

# How is Telemedicine in Health Services in Indonesia during the Covid-19 Pandemic?: Literature Review

Jennyla Puspitaning Ayu \*, Ida Herwati \*, Luthfiatul Mustafidah \*, Listiyawati \*

\* Sekolah Tinggi Ilmu Kesehatan Kepanjen, Malang, Indonesia

DOI: 10.29322/IJSRP.12.07.2022.p12713  
<http://dx.doi.org/10.29322/IJSRP.12.07.2022.p12713>

Paper Received Date: 10th June 2022  
Paper Acceptance Date: 27th June 2022  
Paper Publication Date: 6th July 2022

**Abstract** - Indonesia is one of the countries that have implemented telemedicine. Telemedicine is one of the strategies to prevent the spread of the Covid-19 virus which is applied to health services using electronic communication technology. Telemedicine is a health practice with the use of audio, visual, and data communications, including care, diagnosis, consultation, and treatment as well as medical data exchange and remote scientific discussion. The existence of advantages and disadvantages as well as regulations related to telemedicine in Indonesia is the background of researchers in researching telemedicine in health services in Indonesia to be able to know the description of the use of telemedicine in health services in Indonesia. This research is in the form of a literature review by referring to several journals and scientific articles as secondary data. The results show that the use of telemedicine in Indonesia has a positive impact on health services. However, the implementation of telemedicine in Indonesia still needs improvement, among others, infrastructure distribution, the strength of stakeholders in forming regulations, and the readiness of health workers.

**Index Terms** - telemedicine, Covid-19, technology

## I. INTRODUCTION

Acute respiratory syndrome coronavirus 2 (SARS-CoV2) is the seventh type of coronavirus found in humans. This syndrome was first discovered in Wuhan, Hubei Province, China in December 2019. Since then this virus has spread throughout the world, recorded on 20 May 2020 as many as 4,806,299 people were infected and 318,599 people died (1). On January 30, 2020, the World Health Organization (WHO) declared SARS-CoV2 a Public Health Emergency of International Concern (PHEIC) due to the significant increase in new confirmed cases in various countries (2). In Indonesia, the first positive case was reported on March 2, 2020. Cases of the SARS-CoV2 virus, known as Covid-19, have continued to increase to date (3). This has led to the emergence of a government regulation on Large-Scale Social Restrictions (PSBB) which was first issued in March 2020 and has been re-enacted several times in areas prone to the Covid-19 virus. The impact of this regulation on the health care sector is the emergence of technology-based health services to minimize face-to-face contact and is one of the implementations of physical distancing strategies. (4).

Technology-based health services are considered to be able to overcome the dilemma of the current health care system which needs to maintain the capacity to provide services not only for Covid-19 patients but also for patients suffering from acute illnesses while protecting doctors, nurses, and other health workers from exposure to the Covid-19 virus. (5). Technology-based health services are an innovation in the development of health services throughout the world, including Indonesia, known as E-health (6). E-health services are more commonly known as telemedicine. Indonesia is one of the countries that has implemented telemedicine. Telemedicine is one of the strategies to prevent the spread of the Covid-19 virus which is applied to health services using electronic communication technology. Telemedicine is a health practice with the use of audio, visual, and data communications, including care, diagnosis, consultation, and treatment as well as medical data exchange and remote scientific discussion. Telemedicine consists of several forms, namely online consultation, screening, and chatbot (7).

In the results of the survey on the application of telemedicine, it was found that patients were willing to do telemedicine, but several obstacles were found, namely, patients felt that health services without using telemedicine were services that were easy to access, patients felt more satisfied when meeting face to face with health workers or doctors, patients were not used to it. with telemedicine and cannot use it (8). The advantage of telemedicine is that it is a solution for patients to get health services amid the Covid-19 virus pandemic, besides that telemedicine services are known to be cheap, easy to access and provide comfort to patients. Meanwhile, telemedicine health workers can make services more effective and efficient in terms of monitoring, evaluation, and education (3). In Indonesia, telemedicine services have been introduced since 2012, then to increase the implementation of telemedicine during the pandemic, the medical council issued Regulation Number 74 of 2020 concerning clinical authority and medical practice through telemedicine in Indonesia (9). The existence of advantages and disadvantages as well as regulations related to telemedicine in Indonesia is the

background of researchers in researching telemedicine in health services in Indonesia to be able to know the description of the use of telemedicine in health services in Indonesia.

## II. IDENTIFY, RESEARCH, AND COLLECT DATA

The research method used in this research is a systematic study Literature Review reviewed from several journals related to the topic of the application and use of telemedicine in health services. Journals were searched using Google Scholar using the keywords "telemedicine in Indonesia", "telemedicine solutions", and "telemedicine". Articles are separated according to inclusion criteria, namely articles in Indonesian and English, and published in the period from 2015 to a maximum of 2022, pdf document type, and free of charge. The sources used in carrying out this literature review approach are books, journals, articles, and others. The filtering system in this literature review uses PRISMA flow diagrams.

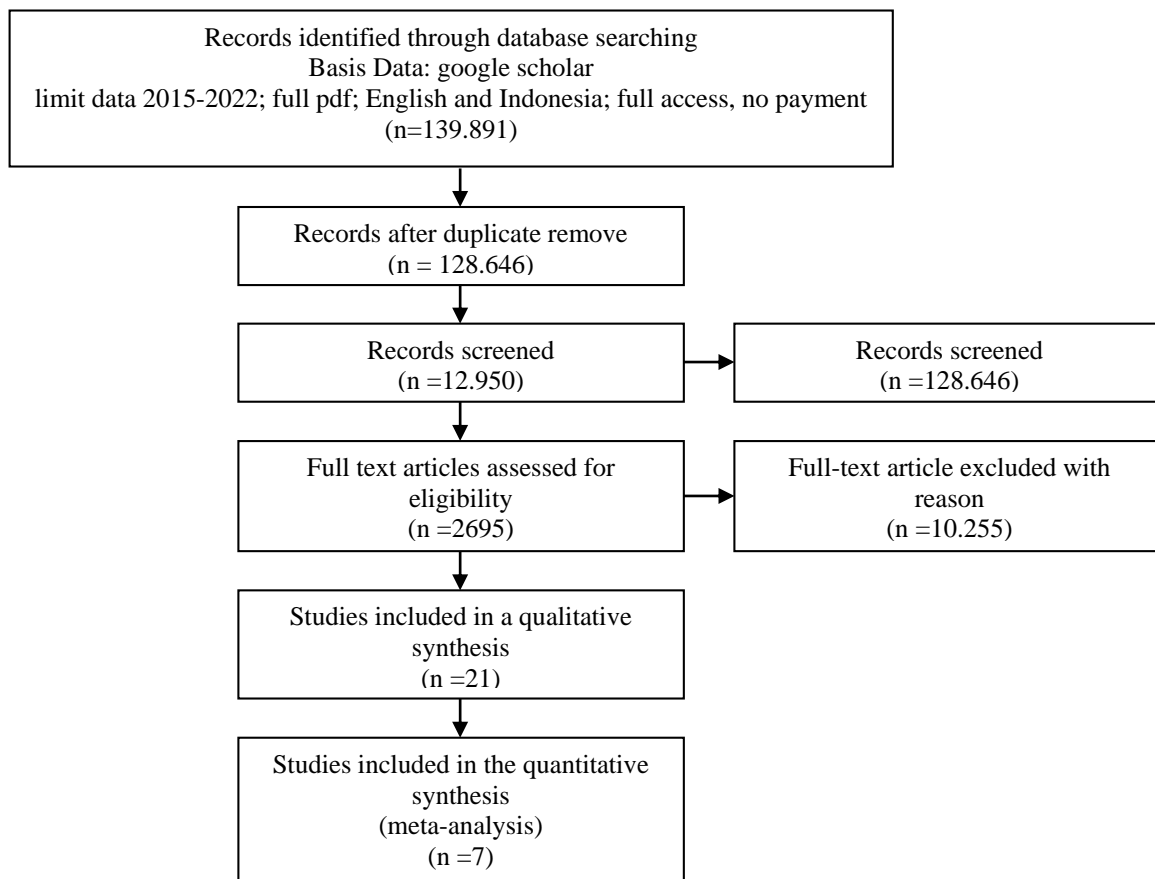


Figure 1. PRISMA Flow Diagram

## III. RESULT

In collecting articles about the use of telemedicine in health services in Indonesia during the Covid-19 pandemic, the authors conducted a search using keywords that had been compiled, and after that, a selection was made and 2,695 articles were generated and then re-selected according to meta-analysis obtained 7 articles. . Articles that have been selected, again carried out a descriptive approach by covering the discussion requirements, namely an overview of the use of telemedicine in health services in Indonesia during the Covid-19 pandemic. Based on a literature review conducted on 8 sources from national and international articles, the results can be seen in table 1.

Table 1. Overview of 7 National and International Article Sources

No	Writer	Year	Title	Results
1	Muslimin Machmud, Abdullah Masmuh,	2020	Artificial Intelligence In The Public Health Sector:	It was found that during the restriction of public activities during the Covid-19 pandemic, the Indonesian government

	Cahirudin Nasirin, Salahudin, Tawakkal Baharuddin, Andi Ernie		The Use of Telemedicine In Indonesia During Covid-19	in this case the Ministry of Health made a breakthrough in providing health services to the community while still complying with health protocols through Artificial Intelligence as a medium of information and communication. The government uses this technology through telemedicine services as an application used by health services. The use of telemedicine also affects the prevention and spread of the Covid-19 virus in Indonesia.
2	Carolina Kuntardjo	2020	Dimensions of Ethics and Telemedicine in Indonesia: Enough of Permenkes Number 20 the Year 2019 As a Frame of Telemedicine Practices in Indonesia?	implementation of telemedicine still has many obstacles in terms of ethics and law. The development of telemedicine is not in line with the regulations made. From an ethical point of view, which refers to the bioethical principles of beneficence, non-maleficence, autonomy, and justice, the practice of telemedicine makes it possible to endanger patient safety because doctors do not directly examine patients. The doctor-patient relationship is also fading. On the other hand, this will also endanger the position of doctors who carry out telemedicine because currently there are more and more malpractice demands
3	Rashid Bashshur, Charles R. Doarn, Julio M. Frenk, Joseph C. Kvedar, and James O. Woolliscroft.	2020	Telemedicine and the Covid-19 Pandemic, Lessons for the future	In this study, it was found that the Covid-19 pandemic had a dilemma for health care facilities. Health care facilities are required to provide the best service by maintaining physical distance and contact. The use of telemedicine as a tool to provide health services shows that telemedicine is effectively able to prevent the spread of the Covid-19 virus by maintaining a distance between doctors and patients.
4	Jay Portnoy, Morgan Waller, RN, BSN, and Tania Elliott.	2020	Telemedicine in the Era of Covid-19	In this study, the use of telemedicine still has several obstacles, but telemedicine services are a solution that provides health services during the Covid-19 pandemic. Online resources are used in terms of promoting telemedicine services in health facilities so that people can know more about the benefits and uses of telemedicine services.
5	Muhammad Abdul Kadir	2020	Role of Telemedicine in Healthcare during the COVID-19 Pandemic in the Developing Countries	The COVID-19 pandemic is a public health emergency of concern worldwide. The use of telemedicine services plays an important role in reducing the spread of the virus, providing efficiency in professional health care time, and reducing mental health problems. Many developing countries already have cellular and internet network coverage. Although this is limited in some areas of developing countries, the provision of virtual healthcare/ telemedicine can be applied. However, in general, people in developing countries do not understand telemedicine and its benefits.
6	Adhi Bahtiar, Adis Imam Munandar	2021	Stakeholder analysis on policies for the use of telemedicine in dealing with Covid-19 in Indonesia	The number of actors involved makes the three main actors in the category of definitive stakeholders, namely the Ministry of Health of the Republic of Indonesia, the Covid-19 Handling Task Force, and the Indonesian Medical Council (KKI) become the main determinants of telemedicine policies, both in suppressing the spread of Covid-19 and changing faces. national health service. Its role in formulating, implementing, and managing

				telemedicine implementation, including its training and supervision, will be vital to the future success of the service.
7	Salesika, Rico Januar Sitorus, Rizma Adlia Syakurah	2021	Use of Telemedicine as Information Technology for Alternative Solutions to Prevent the Spread of COVID-19: Literature Review	Telemedicine services during the COVID-19 pandemic are one of the alternative solutions to reach all regions. Telemedicine has a positive impact on public health. Telemedicine is increasingly in demand by users because it can facilitate medical personnel and users who need health services during a pandemic. Telemedicine allows it to be applied in Indonesia to improve the quality of health services.

#### IV. DISCUSSION

The use of telemedicine by medical personnel and patients can make services effective and efficient, both in monitoring, evaluating, and educating during this pandemic. With a variety of telemedicine methods, patients can report their symptoms and get advice and direction regarding their illness. In foreign countries, telemedicine has been used in handling cases of pulmonary, musculoskeletal, and neurology (3) As an effort to prevent the spread of COVID-19, the government in Indonesia is actively urging the public and medical personnel to use startup results in the form of telemedicine as a remote or online public health service application between hospital and patients. However, in its implementation, several challenges arise such as technological capabilities, data security and patient privacy, laws and regulations, usage guidelines, and individual patient problems themselves. The use of telemedicine in Indonesia is one of the strategic policies to minimize physical contact between doctors and patients to control the spread of the COVID-19 virus. The government in this case is referred to as one of the definitive stakeholders who play a major role in taking steps to make the implementation of telemedicine successful, that stakeholders have great power, authority, and interest to determine various telemedicine parameters, such as services, tariffs, supervision, and the telemedicine business model so that they face the world of health and the government's strategy in suppressing the spread of the COVID-19 virus can be successful and useful. Telemedicine has also been used as a health service solution during the COVID-19 pandemic and is strongly correlated with government and startup calls (4)

Policies on telemedicine contribute to the implementation and implementation of telemedicine in Indonesia. However, the implementation of telemedicine in Indonesia still has many ethical and legal obstacles (10). In Indonesia, the legal basis for implementing telemedicine is as follows:

- Law No. 29 of 2004 concerning Medical Practice
- Law Number 11 of 2008 concerning Information and Electronic Transactions
- Law Number 44 of 2009 concerning Hospitals
- Government Regulation Number 46 of 2014 concerning Health Information Systems
- Government Regulation Number 47 of 2016 concerning Health Service Facilities
- Minister of Health Regulation No. 269 of 2008 concerning Medical Records.
- Minister of Health Regulation Number 2052 of 2011 concerning Practice Permits and Implementation of Medical Practices
- Minister of Health Regulation Number 36 of 2012 concerning Medical Secrets

The development of telemedicine is not in line with the regulations made. From an ethical point of view, which refers to the bioethical principles of beneficence, non-maleficence, autonomy, and justice, the practice of telemedicine makes it possible to endanger patient safety because doctors do not directly examine patients. The doctor-patient relationship is also fading. On the other hand, this will also jeopardize the position of doctors who perform telemedicine because currently there are more and more demands for malpractice. Minister of Health Regulation Number 20 of 2019 concerning the Implementation of Telemedicine among Health Service Facilities is not sufficient as a guideline for implementing telemedicine in Indonesia, because the rules contained in it are not detailed enough ( 10). The implementation of telemedicine in Indonesia still has several obstacles and obstacles, including (11) :

1. Development of communication infrastructure, especially the internet network, which has not been evenly distributed in Indonesia, especially in remote areas.
2. Availability of hardware and software, which is still expensive.
3. Human resources, both in terms of quality and quantity.
4. The technological gap between urban and remote areas.
5. Inadequate regulations to regulate the use of digital formats.
6. Authentication, privacy, and data security cannot be fully guaranteed while improving data security systems will increase costs.
7. Service financing system for telemedicine service providers.
8. It is feared that the accuracy of the data sent is not of good enough quality so that it affects the process of diagnosis and therapy
9. The doctor-patient relationship as well as between health workers that is not carried out directly will reduce the quality of the relationship.

Telemedicine technology is theoretically useful for equitable distribution of health services in all regions, especially in Indonesia. However, it takes a good infrastructure aspect to implement it. The first aspect is telecommunication network connectivity and the second is the availability of equipment to access telemedicine evenly throughout the region. This is because Indonesia is a vast country and there are still many remote areas that do not have internet access (12). Following Nasution's research, (13) the geographical condition of an area is a challenge in itself to reach its connectivity where the transmission of the COVID-19 Virus is not only exposed to urban areas but also rural areas. Therefore the range of internet connectivity must reach rural areas. The use of web services must also be improved because this system is very supportive of telemedicine applications in processing medical images.

During the Covid-19 pandemic, visits to health care facilities will increase the risk of transmitting the Covid-19 virus to patients who are not infected with the Covid-19 virus. This is because the symptoms of Covid-19 vary. Many of the Covid-19 sufferers are asymptomatic, mildly symptomatic, asymptomatic, and pre-symptomatic. Accurate Covid-19 testing tools are needed as well as health service solutions that can minimize the prevention of the Covid-19 virus (14). The use of telemedicine is a solution related to health services that minimize the prevention of the Covid-19 virus and is one of the efforts to implement physical distancing. This is supported by the role of the Indonesian government in implementing telemedicine in Indonesian health care facilities. These stakeholders include the Ministry of Health of the Republic of Indonesia, the Covid-19 Handling Task Force, and the Indonesian Medical Council (KKI) which are the main determinants of telemedicine policies, both in suppressing the spread of Covid-19 and changing the face of national health services (4).

In one of the hospitals in Indonesia that implement telemedicine, several factors influence the use of telemedicine such as cultural/traditional factors, educational background, and family. So in the short term, it still takes time to be able to implement the system because some people still choose to consult with doctors face-to-face. But in the long run, these 7 telemedicine systems will be accepted by many people because they have many uses and benefits that can be obtained (15). This is inseparable from the diversity of culture, ethnicity, language, and geographical conditions of the Indonesian state (16).

In the field of Research and Innovation, BPJS Kesehatan wrote that the use of telemedicine services became the National Health Insurance Scheme (JKN). Telemedicine is used for patients referred back (PRB) and pregnancy can be included as a form of health service in the JKN scheme. The costs and payment schemes being piloted are very important enablers to support telemedicine services that are compliant with WHO recommendations (17). To support all of this, it is necessary to prepare Health Workers in managing telemedicine itself. Education and training are needed to use information and communication technology in these fields. The use of telemedicine in Indonesia requires readiness from all aspects, one of which is infrastructure. Indonesia as a developing country is not yet ready with the infrastructure to link information between organizations that are one of the supporters of telemedicine implementation. The readiness of health workers in Padang, Indonesia is still below the average with the highest mean of only 0.35 in the societal readiness dimension, which is one of the measurement dimensions used to see readiness related to the socio-cultural of the Indonesian people (18).

## CONCLUSION

The application of telemedicine in Indonesia is a solution for health services in Indonesia, especially in the face of the Covid-19 pandemic. Through the use of telemedicine, health services are increasingly effective and make it easier for people to access health services without having to go to a hospital or clinic. However, on the one hand, the use of telemedicine in Indonesia still has several obstacles, including related to regulations that have not fully accommodated the application of telemedicine, preventing doctors/health workers from taking malpractice actions, protecting patient privacy and the costs of telemedicine services that have not been detailed. In addition, the diversity of culture, language, ethnicity, and geographical location of the Indonesian state is also a challenge in the use of telemedicine. People, especially in rural areas, are not familiar with telemedicine, its benefits, and how to use it. This of course cannot be separated from the role of infrastructure in several regions in Indonesia which has not been evenly distributed and the level of education of the Indonesian people. The role of health workers and the readiness of health workers are also the main focus of the implementation of telemedicine in Indonesia. Education and training of health workers in the use of telemedicine need to be improved and pursued so that telemedicine services can become solutive and effective services.

## REFERENCES

1. Ciotti M, Ciccozzi M, Terrinoni A, Jiang WC, Wang CB, Bernardini S. The COVID-19 pandemic. *Crit Rev Clin Lab Sci*. 2020;57(6):365–88.
2. Susanna D. When will the COVID-19 pandemic in Indonesia end? *Kesmas J Kesehat Masy Nas (National Public Heal Journal)*. 2020;15(4).
3. Lubis ZI. Qualitative Analysis of the Use of Telemedicine as a Solution for Health Services in Indonesia during the COVID-19 Pandemic. *Physiother Heal Science*. 2020;2(2).
4. Bahtiar A, Munandar AI. Stakeholder Analysis on Telemedicine Utilization Policies in Facing Covid-19 in Indonesia. *PREPOTIVE J Public Health*. 2021;5(1):68–79.
5. Bashshur R, Doarn CR, Frenk JM, Kvedar JC, Woolliscroft JO. Telemedicine and the COVID-19 pandemic, lessons for the future. Vol. 26, *Telemedicine and e-Health*. Mary Ann Liebert, Inc., publishers 140 Huguenot Street, 3rd Floor New ...; 2020. p. 571–3.
6. Widhiarso A. Telemedicine and Telepharmacy: Challenges and Developments During the Covid-19 Pandemic. *J Farm AND Health*

- Indonesia. 2021;1(1).
7. Jamil M, Khairan A, Fuad A. Implementation of Social Network-Based Telemedicine Applications by Utilizing Cloud Computing Technology. *JEPIN (Journal of Education and Research Inform.* 2015;1(1).
  8. Portnoy J, Waller M, Elliott T. Telemedicine in the era of COVID-19. *J Allergy Clin Immunol Pract.* 2020;8(5):1489–91.
  9. Sitorus RJ, Syakurah RA. The Use of Telemedicine as Information Technology in the Context of Alternative Solutions for Preventing the Spread of COVID-19: Literature Review on Preventing the Spread of COVID-19: Literature Review. *MPPKI (Indonesian Health Promotion Public Media J Heal Promot.* 2021;4(4):448–55.
  10. Kuntardjo C. Dimensions of Ethics and Telemedicine in Indonesia: Enough of Permenkes Number 20 the Year 2019 As a Frame of Telemedicine Practices in Indonesia? *Soepra.* 2020;6(1):1–14.
  11. Prawiroharjo P, Pratama P, Librianty N. Telemedical services in Indonesia: Necessity, risks, and ethical limitations. *J Indonesian Medical Ethics.* 2019;3(1):1–9.
  12. Santoso BS, Rahmah M, Setiasari T, Sularsih P. The development and future of telemedicine in Indonesia. *Natl Conference Inf Technol Tech engineering.* 2015;
  13. Nasution TH, Fahmi F. Utilization of Web Services in Telemedicine Applications. In: *National Seminar on Medical Informatics (SNIMed).* 2012.
  14. Kadir MA. Role of telemedicine in healthcare during the COVID-19 pandemic in developing countries. *Telehealth Med Today.* 2020;
  15. Al Kharis K. Development of Telemedicine in Overcoming the Accessibility of Health Services During the Covid-19 Pandemic Primaya Hospital. *Cikarang Faculty of Economics Business and Social Sciences, Pelita Bangsa Univ.*
  16. Anwar A. Legal Aspects of the Use of Telemedicine. *FIKI 2013.* 2013;1(1).
  17. Wibowo B. Utilization of Information Technology in the Context of Preventing the Spread of COVID-19. *Ministry of Health of the Republic of Indonesia.* 2020;
  18. Abigael NF, Ernawaty E. Literature Review: Measuring the Readiness of Health Workers in Receiving Telehealth or Telemedicine between Developed and Developing Countries. *J Health.* 2020;11(2):302–10.

#### AUTHORS