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Post-pandemic telehealth app: a literature review on future opportunities and challenges

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ABSTRACT

Introduction: Telehealth is a medical service solution that can minimize the transmission of COVID-19 by conducting health care remotely. This study aims to analyze the challenges and opportunities of using telehealth to improve public health quality in the post-pandemic period.

Methods: The PRISMA method was used to synthesize 28 articles in this study. Furthermore, the research variable data is compared with empirical/theoretical support.

Results: Online treatment programs through telemedicine have economic benefits for the health care system and patients because they can efficiently use costs, time, and energy. However, several challenges come from the readiness of service providers, the capacity of service users, network affordability, and local government support.

Conclusion: The preparation of resources is needed so that telehealth can be used more efficiently and reach all elements of society in the post-pandemic period.

Keywords: COVID-19; health care; telemedicine, telehealth in pandemic era

INTRODUCTION

Telehealth/telemedicine is an alternative solution for medical services during the Covid-19 crisis. The existence of telehealth/telemedicine can minimize the use of healthcare infrastructure and allow healthcare to be carried out remotely. The massive use of telehealth is used especially during the COVID-19 pandemic. In a study conducted in Nebraska, 50 of the 51 agencies that sampled the study stated that they offer telehealth services and there has been an increase in usage during the COVID-19 pandemic.[1] This relates to the ease with which users can access health services due to social distancing rules that prevent users from meeting face-to-face with health providers.

Another thing that causes the increasing use of telehealth is the high level of participation of health workers in using telehealth. In addition, health practitioners plan to continue using telehealth services even after the pandemic ends. This is slightly different from the study in Amsterdam, which examined the factors associated with using contact tracing applications in individuals diagnosed with SARS-CoV-2, which stated that out of 29,766 positive cases, only 4824 reported using this tracking app.[1] This is related to sociodemographic characteristics where parents, women and people not born in the Netherlands are less likely to download contact tracing applications. The number of users of the application in the Netherlands is also relatively low compared to other countries in Europe, where in other countries additional features are added to the contact tracing application that make the application more attractive. This needs the attention of the Dutch government to further promote this application's use and add additional features to this application.

Patients consider the ease of using telemedicine necessary so that they feel familiar with the application used. In a study conducted in Canada, some patients felt that the inconvenient application made them choose not to use the telemedicine application and thought it was not suitable for them.[2] The obstacles they face are not related to the speed of internet access which is already quite good, but related to their habit of using applications that they find comfortable. It should be noted that some patient inputs, such as applications that are comfortable to use, can accommodate the deaf with additional text and images, provision of dialog boxes to be able to communicate privately with doctors and additional reminder features for further treatment should be a concern for providers to be able to develop telemedicine.

The use of telehealth in various health service providers is a form of change in health care practices that have been carried out since the beginning of the COVID-19 pandemic. Telehealth is an alternative to remotely evaluate patients who are quarantined and unable to come to health facilities for various reasons and to reduce the risk of exposure to covid-19.[3] Before the COVID-19 pandemic, not all academic health centers in the United States and Canada provided video conferencing platforms; some places still require service providers and users to be in designated locations. Still, since the beginning of the pandemic, these places have provided video conferencing services that allow service providers and users to participate from home.[4] A survey conducted on 247 pediatric surgeons in the Americas showed that the use of telehealth during the COVID-19 pandemic was more (62.3%) than before the Covid-19 pandemic (19.8%).[5] Another survey was also conducted on 74 doctors and 271 nurses in wound care management in Turkey. The survey results show that 47.3% of doctors and 33.9% of nurses use telehealth to assess and treat chronic wounds.[6] At this time, the pandemic

will turn into an endemic. Will the use of telehealth still be a useful application to be applied in all countries in terms of providing long-distance health services? Therefore, this study aims to analyze the challenges and opportunities of using telehealth to improve public health quality in the post-pandemic period.

METHODS

This literature review was conducted using the PRISMA method to determine scientific articles to answer research questions "What are the challenges and opportunities for using telehealth in improving the quality of public health in the post-pandemic period?". Article searches were conducted on 3 databases: ScienceDirect, Pubmed, and Proquest. The keywords used were the inclusion criteria for the search for scientific articles, namely 'Telehealth' AND 'Covid-19' OR 'SARS-Cov-2' OR 'Pandemic' AND 'Health Quality' OR 'Public Health Quality'. Inclusion criteria for the search for scientific articles included: (i) articles from peer-reviewed journals that are the result of original research that discusses the evaluation of the use of telehealth in improving the quality of public health during the COVID-19 pandemic; (ii) speak English; (iii) published in 2020-2022; and (iv) is a full-text article. After filtering and adjusting the research variables, 28 articles were analyzed, consisting of 8 articles published in the ScienceDirect database, 10 in the Proquest database, and 10 in the Pubmed database. Data analysis was carried out by synthesizing and comparing variable research data with empirical/theoretical support and presenting it through tables and descriptions. The results of this study are described in a narrative form that contains a complete description of 2 sub-discussions, namely the opportunities and challenges of using telehealth in the post-pandemic era.

RESULTS

The analysis results of the 28 selected articles are described in several sub-discussions, namely the use of research methods and geographic distribution of the research site. The results of the classification of research methods show that so far the most widely used data collection technique in various countries regarding the use of telehealth is the survey technique. Many researchers have chosen this data collection technique to identify telehealth implementation in improving public health quality. (Table 1)

This acceptance of telemedicine is shown by a significant increase in the use of telemedicine before and after the pandemic.[7]

Based on the results of the analysis of article distribution (Figure 1), over the last 3 years (2020-2022), scientific publications of research results related to the topic of telehealth have spread across the continents of Europe, Africa, North America, South America, and Asia. The largest number of research for the development of telehealth technology occurs in North America, an association of developed countries.

The Opportunities of Using Telehealth In the Post-Pandemic Era

Telemedicine, which was rarely used before the pandemic, is potentially used and will be maintained in the post-pandemic period because it has provided many benefits. Telemedicine is seen as effective in the treatment process compared to direct treatment.[8] Based on the identification and analysis of the 28 articles used, 3 major opportunities can improve the quality of post-pandemic telehealth implementation, including (1) Patient satisfaction that developed during the implementation of telehealth; (2) Telehealth can minimize disease transmission; (3) Economic benefits that patients experience while using telehealth.

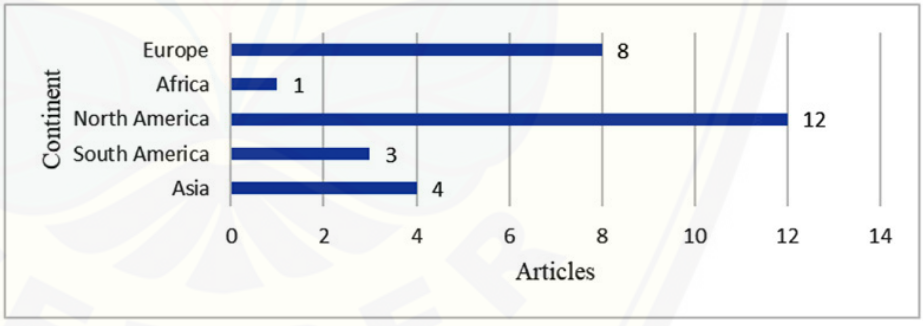

Figure 1. Geographical Area Study

Table 1. Data Collection Technique Distribution are Reviewed in A Database of 28 Articles

Research Methodology (data collection technique)	Authors (Year)	Total Articles
Survey	Arne Peine, et al (2020); Ashwin Ramaswamy, et al (2020); Stathopoulos et al (2021); Da Silva Aquino, et al (2021); Ellehuus et al (2021); Wu, et al (2020); Olivo, et al. (2021); Martinengo, et al (2021); Elhadi, et al (2021); Ritsema et al (2022); Lima, et al (2022); Wright, et al (2020); Shih, et al (2022); Reynolds, et al (2021); Gifford, et al (2021); Shah, et al (2022); Karadag, et al (2021); Folk, et al (2022); Capusan and Fenster (2021); Rao, et al (2022)	20
Experimental study	Lai, et al (2020); Calvo-Paniagua, et al (2022); Muschol, et al (2022)	3
Secondary data	Miller et al (2021)	1
Qualitative study	Freske and Malczyk (2021); Burton, et al (2022); Turner, et al (2022); Van Citters, et al (2021)	4

The Challenges of Using Telehealth In the Post-Pandemic Era

The use of telehealth is increasing, but obstacles can also occur in rural communities due to a lack of ability to access technology and internet access.[1] These challenges can be categorized into several groups based on who is responsible: (1) Service provider (difference in perception, lack of education, finance, customized type of service); (2) Service users; (3) Network provider; (4) Government.

DISCUSSION

The Opportunities of Using Telehealth In the Post-Pandemic Era

A study in the UK and Denmark on patients found that most patients could accept and positively respond to telemedicine as a substitute for face-to-face treatment. However, in certain critical cases, they still wanted to meet face-to-face with medical personnel.[9,10] Telemedicine, which was rarely used before the pandemic, is considered very potential to be used and will be maintained in the post-pandemic period because it has provided many benefits. Telemedicine is seen as effective in the treatment process compared to direct treatment.[8,9] A study in a health service even revealed that patient satisfaction with telemedicine was better than in-person visits during the past year and during the COVID-19 pandemic.[11] The use of telemedicine can also reduce the risk of exposure to Sars-Cov-2 for both medical staff and patients, especially those with special vulnerabilities. The popularization of online care programs through telemedicine is likely to have economic benefits for both the healthcare system and patients because it can efficiently use costs, time, and energy.[12] Telemedicine in the future needs to be more tailored to the preferences of its users. A study found that patients of different ages have different preferences.[10]

Telehealth is a service that is needed during the COVID-19 pandemic because it can minimize the risk of contact between health practitioners and patients. COVID-19 is indeed a factor that can encourage the use of telehealth, but weather factors, time spent traveling and other challenges increase the need for telehealth use. In practice, telehealth also plays an important role in improving treatment plans, increasing attendance according to schedule, and in certain cases, increasing the efficacy of treatment management. Some health practitioners also revealed that telehealth services make patients more open to expressing their complaints.[1]

After the COVID-19 pandemic period ends, telehealth in all health care facilities is likely to be continued because the benefits felt are not only related to preventing the spread of COVID-19. The survey conducted at the Children's Lung Clinic regarding satisfaction with the use of telehealth was very high, which was indicated by 82% of participants strongly agreeing or agreeing that they would use telehealth services again. The reasons for the satisfaction of respondents in this survey were felt in several aspects, such as the convenience of communicating with doctors, easy to learn and use of telehealth, still being able to see doctors as if meeting in person, patients being able to express their feelings effectively, increasing access to health services.[13]

In addition, telehealth also has advantages in terms of time and cost efficiency, ease of making appointments, and time/schedule flexibility.[6,14,15] The benefits of this time/schedule flexibility are felt especially for students.[16] The more flexible time impacts increasing access to health services.[16] Research conducted on 546 contraceptive service providers revealed that several positive perspectives regarding telehealth services enable continuous, more efficient care, including updating prescriptions, simplifying the coordination process, and accommodating patients who are difficult to visit in person.[16]

The Challenges of Using Telehealth In the Post-Pandemic Era

The use of telehealth before, during and after the end of the pandemic faces many challenges in its implementation. Limitations in the physical examination are one of the obstacles that are quite clearly visible in telehealth services compared to face-to-face services, making it difficult to conduct a comprehensive assessment.[6,17] Barriers to the lack of technological support, such as access to the internet, are a challenge to using telehealth.[5,6,16,18]

In this case, telehealth/telemedicine service providers are health service providers, including regional hospitals, teaching hospitals, private clinics, private practice clinics, rehabilitation clinics, and so on. The parties directly involved in telehealth/telemedicine are doctors, nurses and other health workers. Compared to private practice clinics, positive perceptions of telehealth/telemedicine were found in hospitals. Positive perceptions about telehealth/telemedicine were also significantly higher among doctors than nurses.[19] This is, of course, a challenge, especially for private practice clinics, to improve the management of the implementation of telehealth/telemedicine to create a high positive perception of telehealth/telemedicine. Perception can be formed of them through the educational process. Education about telehealth/telemedicine is also a challenge for the future sustainability of this method. In a study, knowledge about telehealth/telemedicine among health workers was deemed inadequate. Service providers should provide specific budgets to increase the effectiveness and efficiency of telehealth/telemedicine, such as additional investment in infrastructure, upgrading of clinical staff, and additional clinical and administrative staff training, potentially impacting telehealth/telemedicine implementation.

The challenges regarding service users, in this case, our patients, related to social aspects such as language and lack of technical skills in using technology for telehealth/telemedicine. For example, in telehealth/telemedicine hematology, not all older patients are comfortable with electronic devices.[10] Furthermore, telehealth/telemedicine relies heavily on the internet network. It takes a stable and strong connection for this service to run smoothly. Based on this, the quality of internet connections by network providers needs to be improved to ensure the widespread use of internet services during the COVID-19 outbreak and beyond. This is important considering that the satisfaction level of telehealth/telemedicine users is strongly influenced by the high speed of teleconsultation and the accuracy of the information received

in the consultation process.

The government has an important role in maintaining safe and effective telehealth/telemedicine. Several studies on telehealth/telemedicine stated that the challenge ahead for the government is how the government can provide and use the state financial budget to support the popularization of modern electronic devices and internet services, which are important to support telehealth/telemedicine. In addition, the government is also deemed necessary to make relevant laws to regulate and protect the privacy of patients/telehealth/telemedicine patients/users.[13]

CONCLUSION

There are so many positive impacts arising from the application of telemedicine during a pandemic. Online treatment programs through telemedicine have economic benefits for the healthcare system and patients because they can streamline costs, time, and energy. However, several challenges must be faced to further improve the effectiveness and satisfaction of telehealth/telemedicine users. These challenges can come from service providers' readiness, service users' capacity, network affordability, and local government support. Therefore, it is necessary to prepare resources so that telehealth/telemedicine applications can be more efficient and reach all elements of society in the post-pandemic period.

MANDATORY:

Conflict of interest

None declared.

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This literature review research uses articles available in open access and free of charge. So that the financing comes from each researcher independently

Ethics

This literature review research does not use research ethics studies.

Author contributions

RI, AIS, and DIA contributed equally to this work. RI, AIS, and DIA contributed to the conception and design of this viewpoint and drafted the primary version of the manuscript. GN contributed to the conception and design of this viewpoint, drafted the primary version of the manuscript, edited the manuscript, and reviewed the final version. All authors discussed and agreed on the implications of the study findings and approved the final version to be published.

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