

The Effectiveness of Online Counseling Methods to Improve the Knowledge of Covid 19 Vaccination in High School Students 276

Maher Syahbani Putra Perwira^a, Fatih Nugraha Abdillah^a, Nabil Fauzi Barmen^a,
Maftuchah Rochmanti^{b*}

^aMedical Study Program, Faculty of Medicine, University of Airlangga 60132, Surabaya, Indonesia

^bDepartment of Anatomy, Histology, and Pharmacology, Faculty of Medicine, University of Airlangga 60132, Surabaya, Indonesia

*Corresponding Author: maftuchah-r@fk.unair.ac.id

Abstract

The COVID-19 pandemic, which started in Wuhan, China, has been moving around the world since late 2019. In Indonesia, the first case of a Covid-19 patient was identified on 2 March, 2020, in Depok. For now (30 July, 2021), confirmed cases in Indonesia had reached 3,372,374 cases, and 92,311 of them died. Therefore, preventive measures are needed so that the chain of Covid-19 spread in Indonesia is broken, one of which is vaccination. For now, Indonesia is in the process of accelerating vaccination coverage. It has been given to people in the 12-17 year age group, the majority of which are in high school (SMA). Based on SDGs point 4, namely quality education, especially in the field of basic education. Educational steps were taken for the community, especially high school students in several schools in Indonesia, by making online counseling activities and seeing an increase in students' understanding of knowledge related to Covid-19 vaccination. Before the counseling begins, participants will be given a questionnaire in the form of a pre-test to determine the knowledge of high school students before the counseling. After the counseling is carried out, the counseling participants will also be given a post-test to see if there is an increase in the knowledge of high school students regarding the Covid-19 vaccination. In this study, there were 157 respondents who filled out the pre-test and post-test. The results of this study showed that there was an increase in students understanding of Covid-19 vaccination after online counselling.

Keywords: Basic education, Counseling, High school student, Vaccination, COVID-19 Pandemic, SDGs

1. Introduction

The COVID-19 pandemic that started in Wuhan, China, has spread around the world since late 2019. COVID-19 has infected individuals of all ages and people of all economic strata. However, people who have a high risk of severe or fatal disease are older people and people with co-morbidities, such as diabetes, cancer, and other chronic diseases. In Indonesia, the first case of a COVID-19 patient was identified on 2 March 2020 in Depok (Nugraha et al., 2020). For now (30 July 2021), confirmed cases in Indonesia had reached 3,372,374 cases, and 92,311 of them have died (Kementrian Komunikasi dan Informatika, 2021) Although the number of recovered cases in Indonesia is not small, reaching 2,730,720 cases. It does not mean that all recovered patients do not have side effects such as fatigue, shortness of breath, joint pain, chest pain, headache, muscle weakness, neurological symptoms, and mental health disorders. Therefore, recovered patients still need treatment, mostly related to rehabilitation (Nugraha et al., 2020). Therefore, preventive measures are needed so that the spread of COVID-19 in Indonesia is broken, one of which is vaccination.

Vaccination is the administration of vaccines (antigens) that can stimulate the formation of immunity (antibodies) of the immune system (immune) in the human body (Angel A. Justiz Vaillant; Marc J. Grella., 2021). Vaccination as a primary prevention effort is very good in preventing diseases that can be prevented by vaccination. Vaccination with the correct procedure is expected to provide optimal immunity, safe injection, and minimal Adverse Event Following Immunization (AEFI). The immune system against a disease can form naturally when a person is infected with a virus or germ that causes it (Janeway CA Jr, Travers P, Walport M,

2001). However, Coronavirus infection has a very high risk of death and infectious ability. Therefore, another way is needed to form the immune system, namely vaccination. The COVID-19 vaccination is carried out after the certainty of its safety and efficacy has been tested. Vaccination is an effort to reduce morbidity and mortality and encourage the formation of herd immunity. In addition, the COVID-19 vaccination aims to protect and strengthen the health system as a whole, as well as maintain productivity and reduce the social and economic impact of the community (Widiastuti, 2020).

The provision of COVID-19 vaccination for the people of Indonesia is carried out in stages. The first stage starts with health workers. Then the next stage is given to public service officers. Then the next step is given to vulnerable communities. The last stage is the general public and other economic actors. As of July 30, 2021, 46,805,993 1st vaccine doses have been given to the Indonesian people, and 20,146,421 2nd vaccine doses have been given. This figure is still tiny compared to the target of 208,265,720, which in percentage terms has only touched 9.6% (Kementrian Komunikasi dan Informatika, 2021a) Therefore, the Government continues to encourage the provision of vaccinations for the people of Indonesia by implementing vaccination programs at various points in every city/district in Indonesia. For now, Indonesia is in the process of accelerating vaccination coverage. Currently, the vaccine has been given to people in the 12-17 year age group, most of whom are in high school (SMA).

Recommendations for giving COVID-19 vaccines to children have been recommended internationally and nationally. The CDC recommends administering the Pfizer-BioNtech vaccine to the pediatric population. Indonesia (BPOM and IDAI) has also issued a recommendation for the Sinovac vaccine for children aged 12-17 years. Therefore, to assist the government in accelerating the provision of vaccination to the community, an effort is needed to provide education to the 12-17 year age group to understand the importance of vaccination. Based on SDGs point 4, namely quality education, especially in the field of basic education. Due to the importance of understanding vaccination as a basic need of every society, especially in the health sector. Intervention steps were carried out, namely education for the community, especially high school students in several schools in Indonesia, by making online counseling activities. *Health counseling* is a health education activity, which is carried out by spreading messages, instilling confidence, so that people are not only aware, know and understand, but are also willing and able to make recommendations related to health (Machfoedz, I., Suryani, 2007) With this, it is hoped that there will be an increase in the understanding of high school students' knowledge regarding Covid-19 vaccination in order to assist the government in accelerating vaccination coverage.

2. Method

This community service is part of the Community Service Program (Kuliah Kerja Nyata) that focusing on the Covid-19 Module from the Faculty of Medicine, Universitas Airlangga, were carried out in the form of online counseling education about Covid-19 vaccination to the public. Especially students in Secondary Education (High School) in Indonesia such as SMA Negeri 3 Bandung, SMA Negeri 1 Rembang, SMA Negeri 6 Surabaya.

This online counseling activity is aimed to improve the knowledge and understanding of Covid-19 vaccination lasted for one hour. Before the counseling begins, participants will be given a questionnaire in the form of a pre-test to determine high school students' knowledge before the counseling. After the counseling is carried out, the counseling participants will also be given a post-test to see if there is an improvement in high school students' knowledge regarding the Covid-19 vaccination. Criteria for inclusion were analyzed data,

including the high school students who full fill the pre-test and post-test and follow the whole online counseling activities. Response to the questionnaire has not filled the pre-test and post-test are not included in the test study.

Instruments used in the form of a questionnaire pre-test and post-test consisted of 10 grains of the question in the form of a multiple-choice question. Data were obtained and then statistically analyzed using the Statistical Package for the Social Science (SPSS) version 26, then performed a paired non-parametric comparison test using the Wilcoxon Signed Rank Test. The statistical analysis result of questionnaire data is used to determine an overview understanding of the students high school about Covid-19 vaccination.

3. Result and Discussion

3.1 The Knowledge improvement of Covid 19 vaccination in high school students

The results showed a significant difference in scores from the results of the pre-test and post-test. There were 121 students who experienced an increase in their score, 15 students' scores decreased, and 21 students with a fixed score. When the results of Asymp. Sig. (2-tailed) < 0.05 , then the hypothesis can be accepted. Based on the results of the Wilcoxon Signed Rank Test, it was obtained Asymp. Sig. (2-tailed) is 0.000 which means that it can be confirmed that there is a significant difference in the results of the pre-test and post-test scores.

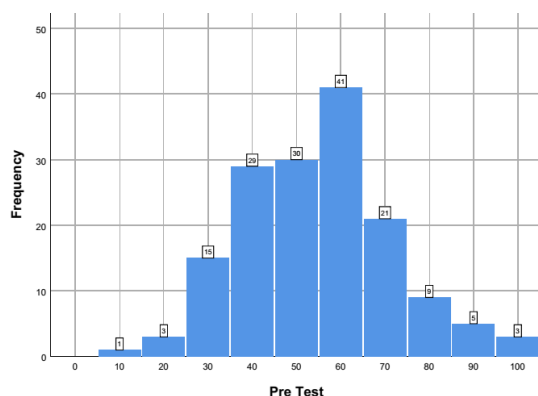


Figure 1. Frequency distribution diagram of Pre-Test scores

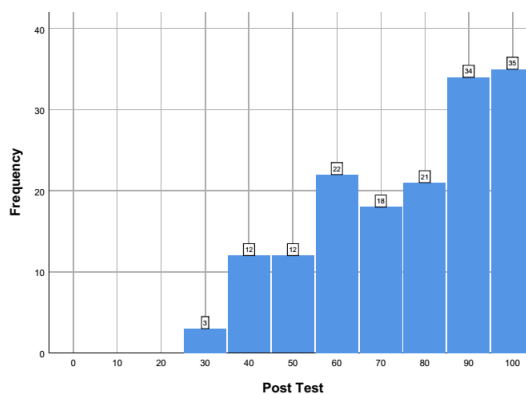


Figure 2. Frequency distribution diagram of Post-Test scores

Table 1. Mean Scores in Pre-Test and Post-Test

	Mean	Std. Deviation
Pre-test	54.65	17.154
Post-test	76.37	20.164

Table 2. Asymp. Sig. (2-tailed) Test

	Asymp. Sig. (2-tailed)
Post-Test – Pre-Test	0.000

Table 3. Changes in Pre-Test and Post-Test Scores

		Frequency	Mean	Sum
Changes in pre-test and post-test scores	Decrease	15	31.83	477.50
	Increase	121	73.05	8838.50
	Ties	21		
	Total	157		

3.2. The Content of each pre-test and post-test question in the online counseling program.

After students do the pre-test, students are given counseling about Covid-19 vaccination, including coronavirus, vaccination, immunization, and herd immunity. The counseling material provided is the basis for making pre-test and post-test questions. The following are pre-test and post-test questions that students worked on and discussed;

Table 4. Pre-Test and Post-Test Questions

Question Number	Question	Answers
1	The following are symptoms that rarely occur in patients with COVID-19, except:	A. Headache B. Conjunctivitis C. Sore throat D. Dry cough E. Diarrhea
2	Biological products are containing antigens in the form of dead or alive microorganisms that are attenuated, still intact or parts thereof, or in the form of microorganism toxins that have been processed into toxoids or recombinant proteins, which are added with other substances, which when given to a person will cause specific immunity automatically. active against certain diseases is the meaning of...	A. Vaccination B. Immunization C. Vaccine D. BCG E. DPT Immunization
3	The minimum distance that needs to be applied so that people are not easily infected with COVID 19 is...	A. 0,5 meter B. 1 meter C. 2 meter D. 4 meter E. 5 meter
4	An effort to form a person's immune system against a disease so that if one day he is exposed to the same disease, he will not get sick or only experience mild illness is called...	A. Immunization B. Vaccines C. Vaccination D. BCG E. DPT Vaccination
5	Immunization was carried out for the first time in Indonesia in	A. 1945 B. 1913 C. 1956 D. 1962 E. 1965
6	A condition where most of the community has been protected from a disease that forms immunity in some of the community to prevent transmission and severity is called...	A. Immunization B. Vaccination C. Immune D. Vaccines E. Herd Immunity
7	How do vaccines work?	A. Vaccines will increase hormone levels in the body

		B. Vaccines will decrease blood flow rate C. Vaccines keep skin healthy D. Vaccines will stimulate the formation of immunity against certain diseases in a person's body E. Vaccines reduce the risk of acute renal failure
8	A person can be vaccinated if they meet the following conditions:	A. If you have been exposed to COVID-19 and have recovered for more than a month, you can be vaccinated B. Under the age of 18, you can get approval to be given the COVID-19 vaccine C. Blood pressure can be above 180/110 mmHg D. Breastfeeding mothers have not been vaccinated E. For people with systemic autoimmune diseases, vaccination should be postponed and should be consulted with the treating doctor
9	AEFI Vaccine COVID-19 cannot be caused by	A. Antigen B. Preservatives C. Antibodies D. Auxiliary materials E. Stabilizer
10	Types of AEFI Vaccine COVID-19 that can occur, EXCEPT	A. Anaphylactic reaction B. Cellulitis C. Fever D. Blurred vision E. Fainted

The online counseling program contains materials that can help students understand the Covid-19 vaccination. The increase in pre-test - post-test scores and an increase in correct answers to each question are evidence of the effectiveness of the online counseling program in increasing the understanding of high school students regarding the covid-19 vaccination.

- Question number 1

Dry cough is a common symptom that often occurs in Covid-19 patients (Azwar et al., 2020)

- Question number 2

Vaccines are biological products containing antigens in the form of dead or alive microorganisms that are attenuated. Still intact or parts thereof, or in the form of microorganism toxins that have been processed into toxoids or recombinant proteins. Which are added with other substances, which, when given to a person, will cause immunity. Specifically active against certain diseases. (Komite Penanganan COVID-19 & Kementerian Kesehatan RI, 2021)

- Question number 3

We keep a distance of at least 1m from each other and avoid spending time in crowded places or in groups (WHO, 2020)

- Question number 4

Immunization is an effort to form a person's immune system against disease. If he is exposed to the same disease one day, he will not get sick or only experience mild illness. (Kementrian Kesehatan RI, 2013)

- Question number 5

The immunization program in Indonesia has been implemented since 1956 and has succeeded in preventing the spread of various infectious diseases (Komite Penanganan COVID-19 & Kementerian Kesehatan RI, 2021)

- Question number 6

Herd Immunity is a condition where some people have been protected from infectious diseases. This condition can only be achieved if immunization coverage is high and evenly distributed (Komite Penanganan COVID-19 & Kementerian Kesehatan RI, 2021).

- Question number 7

Vaccines will stimulate the formation of immunity against certain diseases in a person's body. After being vaccinated, the body will be able to recognize, remember, and fight viruses or bacteria that carry disease (Hadiani, D. N, 2014).

- Question Number 8

While vaccine supplies are limited, it is recommended that priority be given to health workers at high risk of exposure and older people, including those aged 65 or older (WHO, 2021).

The vaccine has been found to be safe and effective in people with various conditions that are associated with increased risk of severe disease. This includes hypertension, diabetes, asthma, pulmonary, liver or kidney disease, as well as chronic infections that are stable and controlled. Vaccination also can be offered to people who have had COVID-19 in the past.

- Question Number 9

Adverse event following immunization (AEFI) is any untoward medical occurrence which follows immunization and which does not necessarily have a causal relationship with the usage of the vaccine. If not rapidly and effectively dealt with, can undermine confidence in a vaccine and ultimately have dramatic consequences for immunization coverage and disease incidence. AEFI is caused by antigens contained in vaccines, other vaccine components (e.g. adjuvants, stabilizers and preservatives) (Winulyo, 2021).

- Question Number 10

AEFIs are grouped into five categories (Winulyo, 2021).

1. Vaccine product-related reaction **Example:** limb swelling following vaccination.
2. Vaccine quality defect-related reaction. **Example:** Failure by the manufacturer to completely inactivate a lot of inactivated polio vaccine leads to cases of paralytic polio.
3. Immunization error-related reaction **Example:** Transmission of infection by contaminated multidose vial.
4. Immunization anxiety-related reaction **Example:** Vasovagal syncope in an adolescent during/following vaccination.
5. Coincidental event **Example:** A fever occurs at the time of the vaccination (temporal association) but is in fact caused by malaria.

3.3. The Knowledge improvement of Covid 19 vaccination in high school students towards each pre-test and post-test question.

Table 5. Frequency Pre-Test and Post-Test

Question Number	Pre-test		Post-test		Asymp. Sig. (2-tailed)
	Frequency	%	Frequency	%	

1	40	25,5	96	61,2	0.000
2	131	83,4	144	91,7	0.005
3	89	56,7	134	85,4	0.000
4	79	50,3	119	75,8	0.000
5	106	67,5	146	93,0	0.000
6	120	76,4	132	84,1	0.014
7	156	99,4	156	99,4	1.000
8	63	40,1	99	63,1	0.000
9	32	20,4	80	51,0	0.000
10	42	26,8	93	59,2	0.000

Table 6. Changes in Correct Answers of Pre-Test and Post-Test

Changes in correct answers of pre-test and post-test	Question Number									
	1	2	3	4	5	6	7	8	9	10
Decrease	2	4	4	11	2	6	1	14	7	6
Increase	58	17	49	51	42	18	1	50	55	57
Ties	97	136	104	95	113	133	155	93	95	94

The result from Table 5 shows that the Asymp. Sig. (2-tailed) of question numbers 1, 2, 3, 4, 5, 6, 8, 9, and 10 is <0.05 , which means there is a significant difference in the results of each question. In question number 7, the result of Asymp. Sig. (2-tailed) is >0.05 , which means the hypothesis is rejected. It happens because the students already understand the content of the questions before being given online counseling, which can be seen from the pre-test results, with as many as 156 students answering correctly. The students already understand the content of question number 7 because the students already know how the vaccine works, namely as a form of immunity against Covid-19. This is due to the government's ongoing implementation of vaccination programs throughout Indonesia, which has caused vaccines to be no longer common to the public (Kementrian Komunikasi dan Informatika 2021b). Changes in the results of students' answers to each question can be seen in table 6.

4. Conclusions

The online counseling program contains materials that can help students understand the Covid-19 vaccination. The increase in pre-test - post-test scores and an increase in correct answers to each question are evidence of the effectiveness of the online counseling program in increasing the understanding of high school students regarding the covid-19 vaccination. This of course can help the success of the Covid-19 vaccination program that the government is carrying out.

5. Suggestion

Future studies could fix several limitations of this study. The respondents' scope can be expanded so that they are not only focused on Secondary Education, such as Senior high schools and located on the island of Java. In addition, this research needs to be followed up using questionnaires that have been tested for validity and reliability, as well as more complex statistical data processing.

6. Acknowledgements

The researcher would like to thank all those who have helped, especially for the schools that have participated in the whole series of activities.

References

- Angel A. Justiz Vaillant; Marc J. Grella. 2021. *Vaccine (Vaccination)*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK532895/>
- Azwar, M. K., Setiati, S., Rizka, A., Fitriana, I., Saldi, S. R. F., & Safitri, E. D. 2020. Clinical Profile of Elderly Patients with COVID-19 hospitalised in Indonesia's National General Hospital. *Acta Medica Indonesiana*, 52(3), 199–205.
- Hadianti, D. N., et al. 2014. *Buku Ajar Imunisasi*. Pusat Pendidikan dan Pelatihan Tenaga Kesehatan.
- Janeway CA Jr, Travers P, Walport M, et al. 2001. *Immunobiology: The Immune System in Health and Disease*. 5th edition. (5th ed.). Garland Science. <https://www.ncbi.nlm.nih.gov/books/NBK27158/>
- Kementrian Kesehatan RI. 2013. *Peraturan Pemerintah Kesehatan Republik Indonesia Nomor 42 Tahun 2013 tentang Penyelenggaraan Imunisasi*.
- Kementrian Komunikasi dan Informatika. 2021a. *Data Vaksinasi COVID-19 (Update per 30 Juli 2021)*. <https://covid19.go.id/berita/data-vaksinasi-Covid-19-update-26-juli-2021>
- Kementrian Komunikasi dan Informatika. 2021b. *Target Percepatan Vaksinasi di Agustus Sampai 2 Juta Dosis Per Hari*. <https://covid19.go.id/p/berita/target-percepatan-vaksinasi-di-agustus-sampai-2-juta-dosis-hari>
- Komite Penanganan COVID-19, & Kementerian Kesehatan RI. 2021. Paket Advokasi Vaksinasi COVID-19. *Kementrian Kesehatan RI*, 9, 22–50.
- Machfoedz, I., Suryani, E. 2007. *Pendidikan Kesehatan Bagian Dari Promosi Kesehatan*. fitramaya.
- Nugraha, B., Wahyuni, L. K., Laswati, H., Kusumastuti, P., Tulaar, A. B., & Gutenbrunner, C. 2020. COVID-19 pandemic in Indonesia: Situation and challenges of rehabilitation medicine in Indonesia. *Acta Medica Indonesiana*, 52(3), 299–305.
- WHO. 2020. *COVID-19: physical distancing*. <https://www.who.int/westernpacific/emergencies/covid-19/information/physical-distancing>
- WHO. 2021. *The Pfizer BioNTech (BNT162b2) COVID-19 vaccine: What you need to know*. https://www.who.int/news-room/feature-stories/detail/who-can-take-the-pfizer-biontech-covid-19-vaccine?adgroupsurvey=%7B%7D&gclid=Cj0KCQjw6ZOIBhDdARIsAMf8YyHwLGicEbspGPAArgSsy3WxwrpENJ63VKEl7odZmjAEaC-Ey-jWFpcaAiteEALw_wcB%0D
- Widiastuti, N. K. 2020. *Yuk, Kenali Lebih Jauh Vaksinasi COVID-19*. <https://www.diskes.baliprov.go.id/yuk-kenali-lebih-jauh-vaksinasi-Covid-19/>
- Winulyo, E. B. 2021. Teknis Pelaksanaan Vaksin Covid dan Antisipasi KIPI. *SatGas Imunisasi Dewasa PB PAPDI PP Perhimpunan Alergi Imunologi Jakarta Perhimpunan Dokter Spesialis Penyakit Dalam Indonesia Cab. Bogor*.