

RESEARCH ARTICLES

Comparison of Knowledge and Information-Seeking Behaviour Between Medical and Non-Medical Students at Universitas Muhammadiyah Sumatera Utara Regarding COVID-19 Vaccination

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Abstract: Coronavirus is part of a family of viruses that cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and severe acute respiratory syndrome (SARS-CoV). Since then, various countermeasures have been carried out, one of which is the COVID-19 vaccination program aimed at accelerating the formation of herd immunity. This study was conducted using a cross-sectional approach with a non-probability consecutive sampling method. Data collection was carried out using primary data obtained directly from respondents through questionnaires. The sample in this study consisted of 100 respondents, divided into 50 medical students and 50 non-medical students. The results showed that among medical students, 42% had good knowledge and 12% had poor knowledge, while among non-medical students, only 6% had good knowledge and 42% had poor knowledge. These results may be influenced by factors such as educational background, access to information sources, and learning environment.

Keywords: COVID-19, medical students, knowledge

INTRODUCTION

The COVID-19 virus was first identified in a seafood and animal market in Wuhan, China. Coronavirus belongs to a family of viruses that cause illnesses ranging from the common cold to more severe diseases such as Middle East Respiratory

Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV).¹ Students of the Faculty of Health Sciences play an important role in future healthcare services and act as the front line; therefore, they are also expected to participate in addressing current health issues in

Indonesia, such as preventing the spread of misinformation related to COVID-19. For this reason, students need to develop the ability to search for valid information (information literacy) regarding vaccination implementation. Many government officials, healthcare workers, and community members have voiced the importance of maintaining health and have shared various information about COVID-19 through social media. However, the pandemic has also been exploited by irresponsible parties to spread misinformation or hoaxes about COVID-19.² As an educated group in society, students have an important role in correcting misinformation about vaccination circulating among the public. They serve as informants within the community, providing accurate education about the vaccination program. As role models in society, students are expected to demonstrate good knowledge, attitudes, and behaviour in preventing COVID-19. Therefore, this study was conducted with the aim of assessing students' knowledge and abilities in seeking information about COVID-19 vaccination.³

LITERATURE REVIEW

COVID-19 Vaccine

Vaccination is the process of introducing a vaccine into the body by administering it to induce and enhance the body's active immunity against a disease, so that vaccinated individuals will not become ill or will only experience mild illness and will not serve as a source of transmission.⁴ Every immune reaction to a pathogen or virus begins with the activation of the innate

immune system. Although this system does not lead to immunological memory, it plays a crucial role in activating and instructing the adaptive immune system. B cells function to produce antibodies that fight against antigens, while T cells function to attack body cells that have already been exposed to the virus or pathogen.⁵

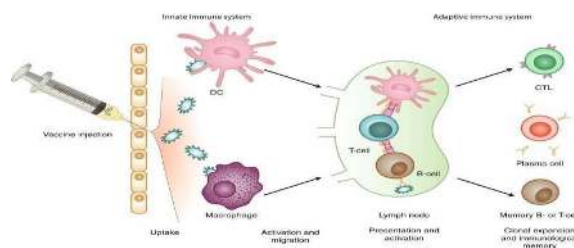


Figure 1. Mechanism of Vaccines in Triggering Immune Response⁵

Vaccines consist of microorganisms that cause disease, or certain components of microorganisms such as DNA or RNA. In Indonesia, the types of COVID-19 vaccines are regulated under the Decree of the Minister of Health No. HK.01.07/Menkes/12758/2020 concerning the determination of vaccine types for the implementation of the COVID-19 vaccination program, namely.⁶

Table 1. Types of Vaccinations⁶

Name	Origin	Platform	Efectivity
Moderna	US	mRNA vaccine	94,5%
Pfizer	US	Nucleoside-modified mRNA	94%
Sinopharm	China	Inactivated virus	79%
Sinovac	China	Inactivated plus adjuvant	63,5%

Astrazeneca	UK	Recombinant adenovirus	63,1%
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In the administration of the COVID-19 vaccine, several aspects must be considered, such as efforts to achieve herd immunity as well as the safety and benefits of the vaccine. The following are the criteria for individuals who cannot receive the vaccine: ⁷

1. Allergic reactions in the form of anaphylaxis and severe allergic reactions due to components contained in the COVID-19 vaccine.
2. Individuals are currently experiencing acute infections.

Individuals with primary immunodeficiency diseases.

Knowledge

Knowledge, or cognition, is a very important domain in shaping a person's actions (overt behaviour). Knowledge of an object varies in intensity or level, namely knowing (knowledge), understanding (comprehension), application (application), analysis (analysis), synthesis (synthesis), and evaluation (evaluation). Factors influencing knowledge include internal factors such as education and occupation, and external factors such as environment and culture, since educational background serves as the foundation of one's knowledge in a particular field. This is consistent with research conducted by several universities in Jordan, which stated that medical students had good and positive knowledge and attitudes toward COVID-19. Knowledge

measurement can be conducted through interviews or questionnaires, which can be adjusted to the respondent's level of knowledge, including knowing, understanding, application, analysis, synthesis, and evaluation. In general, questions used to measure knowledge can be grouped into two types: subjective questions, such as essay-type questions, and objective questions ⁸

Information

Information is the result of processing data into a more useful form for its recipients and can be used as a tool for decision-making. In the context of information systems, information becomes more valuable, formal, and ideal if it is based on ten characteristics: accessibility, comprehensiveness, accuracy, appropriateness, timeliness, clarity, flexibility, verifiability, freedom from bias, and certainty. Technological advancement indeed facilitates human learning, but such sophistication can also lead to laziness in reading, since materials can be accessed through the internet without the need to memorise, write, or purchase books.⁹ Social media platforms already have 90 million users, of which 80% are young people. Therefore, the researcher chose university students, as the millennial generation is dominated by youth, particularly students who have started to become aware of new information, including information about the COVID-19 vaccine. They continuously follow the development of COVID-19 and

the vaccines that have been distributed to society.

METHOD

The method used in this study was a descriptive-analytic method with a cross-sectional design. A cross-sectional study is defined as a type of observational research that analyses data from variables collected at a specific point in time across a predetermined sample population or subjects. This research was conducted at Universitas Muhammadiyah Sumatera Utara. The population of this study consisted of active students of Universitas Muhammadiyah Sumatera Utara. Sampling in this study used the Lemeshow formula since the total population was unknown. The sample size in this research was 100 respondents. Data collection was carried out using primary data obtained directly from respondents through questionnaires.

The questionnaire contained questions about knowledge of COVID-19 and information-seeking behaviour related to COVID-19, distributed via Google Forms. The instruments used in this study were questionnaires on knowledge of COVID-19 vaccination and sources of information. Data analysis in this study included descriptive statistics to present respondents' characteristics in frequency tables. In addition, bivariate analysis was conducted to examine differences in knowledge and methods of information-seeking about the COVID-19 vaccine between medical and non-medical students. Non-parametric statistical analysis, such as the Mann-

Whitney test, was applied using unpaired data.

RESULT

Level of Knowledge about COVID-19 Vaccination. The following are the results of a cross-tabulation showing the level of knowledge of medical students and non-medical students at the University of Muhammadiyah North Sumatra regarding COVID-19 vaccination.

Table 2. Cross-Tabulation of Knowledge Levels

Faculty	Knowledge							
	Not enough		Enough		Good		Total	
	N	%	N	%	N	%	N	%
Medical	6	12	23	46	21	42	50	100
Non-Medical	26	52	21	42	3	6	50	100
Total	32	32	44	44	24	24	100	100

Based on Table 2, it can be seen that medical students searched for information about COVID-19 vaccination through medical journals as much as 52%, while non-medical students searched for information about COVID-19 vaccination through social media, accounting for 46% of respondents.

Search for information about the COVID-19 vaccine. The following is a cross-tabulation showing the information search methods of medical and non-medical students at the University of Muhammadiyah North Sumatra regarding COVID-19 vaccination.

Table 3. Cross-tabulation of COVID-19 vaccination information search

Faculty	Information Search													
	Social Media		Friend		WHO		Television		Radio		Medical Journal		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Medical	14	28	0	0	10	20	0	0	0	0	26	52	50	100
Non-Medical	23	46	10	20	4	8	12	24	0	0	1	2	50	100

This illustrates that 52% of medical students sought information about COVID-19 vaccination through medical journals, while 46% of non-medical students sought information about COVID-19 vaccination through social media.

Comparison of knowledge about COVID-19 between medical and non-medical students. The results of the Mann-Whitney Test hypothesis testing are as follows:

Table 4. Hypothesis testing results

Variable	Faculty	Mean Rank	P-value	Information
Knowledge	Medical	64.22	0.000	There is a Difference
	Non-Medical	36.78		
	Non-Medical	39.54		
	Medical			

In this study, an intuitive test was conducted to compare the level of knowledge of medical and non-medical students regarding COVID-19 vaccination.

Based on the results of the hypothesis test using the Mann-Whitney Test, the average intuitive knowledge of medical students was 64.22, while the average

intuitive knowledge of non-medical students was 36.78. The resulting p-value, or probability value, was 0.000. By comparing the p-value with a significance level of α (0.05), because the p-value $\leq \alpha$, the null hypothesis (H_0) is rejected, meaning that there is a significant difference between the level of knowledge of medical and non-medical students regarding COVID-19 vaccination.

DISCUSSION

A person's knowledge is influenced by factors such as education, occupation, age, interest, and experience. Education is very important as a means of obtaining information, for example, in the health sector, thereby having a positive impact on the quality of life. When someone is informed about a certain matter, they are able to make decisions and determine how to respond to it. In other words, when a person has information about COVID-19, they can determine how to behave toward the disease. The COVID-19 vaccine is an effective intervention that can reduce transmission of the virus and increase herd immunity. Therefore, students are required to know

about COVID-19 vaccination in order to seek valid information.

In terms of information-seeking behaviour, among medical students, 28% used social media as their source of information, 20% obtained information from the WHO (World Health Organisation), and 52% relied on medical journals. Meanwhile, among non-medical students, 46% sought information through social media, 20% from friends, and 24% from television. Surveys showed that medical and non-medical students accessed knowledge about the COVID-19 vaccine through online media such as Weibo, WeChat, and Douyin (72%), through scientific articles (33.7%), and through television (28.2%).¹⁰ In this study, 12% of medical students had poor knowledge, 46% had moderate knowledge, and 42% had good knowledge. In contrast, among non-medical students, 52% had poor knowledge, 42% had moderate knowledge, and only 6% had good knowledge. Research conducted in China also showed that the level of vaccine knowledge among medical students (65.3%) was higher compared to non-medical students (53.6%).¹¹

Based on the data obtained from the hypothesis testing table, there is a significant difference in the level of knowledge and information-seeking behaviour between medical and non-medical students at Universitas Muhammadiyah Sumatera Utara regarding COVID-19 vaccination. The mean rank for knowledge and information-seeking among medical students was 64.22 and 61.46, respectively, while among non-

medical students it was 36.78 and 39.54, respectively. This indicates that medical students have higher levels of knowledge and better ways of seeking information about COVID-19 vaccination compared to non-medical students.

Furthermore, the higher level of knowledge among medical students regarding COVID-19 vaccination can be linked to an educational curriculum that is more focused on health and medical sciences. In medical programs, students receive more comprehensive training on viruses, infectious diseases, and vaccination. This provides them with a stronger foundation of knowledge and enables them to better understand the latest information on COVID-19 vaccination.¹² In addition, easier access to medical journals and resources also helps medical students enhance their knowledge.

In this research context, the difference in knowledge levels between medical and non-medical students regarding COVID-19 vaccination may also be influenced by varying exposure to health information. Medical students tend to be engaged in environments more focused on health sciences, whether through lectures, clinical practice, or research activities. They may have easier access to scientific literature and updated medical information, which helps them stay informed about COVID-19 vaccination. Conversely, non-medical students may not have the same access to specialised medical resources and may rely more on general sources of information,

such as social media or television. This can result in differences in understanding and knowledge about COVID-19 vaccination between the two groups.¹³

To improve knowledge about COVID-19 vaccination among non-medical students, it is important to develop effective educational approaches and information campaigns. Efforts should be made to provide accurate, accessible, and easy-to-understand information through various channels, including social media, brochures, seminars, or group discussions. Additionally, collaboration between medical and non-medical faculties could also help transfer knowledge and experiences through interdisciplinary programs or joint activities. By strengthening the knowledge of non-medical students about COVID-19 vaccination, they are expected to become strong advocates for vaccination and play an active role in combating the virus.¹⁴

CONCLUSION

Based on the results of the research conducted, several conclusions can be drawn, namely:

1. Medical students with low knowledge accounted for 12%, while 46% had moderate knowledge, and 42% had good knowledge.
2. Non-medical students with low knowledge accounted for 52%, while 42% had moderate knowledge, and only 6% had good knowledge.
3. Medical students who used social media as their source of information accounted for 28%, while 20% sought information from the WHO

(World Health Organisation), and 52% used medical journals.

4. Non-medical students who sought information through social media accounted for 46%, while 20% obtained information from friends, and 24% through television.
5. There is a significant difference between the level of knowledge of medical and non-medical students about COVID-19 vaccination. This was proven by testing using the Mann-Whitney Test, which obtained a significance value (p-value) of 0.000 ($p < 0.05$).
6. There is a significant difference between the information-seeking behaviour of medical and non-medical students regarding COVID-19 vaccination. This was proven by testing using the Mann-Whitney Test, which obtained a significance value (p-value) of 0.000 ($p < 0.05$).

The suggestions of this study are as follows:

1. Further research should be conducted to identify the factors influencing the level of knowledge and information-seeking behaviour of medical and non-medical students about COVID-19 vaccination. This may involve factors such as educational background, access to information sources, and learning environment.

2. Students, especially those not from the medical faculty, need to improve their understanding and knowledge of COVID-19 vaccination. It is recommended that students rely on trustworthy sources of information, such as medical journals and relevant health organisations, to obtain accurate and up-to-date information.
3. Faculties can enhance the education curriculum related to COVID-19 vaccination for all students, not only for medical students. This may include special courses, seminars, or activities focusing on understanding vaccination and the importance of adherence to immunisation.

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