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Survey of Perception and Behavioral Intention of the Young Generation Regarding Telemedicine Services During the COVID-19 Pandemic

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Abstract

This study aims to analyze the perceptions of the younger generation and their behavioral intentions to use telemedicine services. This type of research is an online survey using Microsoft Forms. The data analysis technique used an inductive, general qualitative approach. The respondents were 175 people. The survey was conducted between June and August 2021. The study obtained two results, namely, the first is the perception of the younger generation regarding telemedicine services. Second, it was found that the average respondent's behavioral intention was 4.10 out of 5, or the category agreed to use telemedicine services. Viewed from the seven measurement variables, the average response of respondents is 65%, or Telemedicine is categorized as well received. The younger generation has a good perception of telemedicine services, and the existence of behavioral intention indicates individual readiness to use telemedicine services not only during the pandemic but also after the passing of the COVID-19 pandemic. Telemedicine has become a new habit.

Keywords: perception, the younger generation, Telemedicine, Covid-19, Indonesia

Introduction

The COVID-19 spike has had a tremendous impact on healthcare systems. The shift from clinical care to telemedicine visits has accelerated (Tanaka et al., 2020). Telemedicine is the real-time delivery of health services through digital communication technology over long distances between patients and providers (Hilty et al., 2013). Telemedicine aims to ensure cost-effective, timely, and fair service

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provision for everyone, with secure communication between patients and doctors (Hall et al., 2015). Telemedicine became even more evident during the COVID-19 pandemic, as healthcare professionals worldwide communicated efficiently with their patients using virtual clinics (i.e., phone calls, e-mails, and video-based conferencing) (Alsaffar et al., 2020). There has been a marked reduction in outpatient service activities locally and internationally (Khera et al., 2020; Provenzano et al., 2020).

In several countries around the world, the use of telemedicine technology has been around for a long time. However, this technology has only started to be commonly used in Indonesia in recent years. The implementation of Telemedicine is based on the Regulation of the Minister of Health of the Republic of Indonesia Number 46 of 2017 concerning the National E-Health Strategy. Then, during the COVID-19 pandemic (Regulation of the Minister of Health of the Republic of Indonesia Number 46 of 2017 Concerning the National E-Health Strategy, n.d.), it was followed up by the Regulation of the Minister of Health of the Republic of Indonesia Number 20 of 2019 concerning the Implementation of Telemedicine Services Between Health Facilities Regulation of the Minister of Health of the Republic of Indonesia Number 20 of 2019 concerning the Implementation of Telemedicine Services Between Health Facilities, n.d.). Because the urgency of the use of Telemedicine was emphasized again by the issuance of the Circular of the Minister of Health of the Republic of Indonesia Number HK.02.01/MENKES/303/2020 concerning the Implementation of Health Services Through the Utilization of Information and Communication Technology in the Context of Preventing the Spread of Corona Virus Disease 2019 (COVID-19) Letter Circular of the Minister of Health of the Republic of Indonesia Number HK.02.01/MENKES/303/2020 Concerning the Implementation of Health Services Through the Utilization of Information and Communication Technology in the Context of Preventing the Spread of Corona Virus Disease 2019 (COVID-19, n.d.). These regulations provide a reference for providing health services by utilizing information and communication technology to prevent the spread of COVID-19 through Telemedicine.

Telemedicine can overcome several challenges that have hindered equitable access to health, such as the uneven distribution of health workers, geographical problems, and the lack of health facilities in certain areas. WHO recommends several things that can be done using telemedicine services. First, as a means of technology to facilitate treatment control, such as answering questions about the treatment being or has been completed by a patient. Second, it makes it easier for patients to find the laboratory results accurately, especially if they are read usually. Third, provide access to communicate with health

workers from places that are difficult to reach. Fourth, making it easy for patients to gain knowledge about simple medical procedures that can be done at home, such as first aid for diarrhea or injury, Fifth, provide advice on medical specialties that are suitable for the health problems currently being experienced by patients and for example, providing advice regarding dentistry specialties or pediatrician sub-specialties. Sixth, cutting lines at health facilities and making patient services more efficient (Effendi, 2020).

The use of telemedicine services, in general, has started to be carried out in Indonesia since 2017, but their use has only become more widespread during this pandemic. When service providers and the government have prepared this service, the question is: what about the community's readiness as service users? A way to find out the community's readiness is by conducting a public perception survey. The public perception survey is one of the research activities helpful in assessing the public's perception of government work programs that will be carried out, are being carried out, or have already been carried out. The study aimed to analyze the perceptions of the younger generation and their behavioral intentions to use telemedicine services during the COVID-19 pandemic. The selection of the younger generation was made with consideration as research subjects. It was not only analyzing perceptions but also finding out the young generation's behavioral intentions for using Telemedicine now and in the future.

Method

Study design

This research is a survey. The cross-sectional survey was an anonymous online survey that could involve young participants, namely students at a state university in East Java, Indonesia. The selection of young people as respondents with the consideration of knowing the attitudes and behaviors of using Telemedicine in the future lie in the hands of the younger generation. An online survey using Microsoft Forms. The survey was conducted between June and August 2021.

Group of study

This study involved 175 students. All participants have agreed to be surveyed and fill out an online questionnaire. All data provided by participants in this study will be kept confidential and will follow the principles of anonymity and pseudonymity.

Instrument and procedure

The online questionnaire instrument was designed and optimized using Microsoft Forms. The survey consists of seven entries for

participants' personal and demographic data and 17 questionnaire questions. Survey time is around 15–20 minutes. Before the questionnaire was distributed, a validity assessment by the three experts was first carried out, and the results of the validity assessment stated that the entire list of questions was valid and suitable for measuring indicators. Besides that, the reliability of the results of the validity assessment carried out by the experts also showed reliable results.

All data obtained were analyzed inductively using a general qualitative approach. All incoming responses will be downloaded from the Microsoft Form and processed using number-crunching software. The data were then analyzed, grouped according to predetermined indicators, and analyzed using an inductively general qualitative approach based on the responses given by the respondents. The gender factor in this study was excluded from the data analysis, assuming equal equality between male and female participants.

Results

Summary of Studies

Relevant Studies	Description
(Lu et al., 2022)	The use of mobile apps has become a new trend during COVID-19 in Indonesia. This self-service application forms a new behavior in a society without direct interaction with medical staff and still gets doctors' advice and remote medical treatment. The use of mobile applications provides satisfaction to the community. It forms a new habit in the community to maximize the use of telemedicine applications to solve the health problems they face.
(Kubota et al., 2022)	Telemedicine has developed during the COVID-19 pandemic, one of which is to provide health services to people with epilepsy, but its implementation still has some limitations. The results of this study indicate that doctors at epilepsy health centers experience limitations that cause the use of Telemedicine to fail. In addition, the telemedicine program overloads the work of medical personnel due to a shortage of medical personnel.
(Hsieh et al., 2022)	The COVID-19 outbreak has made innovations in remote health services more developed and made it easier for patients to consult doctors and other medical personnel. Telehealth during the pandemic has also changed people's habits and

	behavior patterns in accessing health services. It can be a means of socializing healthy living in the community. The importance of education to maintain a healthy lifestyle during a pandemic and the limited communication between doctors and the community make telehealth essential for creating a healthy lifestyle.
(Ferorelli et al., 2020)	Telemedicine services in Italy are divided into three sections: telemedicine specialists, telehealth, and teleassistance. By law, Telemedicine, developed during the COVID-19 pandemic, is dedicated to making it easy for the public to access health services. However, on the other hand, there is no legal regulation that forms the basis for the implementation of the telemedicine program. So several legal aspects need to be considered concerning telemedicine services, such as the authority to protect the confidentiality of patient data and rules that guarantee that the community will be served professionally and well. Telemedicine has not been able to replace manual health services completely. Therefore, it is necessary to integrate services with due regard to formal legal aspects to support the development of Telemedicine.
(Metzger et al., 2021)	Telemedicine was widely used during COVID-19, one of which was used to perform operations on patients and one for pediatric patients. Based on a survey, 94.4% of people who used Telemedicine during the COVID-19 pandemic tended to use Telemedicine to obtain health services via video teleconference with doctors who treat pediatric patients.
(Zhu et al., 2020)	Telemedicine is suitable for providing routine health services and feedback to patients through the results of their examinations. The use of Telemedicine makes it easy for patients as well as telemedicine service providers to access patient health examination results. The use of Telemedicine makes interactions between patients and service providers more effective.
(Rush et al., 2021)	The use of Telemedicine during a pandemic is not limited to urban communities. On the other hand, Telemedicine is also used to provide services to people in rural areas where it was previously not widely used due to a lack of literacy. Nearly 2/3 of the population in western

	Canada already has access to Telemedicine and requires services related to mental health. Many health services are provided through telemedicine services; unfortunately, limited internet constraints are the reason for not maximizing the use of Telemedicine for rural residents in Canada.
(Deeb et al., 2021)	Telemedicine, which uses various applications in health services, has many benefits for the community, including a patient with Parkinson's disease. On the other hand, it is not only an advantage; Telemedicine for people with Parkinson's also encounters several problems. There are still several problems faced by telemedicine users, including problems related to technology and service instructions.
(Huang et al., 2022)	The rapid development of artificial intelligence is utilized to provide complete telemedicine services to the public. Using AI in Telemedicine makes diagnosing and tracing during the COVID-19 pandemic easier for doctors. The use of artificial intelligence while handling COVID-19 patients makes it easier for doctors to monitor the symptoms suffered by patients. It makes it easier for doctors to make medical decisions for patients. However, a small area for improvement in this medical application is that people also need appropriate comparative data to check their health condition.
(Bitar & Alismail, 2021)	Telemedicine, e-health, and telehealth have been crucial in health services during the COVID-19 pandemic. Technology such as Telemedicine makes it easier for people with chronic illnesses to get services during a pandemic. Telemedicine innovation has also developed with a delivery service model and additional services for consulting with experts developed at Tel-Health during the COVID-19 pandemic, such as video and audio-based services.
(Warner, 2022)	Telemedicine makes medical services for burn sufferers in the UK more effective because they do not need to see a doctor in person to get medical services. With the increasing number of patients, Telemedicine helps reduce costs, makes services faster, and makes it easier for doctors to advise their patients. In general, Telemedicine makes medical services more efficient.

(Brunet et al., 2021)	The existence of COVID-19 has accelerated the development of IT in the health sector. Telemedicine for COVID patients during COVID-19 increased rapidly from 700 users in 2020 to 22,500 in 2021 during the COVID pandemic. This differs from when conditions were normal and few people used Telemedicine. On the other hand, non-Covid patients use Telemedicine to carry out consultations and monitor health conditions.

Table 1 Respondents' Perceptions of Telemedicine Services

Variable	Percentage %	Category
Perceived usefulness of telemedicine services	84	Very Good
Perceived ease of use of Telemedicine	81	Very Good
Perception of Health Legal Guarantee Telemedicine Platform	55	Enough
Perceptions of the Quality of health services through Telemedicine	72	Good
Perception of the cost of telemedicine services	34	Not Good
Perceived Influence of Government and Society in the Use of Telemedicine Services	75	Good
Perceptions of Telemedicine's supporting technology infrastructure	58	Enough
Average	**66**	**Good**

Source: Primary Data Year 2021

Measuring respondents' perceptions of telemedicine services uses eight variables. The highest percentage value of the variable perceived usefulness of telemedicine services is 84%, in the very good category. In contrast, the one with the lowest percentage is the variable perceived cost of telemedicine services, categorized as unfavorable (table 1).

Table 2: Satisfaction and behavioral intention of users of telemedicine services

Variable	Perceptions
The average satisfaction of respondents who have used telemedicine services.	4.0 of 5
The average behavioral intention of respondents is to use telemedicine services now and in the future.	4.10 of 5

Source: Primary Data year 2021

Satisfaction and attitudes towards telemedicine services are shown in the average satisfaction of respondents who have used telemedicine services and the average behavioral intention to use telemedicine services now and, in the future, (table 2).

Discussion

To support the provision of information related to COVID-19, the government is working with 12 telemedicine service providers that the public can utilize. These telemedicine services are connected to the nearest health facility and COVID-19 referral hospital. Twelve digital companies are the Indonesia Telemedicine Association members and work with the government. These companies are DokterSehat, Alodokter, Halodoc, SehatQ, KlikDokter, Good Doctor Technology Indonesia, ProSehat, Healthy Medical Link, Klinikgo, Nurseku.id, Aveecena, and Docquity. Telemedicine companies provide consulting services for COVID patients and non-COVID patients. The government is responsible for services for COVID patients who are self-isolating. Apart from this service, the public can also use online medical consultations provided by BUMN. Telemedicine services are accessed online using mobile devices and computers.

Table 1 shows that measuring respondents' perceptions of telemedicine services uses seven variables. These variables include: 1). Perceived usefulness of telemedicine services obtained a percentage value of 84%, or very good. The COVID-19 pandemic catalyzed the adoption of earlier telemedicine ideas. It helps support social distancing, removes patients from crowded waiting rooms and public transportation, helps sustain appropriate care in times of limited healthcare access, and supports chronically affected patients to meet medical needs. And their psychology in times of social and medical crisis (von Wrede et al., 2020); 2). Perceived ease of use of Telemedicine gets 81%, or very good. The younger generation is used to using information technology devices, so Telemedicine is considered easy and can be used for future follow-ups (Li et al., 2020); 3). The perception of legal health guarantees on the telemedicine platform obtains a percentage value of 55% or the excellent category, meaning it is neutral. Health legal guarantees need to be considered by the government. Therefore, regulations are needed to ensure the development of telemedicine services following the goals and noble values of medical ethics based on the Doctor's Code of Ethics and Doctor's Oath. It is hoped that the government, the Indonesian Doctors Association, and the Medical Ethics Honorary Council can support and oversee the development of this telemedicine service in a good direction and cooperate in auditing and evaluating telemedicine services in Indonesia (Prawiroharjo et al., 2019); 4). Perceptions of the quality of health services through Telemedicine get a percentage of 72% in the "good" category; this question is only answered by those who have used telemedicine services. Not all health services can use Telemedicine, especially for those who need a physical examination, so hybrid arrangements are needed. 5). Perceptions of the cost of telemedicine services get a percentage of

34% or less. Telemedicine for COVID-19 patients is free of charge by the government. In contrast, for non-COVID-19 patients, telemedicine service fees are paid independently by patients not integrated into health insurance. Cost is still an issue that needs to be considered and regulated by the government (Mauro et al., 2020; Riyanto, 2021); 6). On the perception of government and community influence in telemedicine services, a percentage of 75%, or the excellent category, is obtained. The government continues to socialize and provide education on Telemedicine, especially for COVID-19 patients who are in self-isolation. Telemedicine increased significantly during the COVID-19 pandemic (Mouchtouris et al., 2020); 7). Perceptions of Telemedicine's supporting technology infrastructure get a response percentage of 58% or more significant. Virtual clinic service providers are via telephone calls, e-mail, telemedicine platforms, WhatsApp, and video-based conferencing (Alsaffar et al., 2020; Li et al., 2020). Technological infrastructure that supports Telemedicine is urgently needed, such as a stable internet and electricity network, and others, to ensure the smooth implementation of Telemedicine and support the satisfaction of telemedicine users. Based on these seven variables, it is averaged to show that the young generation's perception of telemedicine services is good. Telemedicine services according to needs, situations, and conditions.

Table 2 shows the satisfaction and attitude toward using telemedicine services. On the average satisfaction indicator of respondents who have used telemedicine services, they get a score of 4.3 out of a maximum score of 5, or a score of 4.3 is categorized as good. The younger service users like the convenience offered by telemedicine services. Several similar studies also show satisfaction with telemedicine service users (Fieux et al., 2020; Semprino et al., 2020; Serper et al., 2020), and the average behavioral intention of respondents to use telemedicine services now and in the future is 4.10 of 5, or the "good" or "agree" category. Respondents agreed to use telemedicine services now and in the future. This means a behavioral intention indicates an individual's readiness to perform certain behaviors (Ajzen, 2020). At the younger generation level, the use of technology and information systems has become a habit, so the presence of Telemedicine can be well received. It appears that this behavioral intention explains the behavior of the majority of adopters, who pay attention to convenience and usability, such as helping them manage their health better, and believe technology can be used effectively to communicate with health care providers for medical needs (Putri et al., 2021). The use of telemedicine services not only during the pandemic but also after the end of the COVID-19 pandemic has become a new habit; however, certain services that cannot be used with Telemedicine are still required to be carried out clinically. As

we advance, telemedicine services will continue to be designed not to replace doctor visits but as a companion to better, more efficient, and, of course, appropriate treatment.

Conclusion

Telemedicine has become a new habit. The study obtained two results, namely the perception from seven measurement variables: usability, convenience, legal health guarantees, quality of health services, costs, government and society, and supporting technology infrastructure. The average respondent's answer was 65%, categorized as "good" or "agree," meaning the perception of the younger generation about telemedicine services is well received. The second result found that the average behavioral intention of respondents to use telemedicine services now and in the future is 4.10 of 5, or the category agrees. This means that there is a behavioral intention indicating individual readiness to use telemedicine services not only during the pandemic but also after the passing of the COVID-19 pandemic.

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