



What Experts Say About COVID-19 Vaccine Work in Human Body: Community Health Literacy Analysis



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Abstract

This health paper analysis discusses what experts think about the work of the COVID-19 vaccine in the human body. This study is part of general public health literacy. To facilitate the discussion, we obtained data through a Google search engine on many well-known publications concerned with health issues, especially the coronavirus prevention vaccination program. The publication journals we mean are Medpub, Google Book, Elsevier, Sagepub, Academic research, Taylor and France, and several other publications. We managed this paper in a qualitative design for secondary data exploration. Meanwhile, our research efforts are carried out. Namely, we use data coding, evaluation, and in-depth interpretation to draw conclusions that can answer the questions of this study validly and reliably. The result is that vaccine programs function by training the immune system to detect and fight viruses and bacteria. Do this; pathogenic molecules must be delivered into the body to elicit an immune response. These molecules, known as antigens, can be found in all viruses and bacteria.

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1 Introduction

The government carries out a vaccination program to tackle COVID-19 prevention for all citizens by looking at the effectiveness and productivity resulting from the national vaccination program (Masnun et al., 2021; Sudarmo et al., 2021). According to the government, this vaccination is an essential program, and it is hoped to be carried out evenly. Because the government believes that although the overall vaccination rate for getting the virus is not evenly distributed, this is an effort maximized while citizens carry out health protocols such as wearing masks and dispensing to avoid mass crowds (DeRoo et al., 2020).

Until today, the COVID-19 situation in the country until October 2021 where it has been confirmed that there are more than 4 million people with Coronavirus status, and these 4 million have recovered with a total of 93 million vaccines that have been implemented in the first phase, then 52,000,000 vaccinations in the second phase (Marzuki et al., 2021). Likewise, being vaccinated in the third phase, the stakes reach below one million. However, the government targets the government will be able to provide vaccinations nationally for around 200 million. This is a government program that must be implemented to achieve this maximum aim; the government needs support and participation from all components of the nation (Utami & Nuha, 2021). If it pays attention to active cases, then the cumulative recovery figures and the cumulative deaths of cases indeed illustrate that the ten largest provinces received this data. These figures are three categories of cumulative active cases recovered and died (Update 2021, October).

According to Astuti et al. (2021), this vaccination effort is aimed at meeting the needs of the community, which must be carried out in various ways; there are direct purchases or purchases through multilateral and bilateral cooperation so that this national vaccine will be fulfilled (Kieny & Girard, 2005). Thus, the government hopes that by the end of 2001, it is estimated that the Indonesian people have been vaccinated at approximately 70%; this is the government's expectation (Simon et al., 2020). Data shows that the vaccine program in Indonesia is included in the top 10 countries with the highest number of vaccinations in the world so that this vaccination program can be tightened and the government invites all levels of Society to immediately register to be vaccinated because all vaccines or the government are safe and sound (Simanjuntak & Nurnisa, 2019).

Amid praise from the world community, according to the government, the acceleration of the decline in COVID transmission is believed to be closely related to the vaccination program. However, there are still many vaccination target areas; the fact is that vaccination receipts are still low, so it is hoped that local governments will immediately implement this achievement, and this national program will run well (Setiawan et al., 2021). To this day, more than a quarter of the vaccination targets have received complete vaccinations, namely, Indonesia recorded 4000000 COVID cases since the first president in 2020 (Hertianto & Maharani, 2021). As of October 3, 2001, it was stated that 52 million people had received the second stage of vaccination, meaning that 20% of the vaccination target had almost been achieved (Rizki, 2021).

However, behind the success story of the government running this vaccination program, it turns out that on the other hand, the government must also work hard to make this vaccination a success in various ways so that people will continue to be encouraged to take part in this national vaccination (Pandie, 2020). The fact is that there are still people who refuse to be vaccinated even though B.P.O.M. has allowed that several lower vaccinations are safe to use. According to Fauzia & Hamdani (2021), the public's reluctance to be vaccinated seems to be caused by psychological problems and partly because people who are apathetic to vaccines may be because this patient is a very new thing so that people are hesitant to carry out the vaccine. This vaccination is the right time to provide facts and objective evidence to make their views more objective (Akim, 2021).

The reason residents refuse vaccines could be due to environmental influences where more and more people in a place are still doing vaccines, so many people refuse vaccines (Maurer et al., 2009). Some do not need orders counter to various reasons (Yumetri Abidin & Iska, 2021). People usually try to convey their point of view to others and their beliefs they try to keep their closest people safe according to their respective principles (Purike & Baiti, 2021).

2 Materials and Methods

This method section describes the procedure for our study, which aims to analyze this health-finding article that discusses experts' opinions about how the COVID-19 vaccine works in the human body. This research is part of general public health literacy. To facilitate this study, we obtained data through a Google search engine on many well-known publications concerned with health issues, especially the issue of the COVID-19 vaccine. The journal publications we mean are Medpub, Google Book, Esavier, Sagepub, Academic research, Taylor and France, and several other publications (Galanis et al., 2021). We manage this paper in a descriptive qualitative design for secondary data exploration. Meanwhile, our research review efforts were carried out; we used data coding, evaluation, and in-depth interpretation to draw conclusions that could answer this research question validly and reliably. We followed the review guidelines (Li et al., 2021; Akbarov & Xabilov, 2021).

3 Results and Discussions

The COVID-19 vaccine works by introducing the immune system to an inactivated coronavirus. This does not cause a person to be infected with COVID-19 but equips the body to fight off viral infections in the future (Andreadakis et al., 2020). The question is, how does the COVID-19 vaccine work in the human body. Peoples, (2020) said that the COVID-19 vaccine works by forming the body's immune system. When the COVID-19 vaccine is injected, the body's cells receive information about the Coronavirus. The immune system that breeds later will recognize the Coronavirus if someone is exposed to it. However, when the Coronavirus tries to enter, the immune system fights it (Asman et al., 2021; Widjaja, 2021).

The COVID-19 vaccine works by introducing the immune system to an inactivated coronavirus. This does not cause a person to be infected with COVID-19 but equips the body to fight off viral infections in the future (Di Saverio et al., 2020). The COVID-19 vaccine works by making antibodies to fight the Coronavirus. Antibodies attach to viral proteins. When the COVID-19 vaccine is made, the Coronavirus that is the material for making vaccines is turned inactive by using a beta-propiolactone chemical. Inactivated coronaviruses can no longer replicate, but their proteins remain intact (Pérez de la Lastra et al., 2020).

Because the Coronavirus in the vaccine has died, it can be injected into the human body without causing COVID-19 infection (Ningsih et al., 2021). Once inside the body, some dormant viruses are defeated by a type of immunity called antigen-carrying cells. Cells that carry antigens damage the Coronavirus until several fragments appear on its surface so that that body cells can detect these fragments (Pandey et al., 2020). Antibodies are formed. Immune cells become active, proliferate, and secrete antibodies to fight the Coronavirus (Jacofsky et al., 2020; Widana et al., 2021). Once the vaccine is injected, the immune system can respond to live coronavirus infection. Then the immune cells prevent the virus from entering and blocking the virus in various ways. The body stores all information about the Coronavirus after being injected with the COVID-19 vaccine. The body can remember the Coronavirus for years. Please note, all types of COVID-19 vaccines have been tested in preclinical studies and clinical trials. This step is to assess the vaccine's safety and how well it is effective in preventing disease. Like other vaccines, the COVID-19 vaccine also has relatively safe side effects (Kaplan & Milstein, 2021).

Many companies and industries have concentrated on vaccinations since the emergence of the Coronavirus that caused the COVID-19 pandemic. Several groups are competing to produce a coronavirus vaccine (Crick & Crick, 2020). Simply put, only vaccination can protect a person from contracting the disease. According to WHO, about 20 companies are now developing a COVID-19 vaccine. Making a vaccine is not simple; it takes a lot of effort and time. However, this vaccine was initially tested on humans some time ago (WHO, 2015). Moderna Biotechnology and the National Institutes of Health (N.I.H.) sponsored and carried out the research. Moderna was founded three years ago after the Ebola outbreak, which claimed the lives of 11,000 people (Jobe, 2016). This study aimed to understand how vaccinations work in the body and have side effects, evaluate their effectiveness, and lay the groundwork for more extensive studies later this year. Human trials are running at a very high speed.

In the same manner that other illnesses have been prevented (Sultana et al., 2020). According to the World Health Organization (WHO), if one is familiar with vaccinations, this COVID-19 vaccine is one of the most effective ways of illness prevention. It protects the body against illnesses caused by pathogens such as viruses and bacteria by assisting the immune system in recognizing and combating them (Jacofsky et al., 2020). Vaccines also play an essential part in human existence. Vaccines can protect us from over 25 debilitating or fatal illnesses. A few examples are measles, polio, tetanus, diphtheria, meningitis, influenza, tetanus, typhoid, and cervical cancer (Hajj Hussein et al., 2015).

Back to the problem, how does the coronavirus vaccination function in the human body? The COVID-19 vaccine works in much the same way as other vaccinations. Vaccines are chemicals or products used to develop the immune system to protect against various diseases (Abbasi, 2020). In other words, Vaccines include a variety of biological products, including viral or bacterial fragments and attenuated viruses or bacteria. On the other hand, this substance is beneficial for enhancing the development of antibodies or immunity (Larenas-Linnemann et al., 2020). In other words, the function of coronavirus vaccination is almost the same as other vaccines. The COVID-19 vaccination will encourage the immune system to produce long-lasting immunological molecules. On the other hand, these chemicals will further combat antigens from the COVID-19 infection (Coronavirus) that enter the body (Poonia & Kottlil, 2020). If the COVID-19 antigen strikes again, the body will mount a robust immunological response. The goal is to remove the antigen.

3.1 Sinovac way to combat the virus

Because there are various brands and products for vaccines, we will discuss the first thing: the Sinovac vaccine. This is a drug company from China that has succeeded in making a Coronavirus vaccine. This vaccine is a type of Corona vaccine that has been circulating in Indonesia for a long time (Hernikawati, 2021). Here is more or less how this Sinovac vaccine works in the human body, first seen from what it is made of from the Coronavirus. To make this vaccine, scientists have taken samples of the Coronavirus from patients in China, Britain, and other Europe. This cover eventually became the basis for making the Sinovac vaccine. Because vaccines work by making antibodies to fight the Coronavirus (Goyal et al., 2021). So, antibodies attach to proteins in the human body; that is one way how Sinovac was initially made.

Furthermore, the creators of this virus, for the first time, killed the Coronavirus. So, scientists develop a large stock of Coronavirus in monkey cells then kill the virus with a chemical made from Beta Pro lactone virus. These dead coronas can no longer replicate, but their proteins are still excellent and intact (ElBagoury et al., 2020). Next, scientists took the inactivated virus and then mixed it with a small amount of aluminum compound called Advan with the stimulation of thickness for the human body, which increased when responding to the vaccine (Balasubramaniam et al., 2020). Then how this vaccine responds to the immune system. So, the Coronavirus in the vaccine with Sinovac has been deactivated. Furthermore, it can be injected into humans without the risk of COVID-19. Then it enters the body so that some viruses that have been killed are inserted by a type of immune cell called an antigen-carrying cell (Basari et al., 2021).

3.2 Evidence from the field

How vaccines work in the body based on each country is working almost the same. However, let see how some countries explain—first, the Australian government. According to the Royal Australian Department of Health, they use three vaccine brands; the first is Ashra, the second is Pfizer and Moderna (McMahon et al., 2021). For an explanation of how vaccines work in the body, according to the Australian government's explanation when vaccines equally protect the human body from infection with this malignant COVID-19 vaccine (Aaby et al., 2020). So, the virus that causes COVID-19 has spread the protein inside the virus particle, so the scattering of this protein allows the virus to attack the cells that cause this disease. The first vaccine vaccines help the human body with cellular proteins that threaten the body from viral proteins, the second against Coronaviruses that have the protein in question (Chen et al., 2017). The third dose the recipient's body is immunocompromised, which may require three doses in the main vaccination program to achieve optimal levels of benefit, so this third dose is a booster that is given to every citizen so that the body can survive in the long term and this is an option for the Australian government (Shadmi et al., 2020). Before this vaccine is given to its citizens, the government has carried out a strict simulation where with a rigorous evaluation

process, these three vaccines were finally approved with a record that all three are legal to use in their country, and this is a way that has been taken full of risks use of all three stages of vaccination (Neumann-Böhme et al., 2020).

According to the world health agency, vaccines protect the body from viral threats and how the human body responds (Peeples, 2020). So, a pathogen is a bacterium, parasite, or fungus that can cause disease in the human body any pathogen from some part of its unit or to a certain extent and prevent the disease from being transferred to humans. So, by giving this pathogen, it causes the formation of antibodies called antigens. These antibodies are produced in various responses to pathogenic antigens, which are integral to the human immune system (Docea et al., 2020). So, antibodies are like police in the body for the body's defense, so every antibody or like a soldier, the body system is trained to recognize antigens specifically, so humans have lots of antibodies. However, it takes more time for extra immunity so that they can respond to produce potent antibodies. After these antibodies are produced, the antibodies will work with the immune system and are ready to destroy the virus and, in the end, eliminate diseases. Detects impending disease after the pathogen is defeated by antibodies so in the future, if someone is exposed to the same COVID more than once, then the antibodies are ready to respond because he has a memory stored in the memory to pump this means if someone is exposed to a dangerous virus in the future the immune system is gone ready to treat (Finlay et al., 2021).

Then the question is how vaccines help the human body from the attack of the dangerous Coronavirus. So, the answer is that when a person has been confirmed, they are almost sure to be immune from certain diseases, especially COVID-19 (Haidere et al., 2021). Indeed, not everyone can be vaccinated, especially people who have underlying health problems because their illness has a weak immune system, so they may not receive vaccines, including the coffee vaccine, so people who can still be protected live among people. Involved in this vaccine is known as herd immunity (Hildreth & Alcendor, 2021). This vaccine consists of an attenuated or inactivated viral component of a particular organism that causes an immunological response in the body, so this weaker form will not cause disease in people who have been vaccinated but will trigger their immune system in response to any disease or pathogen. So, some vaccinations require several test doses of one-two to three in a few weeks or months to allow the formation of an immune set (Oldstone, 2020).

3.3 Facts about the COVID-19 vaccine used in the U.S.

As indicated by Tanne (2020), there are a few COVID-19 antibodies now in clinical preliminaries. The public authority keeps on researching the results of these underlying discoveries before suggesting or supporting the utilization of COVID-19 antibodies. Notwithstanding, because there is a pressing requirement for COVID-19 antibodies and techniques for sanctioning government vaccinations might require months or a long time, the U.S.U.S. wellbeing gathering initially approves utilizing an emergency-based immunization for COVID-19 antibodies dependent on more data. Not precisely is generally required. Before the public authority can concede consent or backing for emergency use (Yazdany & Kim, 2020), the data should exhibit that the counter-acting agent is protected and proper. Inoculations that have their Health Service freedom or suggestions for emergency use include:

Coronavirus Vaccination by Pfizer-BioNTech. The Health Service has supported the Pfizer-BioNTech COVID-19 neutralizer, presently known as Comirnaty, to forestall COVID-19 in individuals 16 years old and more seasoned. The F.D.A. endorsed Comirnaty after discovering that the inoculation was protected and compelling. Pfizer-BioNTech COVID-19 inoculation is 91% compelling in forestalling indicative COVID-19 disease in those matured 16 years and over (Middleton et al., 2021). The antibodies are as yet under crisis use approval for youngsters 12 to 15 years old. This immunization is entirely successful in forestalling COVID-19 in kids matured 12 to 15 years. Two implantations are required 21 days separated. If necessary, the following piece can be offered as long as a month and a half after the initial segment (Shervailiou et al., 2020). Moderna's COVID-19 antibodies. Moderna COVID-19 antibodies are 94% compelling in forestalling the results of COVID-19. These antibodies are just suggested for those more than 18 years old. Two imbuements are required, divided 28 days separated. If necessary, the following piece can be offered as long as a month and a half after the initial segment (Zhu et al., 2020).

Janssen/Johnson and Johnson COVID-19 antigen-immune response In a starter clinical preliminary, this neutralizer were 66% compelling in forestalling COVID-19 contamination with random effects, beginning 14

days after infusion. Likewise, the antibodies were 85% compelling in forestalling severe disease with COVID-19 - no under 28 days after immunization (Gautam & Sharma, 2020). These antibodies are just taken into account for those more than 18 years old. People need one imbue. The F.D.A. and the Centers for Disease Control and Prevention (C.D.C.) have suggested that these antibodies proceed in the United States because the advantages offset the dangers. If individuals are given this immunization, they should be taught about blood coagulating issues' potential dangers, and side effects (MacNeil et al., 2021).

Pfizer-BioNTech and Moderna COVID-19 antibodies both use messenger R.N.A. (mRNA). The spike-like pattern on the surface of COVID-19 is known as protein S. Coronavirus mRNA vaccination instructs cells on how to produce harmless S protein fragments (Shadmi et al., 2020). After inoculation, the cells begin to produce protein fragments and display them on the cell surface. The immune system will recognize the protein and begin to build a safe response, and produce antibodies.

Janssen/Johnson & Johnson's COVID-19 antibody is a vector vaccination. Material from COVID-19 infection is implanted in other strains of weak live infection, such as adenovirus, in this type of antibody (Rizk et al., 2021). When an attenuated infection (viral vector) enters your cells, it transports material from the COVID-19 infection that instructs your cells on how to replicate protein S. When your cells display protein S on their surface, your immune system responds by producing antibodies and protecting them with platelets. Antibodies will fight the infection if people are infected with the disease that causes COVID-19 (Vinayagam & Sattu, 2020). Viral vector antibodies cannot cause the body to become infected with COVID-19 or viral vector infection. Similarly, the information provided is not beneficial to the D.N.A.

4 Conclusion

In this final section, we summarize the results of the analysis of this health paper, which discusses the opinions of experts about how the COVID-19 vaccine works in the human body. This research is part of general public health literacy, were to facilitate discussion, we obtained data through the Google search engine on many well-known publications concerned with health issues, especially the coronavirus prevention vaccination program. We mean Medpub, Google Book, Esavier, Sagepub, Academic, and others.

Based on the discussion of the findings, we can conclude that all the papers we reviewed convey the same views on how the corona vaccine works on the human body. We have several BioNTech, Pfizer vaccine, CanSino vaccine, CoronaVac vaccine, Johnson & Johnson vaccine, Moderna vaccine, Oxford, AstraZeneca vaccine, and Sinopharm B.B.I.B.P. Sputnik V vaccine. All vaccine brands describe the same way and impact on the body after being vaccinated. Hopefully, the public literacy health studies' findings will add to the knowledge base and expertise of the academic and field circles.

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References

- Aaby, P., Benn, C. S., Flanagan, K. L., Klein, S. L., Kollmann, T. R., Lynn, D. J., & Shann, F. (2020). The non-specific and sex-differential effects of vaccines. *Nature Reviews Immunology*, 20(8), 464-470.
- Abbasi, J. (2020). COVID-19 and mRNA vaccines—first large test for a new approach. *Jama*, 324(12), 1125-1127.
- Akbarov, A. N., & Xabilov, D. N. U. (2021). The condition of the oral cavity in patients who have had a viral infection COVID-19. *International Journal of Health & Medical Sciences*, 4(4), 381-383.
- Akim, Z. (2021). Konsep Hak Warga Negara Untuk Memilih Divaksin COVID-19 Atau Tidak Sesuai Undang-Undang Dasar 1945. *Simbur Cahaya*, 28(2), 187-201.
- Andreadakis, Z., Kumar, A., Román, R. G., Tollefsen, S., Saville, M., & Mayhew, S. (2020). The COVID-19 vaccine development landscape. *Nature reviews. Drug discovery*, 19(5), 305-306.
- Asman, A., Asman, A., & Dewi, A. K. (2021). Community nursing strategies for tourism health families during COVID-19 pandemic. *International Journal of Health Sciences*, 5(3), 224-231.
- Astuti, N. P., Nugroho, E. G. Z., Lattu, J. C., Potempu, I. R., & Swandana, D. A. (2021). Persepsi Masyarakat terhadap Penerimaan Vaksinasi COVID-19: Literature Review. *Jurnal Keperawatan*, 13(3), 569-580.
- Balasubramaniam, B., Prateek, Ranjan, S., Saraf, M., Kar, P., Singh, S. P., ... & Gupta, R. K. (2020). Antibacterial and antiviral functional materials: Chemistry and Biological Activity toward Tackling COVID-19-like Pandemics. *ACS Pharmacology & Translational Science*, 4(1), 8-54.
- Basari, M. H. B., Nurpalah, R., Mulya, R., & Barlian, U. C. (2021). Management of Character Education In Schools (Case Study Analysis In Sma Terpadu Krida Nusantara Bandung). *IJGIE (International Journal of Graduate of Islamic Education)*, 2(1), 11-21.
- Chen, Y. C., Chu, C. N., Sun, H. M., Chen, R. S., Tu, M., & Lin, S. C. (2017). Using case-based reasoning method to design a return merchandise authorization system for supply chain management in Internet of Thing. In *2017 IEEE 17th International Conference on Communication Technology (ICCT)* (pp. 1462-1466). IEEE.
- Crick, J. M., & Crick, D. (2020). Coopetition and COVID-19: Collaborative business-to-business marketing strategies in a pandemic crisis. *Industrial Marketing Management*, 88, 206-213. <https://doi.org/10.1016/j.indmarman.2020.05.016>
- DeRoo, S. S., Pudalov, N. J., & Fu, L. Y. (2020). Planning for a COVID-19 vaccination program. *Jama*, 323(24), 2458-2459.
- Di Saverio, S., Khan, M., Pata, F., Ietto, G., De Simone, B., Zani, E., & Carcano, G. (2020). Laparoscopy at all costs? Not now during COVID-19 outbreak and not for acute care surgery and emergency colorectal surgery: a practical algorithm from a hub tertiary teaching hospital in Northern Lombardy, Italy. *The journal of trauma and acute care surgery*, 88(6), 715.
- Docea, A. O., Tsatsakis, A., Albulescu, D., Cristea, O., Zlatian, O., Vinceti, M., ... & Calina, D. (2020). A new threat from an old enemy: Re-emergence of coronavirus. *International journal of molecular medicine*, 45(6), 1631-1643.
- ElBagoury, M., Tolba, M. M., Nasser, H. A., Jabbar, A., & Hutchinson, A. (2020). The find of COVID-19 vaccine: Challenges and opportunities. *Journal of infection and public health*. <https://doi.org/10.1016/j.jiph.2020.12.025>
- Fauzia, A., & Hamdani, F. (2021). Pendekatan Socio-Cultural dalam Pelaksanaan Vaksinasi COVID-19 di Indonesia. In *Seminar Nasional Hukum Universitas Negeri Semarang* (Vol. 7, No. 1, pp. 323-338).
- Finlay, B. B., Amato, K. R., Azad, M., Blaser, M. J., Bosch, T. C., Chu, H., ... & Giles-Vernick, T. (2021). The hygiene hypothesis, the COVID pandemic, and consequences for the human microbiome. *Proceedings of the National Academy of Sciences*, 118(6).
- Galanis, P., Vraka, I., Siskou, O., Konstantakopoulou, O., Katsiroumpa, A., & Kaitelidou, D. (2021). Predictors of COVID-19 vaccination uptake and reasons for decline of vaccination: a systematic review. *medRxiv*.
- Gautam, R., & Sharma, M. (2020). 2019-nCoV pandemic: A disruptive and stressful atmosphere for Indian academic fraternity. *Brain, behavior, and immunity*, 88, 948.
- Goyal, M., Tewatia, N., Vashisht, H., Jain, R., & Kumar, S. (2021). Novel Corona Virus (COVID-19); Global Efforts and Effective Investigational Medicines: A Review. *Journal of Infection and Public Health*. <https://doi.org/10.1016/j.jiph.2021.04.011>
- Haidere, M. F., Ratan, Z. A., Nowroz, S., Zaman, S. B., Jung, Y. J., Hosseinzadeh, H., & Cho, J. Y. (2021). COVID-19 vaccine: critical questions with complicated answers. *Biomolecules & Therapeutics*, 29(1), 1.
- Widjaja, G., & Sijabat, H. H. (2022). What experts say about COVID-19 vaccine work in human body: Community health literacy analysis. *International Journal of Health Sciences*, 6(1), 1-10. <https://doi.org/10.53730/ijhs.v6n1.1578>

- Hajj Hussein, I., Chams, N., Chams, S., El Sayegh, S., Badran, R., Raad, M., ... & Jurjus, A. (2015). Vaccines through centuries: major cornerstones of global health. *Frontiers in public health*, 3, 269.
- Hernikawati, D. (2021). Kecenderungan Tanggapan Masyarakat Terhadap Vaksin Sinovac Berdasarkan Lexicon Based Sentiment Analysis (The Trend of Public Response to Sinovac Vaccine Based on Lexicon Based Sentiment Analysis). *JURNAL IPTEKKOM (Jurnal Ilmu Pengetahuan & Teknologi Informasi)*, 23(1), 21-31.
- Hertianto, M. R., & Maharani, N. P. M. (2021). Analisis Yuridis Vaksin COVID-19 Ilegal: Perlindungan dan Penegakan Hak Kesehatan Warga Negara Indonesia. In *Seminar Nasional Hukum Universitas Negeri Semarang* (Vol. 7, No. 1, pp. 301-322).
- Hildreth, J. E., & Alcendor, D. J. (2021). Targeting COVID-19 Vaccine Hesitancy in Minority Populations in the US: Implications for Herd Immunity. *Vaccines*, 9(5), 489.
- Jacofsky, D., Jacofsky, E. M., & Jacofsky, M. (2020). Understanding antibody testing for COVID-19. *The Journal of arthroplasty*, 35(7), S74-S81. <https://doi.org/10.1016/j.arth.2020.04.055>
- Jobe, K. M. (2016). The constitutionality of quarantine and isolation orders in an Ebola epidemic and beyond. *Wake Forest L. Rev.*, 51, 165.
- Kaplan, R. M., & Milstein, A. (2021). Influence of a COVID-19 vaccine's effectiveness and safety profile on vaccination acceptance. *Proceedings of the National Academy of Sciences*, 118(10).
- Kieny, M. P., & Girard, M. P. (2005). Human vaccine research and development: an overview. *Vaccine*, 23(50), 5705-5707. <https://doi.org/10.1016/j.vaccine.2005.07.077>
- Larenas-Linnemann, D., Rodríguez-Pérez, N., Arias-Cruz, A., Blandón-Vijil, M. V., Del-Río-Navarro, B. E., Estrada-Cardona, A., ... & Rojo-Gutiérrez, M. I. (2020). Enhancing innate immunity against virus in times of COVID-19: trying to untangle facts from fictions. *World Allergy Organization Journal*, 100476. <https://doi.org/10.1016/j.waojou.2020.100476>
- Li, M., Luo, Y., Watson, R., Zheng, Y., Ren, J., Tang, J., & Chen, Y. (2021). Healthcare workers' (HCWs) attitudes and related factors towards COVID-19 vaccination: A rapid systematic review. *Postgraduate Medical Journal*.
- MacNeil, J. R., Su, J. R., Broder, K. R., Guh, A. Y., Gargano, J. W., Wallace, M., ... & Oliver, S. E. (2021). Updated recommendations from the advisory committee on immunization practices for use of the Janssen (Johnson & Johnson) COVID-19 vaccine after reports of thrombosis with thrombocytopenia syndrome among vaccine recipients—United States, April 2021. *Morbidity and Mortality Weekly Report*, 70(17), 651.
- Marzuki, I., Iqbal, M., Bahri, S., Purba, B., Saragih, H., Pinem, W., ... & Mastutie, F. (2021). *Pengantar Ilmu Sosial. Yayasan Kita Menulis*.
- Masnun, M. A., Sulistyowati, E., & Ronaboyd, I. (2021). Pelindungan Hukum Atas Vaksin COVID-19 Dan Tanggung Jawab Negara Pemenuhan Vaksin Dalam Mewujudkan Negara Kesejahteraan. *DiH: Jurnal Ilmu Hukum*, 17(1), 35-47.
- Maurer, J., Harris, K. M., Parker, A., & Lurie, N. (2009). Does receipt of seasonal influenza vaccine predict intention to receive novel H1N1 vaccine: evidence from a nationally representative survey of US adults. *Vaccine*, 27(42), 5732-5734. <https://doi.org/10.1016/j.vaccine.2009.07.080>
- McMahon, D. E., Amerson, E., Rosenbach, M., Lipoff, J. B., Moustafa, D., Tyagi, A., ... & Freeman, E. E. (2021). Cutaneous reactions reported after Moderna and Pfizer COVID-19 vaccination: A registry-based study of 414 cases. *Journal of the American Academy of Dermatology*, 85(1), 46-55. <https://doi.org/10.1016/j.jaad.2021.03.092>
- Middleton, R. J., Gorton, J., O'Riordan, E., Knight, S., Kalra, P. A., & Poulikakos, D. (2021). Impact of Shielding and First Dose of COVID-19 Vaccination in Kidney Transplant Recipients. *Nephron*, 1-3.
- Neumann-Böhme, S., Varghese, N. E., Sabat, I., Barros, P. P., Brouwer, W., van Exel, J., ... & Stargardt, T. (2020). Once we have it, will we use it? A European survey on willingness to be vaccinated against COVID-19.
- Ningsih, S., Ismail, D., & Indriani, I. (2021). Study protocol: relationship between parenting patterns and diet with nutritional status of toddlers during COVID-19 pandemic. *International Journal of Health Sciences*, 5(2), 128-134.
- Oldstone, M. B. (2020). *Viruses, plagues, and history: past, present, and future*. Oxford University Press.
- Pandey, S. C., Pande, V., Sati, D., Upreti, S., & Samant, M. (2020). Vaccination strategies to combat novel corona virus SARS-CoV-2. *Life sciences*, 256, 117956. <https://doi.org/10.1016/j.lfs.2020.117956>

- Pandie, D. B. (2020). *Vaksin Ilmiah Kumpulan Esai Tentang COVID-19 dari Berbagai Perspektif Ilmu [Edisi II]*. Penerbit Lakeisha.
- Peeples, L. (2020). News Feature: Avoiding pitfalls in the pursuit of a COVID-19 vaccine. *Proceedings of the National Academy of Sciences*, 117(15), 8218-8221.
- Pérez de la Lastra, J. M., Baca-González, V., Asensio-Calavia, P., González-Acosta, S., & Morales-delaNuez, A. (2020). Can immunization of hens provide oral-based therapeutics against COVID-19?. *Vaccines*, 8(3), 486.
- Poonia, B., & Kottlil, S. (2020). Immune correlates of COVID-19 control. *Frontiers in Immunology*, 11, 2535.
- Purike, E., & Baiti, A. (2021). Informasi Vaksin Di Media Sosial Dan Program Vaksin COVID-19: Langkah Apa Yang Dapat Dilakukan Oleh Pemerintah Republik Indonesia?. *Cross-border*, 4(2), 58-69.
- Rizk, J. G., Gupta, A., Sardar, P., Henry, B. M., Lewin, J. C., Lippi, G., & Lavie, C. J. (2021). Clinical Characteristics and Pharmacological Management of COVID-19 Vaccine-Induced Immune Thrombotic Thrombocytopenia With Cerebral Venous Sinus Thrombosis: A Review. *JAMA cardiology*.
- Rizki, I. (2021). *Hierarki Pengaruh Pemberitaan Vaksin COVID-19 di Detik.com* (Bachelor's thesis, Fakultas Dakwah dan Ilmu Komunikasi Universitas Islam Negeri Syarif Hidayatullah Jakarta).
- Setiawan, F., Sosiawan, A., Wahjuningrum, D. A., Yudianto, A., Nurdianto, A. R., Riyanto, J., & Tena, H. A. B. (2021). *Corona Virus Disease 2019 (COVID-19) Dalam Asas Salus Populi Suprema Lex Esto Dan Kajian Patogenesis* (Vol. 1). Haura Utama.
- Shadmi, E., Chen, Y., Dourado, I., Faran-Perach, I., Furler, J., Hangoma, P., ... & Willems, S. (2020). Health equity and COVID-19: global perspectives. *International journal for equity in health*, 19(1), 1-16.
- Sheervalilou, R., Shirvaliloo, M., Dadashzadeh, N., Shirvalilou, S., Shahraki, O., Pilehvar-Soltanahmadi, Y., ... & Nazarlou, Z. (2020). COVID-19 under spotlight: A close look at the origin, transmission, diagnosis, and treatment of the 2019-nCoV disease. *Journal of Cellular Physiology*, 235(12), 8873-8924.
- Simanjuntak, S. M., & Nurnisa, I. N. (2019). Peningkatan Pengetahuan dan Sikap Ibu Tentang Imunisasi dengan Pendekatan Promosi Kesehatan Tentang Imunisasi Dasar. *Media Karya Kesehatan*, 2(1).
- Simon, D., Tascilar, K., Krönke, G., Kleyer, A., Zaiss, M. M., Heptt, F., ... & Schett, G. (2020). Patients with immune-mediated inflammatory diseases receiving cytokine inhibitors have low prevalence of SARS-CoV-2 seroconversion. *Nature communications*, 11(1), 1-7.
- Sudarmo, Nugraha, M.S., Mardhiah, R. Iliow, F.E., Aslan. (2021). The Identification of Online Strategy Learning Results While Students Learn from Home During the Disruption of the COVID-19 Pandemic in Indonesia. *J. Contemp. Issues Bus. Gov.* 27, 1950-1956.
- Sultana, J., Mazzaglia, G., Luxi, N., Cancellieri, A., Capuano, A., Ferrajolo, C., ... & Trifirò, G. (2020). Potential effects of vaccinations on the prevention of COVID-19: rationale, clinical evidence, risks, and public health considerations. *Expert review of vaccines*, 19(10), 919-936.
- Tanne, J. H. (2020). COVID-19: FDA approves use of convalescent plasma to treat critically ill patients. *Bmj*, 368(m1256).
- Utami, R., & Nuha, G. A. (2021). Pemberdayaan Ibu Rumah Tangga Melalui Pembuatan Handsanitizer Dalam Upaya Pencegahan COVID-19. *Journal of Community Development*, 2(1), 27-31.
- Vinayagam, S., & Sattu, K. (2020). SARS-CoV-2 and coagulation disorders in different organs. *Life Sciences*, 118431.
- Widana, I.K., Sumetri, N.W., Sutapa, I.K., Suryasa, W. (2021). Anthropometric measures for better cardiovascular and musculoskeletal health. *Computer Applications in Engineering Education*, 29(3), 550-561. <https://doi.org/10.1002/cae.22202>
- Widjaja, G. (2021). Impact of human resource management on health workers during pandemics COVID-19: systematic review. *International Journal of Health & Medical Sciences*, 4(1), 61-68.
- Yazdany, J., & Kim, A. H. (2020). Use of hydroxychloroquine and chloroquine during the COVID-19 pandemic: what every clinician should know.
- Yumetri Abidin, Y., & Iska, Z. Z. (2021). Laporan Pengabdian Masyarakat: " Sosialisasi Vaksinasi COVID-19 Terhadap Keraguan Masyarakat Atas Efek Negatif Pasca Vaksin".
- Zhu, F. C., Li, Y. H., Guan, X. H., Hou, L. H., Wang, W. J., Li, J. X., ... & Chen, W. (2020). Safety, tolerability, and immunogenicity of a recombinant adenovirus type-5 vectored COVID-19 vaccine: a dose-escalation, open-label, non-randomised, first-in-human trial. *The Lancet*, 395(10240), 1845-1854. [https://doi.org/10.1016/S0140-6736\(20\)31208-3](https://doi.org/10.1016/S0140-6736(20)31208-3)

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