Overview of the Utility of Using Telerehabilitation on Physiotherapy Services in Indonesia

Arif Pristianto[1], Wa Ode Muzdalyfah[2], Rita Setiyaningsih[3]

Physiotherapy Departement of Universitas Muhammadiyah Surakarta, Central Java, Indonesia[1,2]
Physiotherapy Departement of STIKES Bakti Utama Pati, Central Java, Indonesia[3]

Correspondence Email: arif.pristianto@ums.ac.id[1]
ORCID ID: https://orcid.org/0000-0003-3312-5136[1]

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ABSTRACT:
Introduction: The development of digital technology has also brought changes to aspects of health services so the telemedicine system was developed. In physiotherapy services, this system is known as telerehabilitation or telephysio which uses digital communication technology media to carry out assessment, diagnose, intervention, evaluation, education, consultation and coaching. The emergence of the COVID-19 pandemic made implementing this system even more popular, including in Indonesia.
Objectives: The objective of this study is to see an overview of the utility of using telerehabilitation in physiotherapy services in Indonesia.
Methods: The research method is descriptive observational.
Results: The results of this study show that the majority of physiotherapists using telerehabilitation in Indonesia are in the Jawa and Bali islands (69.0%). The largest specialization is pediatric physiotherapists (37.5%). Physiotherapists quite understand the advantages and disadvantages of this system, even though around 75.0% feel they are still more comfortable practicing with direct visits because they cannot examine patients as with direct visits. 93.8% stated that telerehabilitation will still be needed even though the COVID-19 pandemic is over.
Conclusions: An overview of the utility of using telerehabilitation in physiotherapy services in Indonesia shows that this system has not been spread evenly throughout Indonesia and its implementation is still not significantly satisfactory.

1. Introduction

The rapid development of information technology systems is currently bringing humans into the digital era. One of them is the presence of various online-based health service platforms with various start-up brands. The development of technology and information is increasingly accelerating, especially internet-based digital information technology which has certainly been proven to have a positive impact on many aspects so that work activities become more effective and efficient or fast and precise. Due to the widespread use of computers, the internet has now created a larger and more attractive market for people.[1] In January 2021, the number of internet users in Indonesia was recorded at 2026 million users. This makes it possible to use telehealth/telemedicine in Indonesia.[2] The aspects needed in telehealth are the efficacy aspect and the visibility aspect. The efficacy aspect is an assessment of a product or service regarding how much benefit it will bring to the population to whom the product or service is provided. The visibility aspect includes all factors regarding signal constraints as well as the remoteness of the area or distance to reach adequate health services.

Indonesia, as an archipelagic country with a large area, still finds limited health service infrastructure, especially in DTPK (Disadvantaged Border and Island Areas) so people's access to health service facilities is still low.[3] As stated in a study, Indonesia is an archipelagic country, which causes a gap in health services between urban and rural areas.[4] Apart from the problem of remoteness, for the physiotherapy profession the problem is even more complex because the number of physiotherapists in Indonesia is still inadequate and is only concentrated in a few big cities. This shortage is often caused

by a variety of factors, including a lack of graduates from physiotherapy programs, unequal distribution between urban and rural areas, and high levels of burnout among physiotherapy professionals. As a result, many patients who need care have to wait longer for services or do not receive adequate care at all. This shortage also burdens existing physiotherapists, increasing their workload and potentially reducing the quality of care due to a lack of time and resources for each patient. Additionally, these limitations may hinder preventive and educational efforts that are important for preventing injuries and chronic conditions, exacerbating the overall burden of disease. As quoted from the World Physio page a forum for physiotherapy organizations throughout the world, the proportion of physiotherapists and the population of Indonesia still does not meet the standard, namely 0.58 per 10,000 of Indonesia's population. This means that the ratio of physiotherapists to the population still has not reached 1 person in 10,000 population.[5]

One form of innovation and use of technology in the health service sector is telemedicine. There are several terms to refer to telemedicine or long-distance health services carried out in the field of physiotherapy, such as telephysio or telerehabilitation. Telerehabilitation refers to the delivery of rehabilitation and habilitation services via information and communication technologies (ICT), also commonly referred to as “telehealth” technologies. Telerehabilitation services can include evaluation, assessment, monitoring, prevention intervention, supervision, education, consultation and coaching. This kind of services can be deployed across all patient populations and multiple healthcare settings including clinics, homes, schools or community-based worksites.[6] Telerehabilitation brings increased efficiency in the delivery of health services. By reducing the need for travel and clinic wait times, telerehabilitation allows more patients to be served in less time. This can reduce the workload for health workers and increase overall service capacity. Telemedicine allows patients to benefit financially and the proper implementation of telemedicine can eliminate barriers to health access and provide quality care.[7] Apart from that, telemedicine for the elderly during COVID-19 can improve wellness.[8] A study took a population of musculoskeletal, cardiac, respiratory, and neurological patients aged 18 years and over who were given physiotherapy procedures via telerehabilitation. This study showed positive clinical results and there was no significant difference in results with physiotherapy in face-to-face or conventional visits.[9] Physiotherapists can use telephone calls, video conferences, or send messages via applications downloaded on smartphones such as WeChat, Line, WhatsApp, or other applications that are easy and widely used by the public.[10]

Therefore, given the various facts regarding the problems faced in efforts to provide health services, it is hoped that telehealth/telemedicine can be an alternative solution as a tool that has the potential to be implemented in physiotherapy services, including in Indonesia.

2. Objectives

In Indonesia, even though the term telerehabilitation or telephysio is not as well-known as the existing telemedicine start-up brands, telerehabilitation in Indonesia has started to be intensively promoted since the COVID-19 pandemic due to the implementation of restrictions on visits to hospitals to stop the chain of virus transmission. The COVID-19 pandemic of the 2020s has fueled the rapid growth of the company in recent years, necessitating a deeper understanding of the factors that contribute to customer satisfaction in the online context.[11] Looking at the statutory provisions as a legal basis, the right to legal protection for medical and health personnel should be given great attention for the welfare of health services, especially during the COVID-19 pandemic crisis.[12] The Covid-19 pandemic has had a tremendous impact throughout the world with the virus having infected millions of people.[13] COVID-19 was marked by the launch of a physiotherapy program for long-term Covid patients via tele-physio at the WPTD (World Physical Therapy Day) event in 2021. However, before the COVID-19 pandemic hit, it turned out that there were already several physiotherapy clinics in Indonesia that had first started practicing telerehabilitation or telephysio. This is also proof that it is not only because of the COVID-19 pandemic that this telephysio system is being implemented. Based on searches of scientific articles, not many studies in Indonesia have addressed the topic of the utility conditions of

using telephysio, and what the actual conditions of its application have been like so far. Therefore, the aim of this paper is to conduct research related to looking at the utility of using telephysio in physiotherapy services in Indonesia.

3. Literature Review

Physiotherapy is a form of health service aimed at individuals and/or groups to develop, maintain, and restore body movement and function throughout the life span by using manual treatment, movement enhancement, equipment (physical, electrotherapeutic, and mechanical), function training, and communication. Physiotherapists also play a role in special and complex services and are not limited to inpatient, outpatient, intensive care, child development clinics, geriatric clinics, stroke units, sports clinics, and/or rehabilitation.[14] In addition, physiotherapists also provide patient education about injury prevention and self-care, as well as conducting research to improve clinical practice and treatment outcomes. With an evidence-based approach, physiotherapists collaborate with other health professionals to provide holistic and integrated care, ensuring each patient receives treatment that suits their needs.

Telehealth from a rehabilitation perspective began in 1993, Sparks conducted research entitled Alternatives for cardiac rehabilitation patients unable to return to a hospital-based program. This research is about the use of technology to monitor heart function during home exercise. In general, evaluations of these programs are effective, safe, and feasible.[15] Later in 2000, Kaiser Permanente evaluated the effectiveness of a remote video system that allowed chronically ill patients and their caregivers to interact in real-time. From an economic perspective, telerehabilitation offers significant cost savings. For patients, the reduction in transportation costs and time lost traveling to health facilities is a clear benefit. Additionally, for healthcare facilities, telerehabilitation can reduce operational costs by reducing the need for physical space and other resources.

Physiotherapy telerehabilitation is an innovative approach to providing rehabilitation services via long-distance communication technology. By using video calls, mobile applications, and other digital platforms, physiotherapists can observe, guide, and assess patient progress without having to meet them in person. Research shows that telerehabilitation can provide comparable results to in-person therapy for a variety of conditions, such as orthopedic injuries, stroke, and other chronic illnesses.[16] In addition to increasing accessibility, especially for patients in remote areas, telerehabilitation also allows patients to receive care in the comfort of their own homes.

Another major benefit of physiotherapy telerehabilitation is time and cost efficiency. Patients do not need to travel to a clinic or hospital, which saves time and transportation costs. In addition, telerehabilitation allows physiotherapists to schedule more sessions in a day because the time usually spent setting up rooms or waiting for patients can be minimized. According to Seron et al.[16], this efficiency also helps in reducing the burden on the health system and speeds up the patient's recovery process by providing more frequent and structured therapy sessions.

Although telerehabilitation offers many benefits, there are several challenges that need to be overcome, such as the need for a stable internet connection and adequate technological devices. Additionally, not all patients are comfortable or familiar with this technology, which may impact the effectiveness of therapy. However, with proper training and technical support, many of these obstacles can be overcome. According to Naqvi et al.[17], telerehabilitation has great potential to continue to develop and provide effective and efficient treatment solutions in the future.

Seeing the development of the use of telerehabilitation, a digital physiotherapy practice task force was formed which was a combination of WCPT and the International Network of Physiotherapy Regulatory Authorities (INPTRA) which was convened in 2017 to develop key recommendations for global practice and regulation, which resulted in a white paper approved by the council WCPT and INPTRA on March 18 2020.[18]

In Indonesia itself, there are already several physiotherapists in clinics or hospitals who carry out tele-physio practices. Based on information published on social media, it appears that telephysio has been

practiced even before the COVID-19 pandemic hit Indonesia. For example, the official Physitrack has been operating since 2015.

4. Methods

The design of this research is descriptive. This research aims to describe the phenomena or characteristics of a certain population or situation systematically. Descriptive research typically does not seek cause-and-effect relationships, but instead focuses on detailed depictions of specific aspects of the subject under study, such as demographics, behavior, or specific conditions. [19] In this context, descriptive research can use a variety of methods, including surveys, observations, and data analysis, to gather relevant information and provide a clear picture of the topic being researched. The analytical tests that researchers used in this research used univariate tests which were intended to describe the conditions of the phenomenon in the research being studied.

This research was carried out by distributing a questionnaire in the form of a Google form which contains questions that can describe the utility of using tele-physio in physiotherapy services in Indonesia. The questionnaire in this research uses a questionnaire from previous research conducted by Park et al.[20]. The questionnaire that the researchers used was divided into 5 parts. Part 1 contains the demographic conditions of the respondents, which consists of questions about age, gender, domicile, and length of practice of telephysio or telerehabilitation. Part 2 contains the components of respondents' perceptions regarding understanding regarding telephysio. Part 3 contains safety components that discuss the patient's condition during telephysio practice. Part 4 contains the components of respondents.

5. Results

Table 1. Respondent Demographic Characteristics

Demographic Characteristics	Number of Subjects	
	Frequency	Percentage (%)
Domicile		
Java Island - Bali	11	69.0
Kalimantan island	3	18.8
Sulawesi island	1	6.3
Sumatera island	1	6.3
Papua Island	0	0
Gender		
Male	6	37.5
Female	10	62.5
Age		
23-27	8	50.1
28-32	6	37.6
33-36	0	0
37-41	1	6.3
42-46	1	6.3
Specialization		
General Physiotherapy	4	25.0
Musculoskeletal Physiotherapy	2	12.5

Neuromuscular Physiotherapy	3	18.8
Pediatric Physiotherapy	6	37.5
Orthopedic Physiotherapy	1	6.3
Practice Period		
1 year	7	43.8
2 years	8	50.0
4 years	1	6.3

Based on the data in Table 1, this research consisted of 16 respondents, the majority of whom were women with an age range of 23 years to 45 years spread across 4 large islands in Indonesia. On the island of Papua, no respondents were found who met the researchers' criteria, because in Papua it is possible that there are no physiotherapists who practice telephysio due to various factors, for example, the condition of the signal/network provider in Papua is very unstable which makes it difficult to implement this telephysio system. Research that has been conducted in Wamena, Papua shows that the use of personal quotas which are basically internet quotas from one brand of internet provider, in the Papua area is still very limited and does not reach all areas in Papua and very often experiences disruptions such as broken optical cables. is under the sea.[21] Barriers to the use of telemedicine generally occur in developing countries such as Indonesia. These obstacles are caused by the inadequate availability of information and communication technology infrastructure. The availability of internet access is incomplete and not good enough, which is a problem related to failure in the use of telemedicine in remote areas.[22] Respondents will get a physiotherapist according to their respective expertise. Such as sports physiotherapy for sports injuries, pediatric physiotherapy for complaints in children, neurological physiotherapy specialist, musculoskeletal physiotherapy specialist, and elderly physiotherapy.

Table 2. Perception Components

Questions and Responses	Number of Subjects	
	Frequency	Percentage (%)
Do you know the purpose of telephysio?		
Yes	16	100
No	0	0
Do you know the advantages and disadvantages of using telephysio?		
Yes	16	100
No	0	0

According to the displayed data on Table 2, there were 16 respondents regarding their understanding and objectives of telephysio. Also, all respondents knew the advantages and disadvantages of telephysio.

Table 3. Security Components

Questions and Responses	Number of Subjects	
	Frequency	Percentage (%)
Can you check the patient's condition via telephysio like during a direct visit?		
Yes	7	43.8
No	9	56.3

Do emergency situations never occur even though you cannot see the patient directly?		
Yes	0	0
No	16	100
Can you explain the patient's medical condition well enough as in a direct visit?		
Yes	15	93.8
No	1	6.3
Do you feel patients can understand their medical condition during telephysio as well as during an in-person visit?		
Yes	13	81.3
No	3	18.8

Table 3 presents the results of the survey on telephysio usage among respondents. A majority (56.3%) indicated that telephysio does not allow for direct patient assessment. However, a large proportion (93.8%) agreed that patient conditions can be effectively explained through telephysio, comparable to in-person consultations. While 81.3% of respondents believe patients can understand their medical conditions via telephysio, a smaller group (18.8%) expressed disagreement.

Table 4. Satisfaction Components

Questions and Responses	Number of Subjects	
	Frequency	Percentage (%)
Is it more convenient to make an in-person visit compared to using telephysio?		
Yes	12	75
No	4	25
Yes	9	56.3
No	7	43.8
Would you use telephysio services again?		
Yes	14	87.5
No	2	12.5

Table 4 presents the results of the survey on telephysio user satisfaction. The majority of respondents (75%) found in-person visits more convenient than telephysio. However, overall satisfaction with the telephysio system was moderate, with 56.3% expressing satisfaction. Despite this, a large majority (87.5%) indicated a willingness to use telephysio services again.

Table 5. Requirement Components

Questions and Responses	Number of Subjects	
	Frequency	Percentage (%)
Is telephysio needed in emergency situations like COVID-19?		
Yes	16	100
No	0	0
Is telephysio necessary regardless of emergency situations such as COVID-19?		
Yes	15	93.8
No	1	6.3

All respondents agreed on the necessity of telephysio in emergency situations like COVID-19. Furthermore, Table 5 shows that 93.8% of respondents believe telephysio is essential even outside of emergencies.

6. Discussion

In this component, it can be seen that the map of the distribution of physiotherapists who practice telerehabilitation or telephysio is not evenly distributed throughout Indonesia, this could be due to their relatively new age plus the lack of clear SOPs that regulate the standardization of the implementation of telephysio practice in Indonesia. Apart from that, the distribution of very stable signal providers is also not evenly distributed throughout Indonesia, while this telephysio practice relies heavily on the signal strength/provider network which should be quite strong. As stated in a study in Africa entitled: "Telemedicine for developing countries". The study states that they believe infrastructure is a barrier to the general adoption of telemedicine. One of the infrastructure aspects includes infrastructure in information and communication technology media.[23]

Quoted from LIPI (Indonesian Institute of Sciences) that men prefer things about internet technology while women are more interested in what things can be done with the internet. Research also shows that gender influences the social presence of the internet, perceptions about the ease of using e-mail, and perceptions about the benefits of e-mail. Women's perceptions regarding the social presence of e-mail are higher than men's. Perceptions about the benefits of the internet are also higher among women than men, but men tend to use e-mail more easily than women. Respondents from this study showed that the majority of physiotherapists' gender was female. As with previous research on telemedicine conducted in the United States, 63% of telemedicine users were women.[24]

Based on the questionnaire used in this research which contains four components in looking at the utility of using telephysio in physiotherapy services in Indonesia. The four components are the perception component, security component, satisfaction component, and needs component. The perception component directs our perception that telemedicine utilizes information and communication technologies (ICT) to overcome geographical barriers, and facilitates, accelerates, and increases access to very beneficial health services, especially for rural communities in developing countries who still lack access to them.[25]

In this study, respondents perceived that they knew the purpose of telerehabilitation and also knew the advantages and disadvantages of using it. This is in accordance with previous research conducted by Park et al.[20] in Seoul, that 98% of Doctors and Nurses understand the purpose as well as the advantages and disadvantages of using telemedicine. In terms of safety, a big challenge when physiotherapists practice telephysio is the difficulty of carrying out examinations or the physiotherapy process. The majority of respondents in this study admitted that they were unable to check the patient's condition as in a direct visit. This is because the physiotherapy process, such as a physical examination or specific examination, requires direct touch/movement from the physiotherapist to the patient.

Before carrying out examinations and interventions, physiotherapists need to be sure about the patient's medical condition, and whether their current condition is really safe for carrying out the physiotherapy process. This is done to prevent emergency conditions that could occur. The examination is not very comprehensive when carried out via telephysio because telephysio in practice actually quite limits the physiotherapist's ability to carry out a comprehensive physical examination, while the physical examination is fundamental in establishing a diagnosis which can then determine accurate intervention options. This situation has also been stated by previous research on the implementation of telemedicine conducted in Boston.[26]

The discussion of satisfaction components shows that the practice of telephysio is still relatively new, especially in Indonesia, with various shortcomings and obstacles felt by physiotherapists and patients. Starting from signal/network problems, remote areas, and other challenges. Therefore, the majority of respondents in this study admitted that they were still more comfortable making in-person visits compared to telephysio practices. However, an understanding of the efficacy of using telephysio is a basis for physiotherapists to carry out this practice, that physiotherapy services via telephysio have the same benefits compared to direct visits. As seen in the results of a literature review research shows evidence that telephysio can be compared with face-to-face rehabilitation for conditions such as

osteoarthritis, low back pain, knee and hip arthroplasty, multiple sclerosis, and rehabilitation for cardiopulmonary conditions.[16] From the results of this research, it can be seen the majority of respondents stated that they were quite satisfied with the current telephysio system in Indonesia, although the results were not very significant compared to respondents who felt they were still not satisfied. This is in line with the results of research on telemedicine in Colombia, namely that 80% of respondents were quite satisfied and would continue to use this telemedicine system.[27]

In the need component, it can be concluded that as an effort to prevent the transmission of dangerous diseases such as during the COVID-19 pandemic, it can be ensured that telemedicine is needed in emergency situations. for healthcare workers in settings with high risk of infection and transmission, the use of telemedicine or telerehabilitation can be a safe way to provide care. Providing rehabilitation services to a growing patient population is challenging due to the lack of healthcare practices and skilled personnel. Telerehabilitation has the potential to address gaps in care delivery and increase patient engagement and compliance.[28]

One of the respondents has been practicing telephysio for the past 4 years since 2018. This shows that the practice of telephysio has existed in Indonesia since before the COVID-19 pandemic hit Indonesia around March 2020. So, it is possible that the practice of telephysio will continue to develop even despite the COVID-19 pandemic. Several previous studies have shown predictions about the sustainability of telemedicine in the future. Research by Dorsey and Topol[29] in a study in the USA entitled "Telemedicine 2020 and the next decade", stated that virtual care and clinical care will likely be integrated in the future. Virtual visits will not only replace routine health check-ups but will also complement in-person care. For example, telestroke expands the expertise of the stroke team to provide patient care in their home. The application of telemedicine to physiotherapy services is a form of adaptation to technological developments and is a catalyst for the development of technology-based applications to support services.[30]

7. Conclusion

Technology has changed the way people work, as has also changed physiotherapy services. Digital technology-based health system innovations are increasingly developing rapidly, which means the telerehabilitation system is also increasingly developing. Therefore, research that identifies the effectiveness of this system is still very necessary to ensure that the implementation of the telephysio or telerehabilitation system in Indonesia runs effectively.

Based on the results of this research, a general picture can be seen that telerehabilitation cannot be fully implemented in Indonesia, due to signal problems which are still an obstacle in Indonesia. Factors such as electricity supply, internet speed, lack of appropriate infrastructure and technology, and skilled health personnel influence the success rate of implementing telemedicine. However, telerehabilitation is essentially needed in Indonesia. At the current trend in the development of digital technology, it cannot be denied that telerehabilitation will continue to be needed and developed in the future.

This research uses an inter-rater method. Therefore, this research questionnaire can be further developed using an intra-rater method to see how well the respondents understand the items being asked. Researchers in this study have made efforts so that the assessment of telephysio or telerehabilitation utility can represent all regions of Indonesia, but the results cannot yet provide a comprehensive representation of Indonesia. To achieve the efficacy of a service, it is also necessary to assess the obedience aspect, namely assessing whether recipients and service providers comply with service commitments or not.

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