

Table 6. The correlation between attitude level and vaccination coverage

Attitude's level	Vaccination coverage						p-value
	Dose 2		Dose 3		Total		
	(n)	(%)	(n)	(%)	(n)	(%)	
Lack	0	0	0	0	0	0	0.001
Sufficient	3	4	2	3	5	7	
Good	7	9	65	84	72	93	
Total	10	13	67	87	77	100	

Table 7. The correlation between organizational history and vaccination coverage

Organizational history	Vaccination coverage						p-value
	Dose 2		Dose 3		Total		
	(n)	(%)	(n)	(%)	(n)	(%)	
Never	3	4	16	21	19	25	0.68
Active	7	9	51	66	58	75	
Total	10	13	67	87	77	100	

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DISCUSSION

Using the SPSS Spearman test (Table 5), a *p-value* of 0.6 (> 0.05) was found, which indicated that there was no relationship between knowledge and vaccination coverage. The above results are in line with research entitled The Relationship of Knowledge, perceptions, and Beliefs, with acceptance of the COVID-19 vaccine in the community in the working area of the Dana Health Center in 2022 that found no relationship between knowledge and acceptance of the COVID-19 vaccine in the community in the working area of the Dana health center[12]. Other research with the same results found no relationship between knowledge and behavior toward COVID-19 vaccination in people aged 18-59 years in the Lompio Village[13]. The research yielded the same results, indicating that knowledge did not affect post-vaccination COVID-19 prevention behavior among the people of Siak Hulu District[14].

However, the above research is inversely proportional to research conducted in the Babura sub-district, which shows that the level of knowledge is related to compliance with COVID-19 vaccination in older people [15]. This result contradicts the theory that knowledge plays a vital role in influencing behavior. Good knowledge will underlie behavior that is by the knowledge possessed. Knowledge forms individual beliefs that will later perceive reality and provide a basis for making decisions and determining behavior toward particular objects[16]. No significant relationship was found between knowledge and behavior toward the COVID-19 vaccination, indicating that other factors may influence a person's behavior. Three factors affect human behavior, namely genetic/ endogenous factors (race, gender, nature, intelligence), exogenous factors (environmental, religious, social, economic), and other factors[17]. Bloom's cognitive domain taxonomy divides knowledge into six levels: remember, understand, apply, analyze, evaluate, and create[18]. According to the researchers, the respondents' knowledge level in this study had just entered the stage of understanding information but had not yet been able to apply it.

A study conducted in India and China concerning the relationship between the influence of knowledge and attitudes towards COVID-19 vaccination found that knowledge about vaccination and COVID-19 infection influences individual intentions to make vaccination decisions through attitude factors, so knowledge does not directly affect individual decisions to vaccinate. So, knowledge is not central to influencing practice and does not directly influence personal decisions to vaccinate[19,20].

Based on statistical calculations using the SPSS calculation (Table 6), a *p-value* of 0.001 (<0.05) was found, which indicated that there was a relationship between attitude and COVID-19 vaccination coverage in pre-clinical medical students at Universitas Muhammadiyah Surabaya. Other research also yielded that a person's attitude correlates with preventative behavior (Using a mask, keeping a distance, and washing hands[21]. Research conducted in India involving 400 respondents concluded that attitude is a factor that is quite large in influencing an individual's intention to vaccinate against COVID-19[22]. This is to the theory that attitude is a personal factor that impacts behavior [16]. The behavior of a person or society regard-

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ing health is influenced by attitudes that will perceive reality and make the basis for making a decision that will determine behavior towards an object[23].

In the Theory of Planned Behavior, behavioral intention and perceived behavioral control influence a person's behavior. Intentions can be influenced by several factors, including attitude [24]. In the context of COVID-19 vaccination, attitude towards behavior is a person's positive attitude regarding COVID-19 vaccination, including behavioral beliefs and assessment/evaluation of the results of the action (behavioral outcomes). This theory concludes that a positive attitude is the most influential factor in taking action[20]. An individual's belief regarding the consequences of a particular behavior can shape their motivation to engage in that behavior and influence their choice to follow through. It is undeniable that beliefs are strongly linked to attitudes and behavior. Our beliefs significantly affect our attitudes, guiding our decisions and actions [25].

Based on the results of statistical calculations with the SPSS application using the Spearman test, it was found that the *p-value* was 0.469 (>0.05) (Table 7), which indicated that there was no relationship between organizational history and vaccination coverage.

The reason for choosing research subjects using a population of pre-clinical medical students is that they are considered health students who are more active in the community directly through the organizational field so that they feel closer to the community and have more significant influence so researchers want to know whether students with organizational history influence vaccination coverage practices. However, if seen from Table 7, it is found that students who are active/have been in an organization are more likely to have better practices (vaccination history) compared to students who are not active in organizations (51: 16). According to the researcher's direct observations, this can be caused by the fact that in several organizations that the students participate in, they have several activities that are actively involved in the direct community where they have to implement strict health protocols including a complete vaccination history as recommended by the government and also contained in several regulations the organization itself. This also represents a positive attitude and behavior towards COVID-19 vaccination.

Several student organization activities that have been held include health education for the community, telemedicine activities, and volunteer vaccinator assistance. During the COVID-19 pandemic, the university tried to limit activities that involved large crowds. Thus, several student organizations require their members first to be vaccinated as a condition for participating in several student-organization work programs directly involved in the community. This established protocol aims to protect student organization members from COVID-19 transmission. Thus, participating in student organizations is a form of positive behavior that supports vaccination activities.

In several activities carried out in the organizational realm, there are still few educational activities that emphasize COVID-19 vaccination for pre-clinical medical students, so this can be a factor in the lack of student literacy regarding COVID-19 vaccination and also influences the decision to vaccinate due to the lack of socialization regarding COVID-19 vaccination for students. The im- importance of literacy re-

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garding COVID-19 vaccination is helpful as a provision for students to later work in the community to educate and invite people to vaccinate. This study concluded that students' organizational history (active involvement) in an organization does not affect practice (vaccination coverage).

In this study, researchers experienced limitations where the number of samples was not significant and broad, and vaccination coverage was used up to dose 4 (booster 1).

CONCLUSION

Research results found a correlation between attitude and COVID-19 vaccination coverage and no correlation between knowledge and an organization's history with COVID-19 vaccination coverage among pre-clinical medical students in Universitas Muhammadiyah Surabaya.

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