

# A Review of Adaptation of Thai Traditional Telemedicine

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## Abstract

This study aims to examine the challenges of integrating Traditional Thai Medicine (TTM) in telemedicine in Thailand and potential solutions to improve healthcare access and quality. TTM's hands-on techniques and reliance on visual cues create unique challenges for integration. The study shows that integrating TTM into telemedicine in Thailand is a complex process that requires a multi-faceted approach and faces challenges such as lack of infrastructure and limited access to technology. Solutions include developing standards and regulations, providing education and training for healthcare professionals, and developing TTM-specific telemedicine platforms. Telemedicine in Thailand is a crucial tool for delivering healthcare services, but faces challenges with integrating traditional Thai medicine. Studies suggest telemedicine can improve access to healthcare in rural and remote areas, with remote consultation, monitoring, and follow-up care improving quality of care and reducing costs. The development of Thai Traditional Telemedicine (TTM) combines traditional Thai medical practices with modern technology to preserve cultural heritage and improve access to healthcare in remote and underserved areas. Lack of standardization and regulation can lead to mistrust in its effectiveness, but further research is needed to understand the adaptation of traditional telemedicine in Thailand and its potential impact on healthcare access, patient satisfaction, and traditional medicine understanding. Policies and initiatives to support the growth of TTM are also recommended.

**KEYWORDS:** Thai Traditional Medicine, telemedicine, healthcare service, remote areas, adaptation

## 1 INTRODUCTION

Thailand has a long-standing tradition of Thai Traditional Medicine (TTM) is an important aspect of the country's healthcare system. TTM is a form of medicine that is based on the use of natural substances, such as herbs and minerals, as well as traditional practices such as massage and spiritual healing. It is deeply rooted in Thai culture and has been passed down through generations. TTM is widely used in Thailand, both in traditional and modern healthcare settings, and is often used in conjunction with Western medicine (Senachai, 2019).

In recent years, there has been a growing interest in telemedicine to improve healthcare access and quality. Telemedicine is the use of technology to provide medical care remotely,

such as through video conferencing or remote monitoring. However, despite the growing popularity of telemedicine in Thailand, there is limited research on the integration of TTM in telemedicine. This paper aims to examine the current state of telemedicine in Thailand and the challenges faced in its integration with TTM.

The integration of TTM in telemedicine poses unique challenges, as TTM often involves hands-on techniques such as massage and herbal remedies. Additionally, TTM practitioners often rely on visual cues, such as the colour of the patient's tongue, to make a diagnosis, which may be difficult to convey through telemedicine. This paper will explore these challenges and potential solutions to overcome them.

Finally, TTM is an integral part of the healthcare system in Thailand. However, despite the growing popularity of telemedicine, there is limited research on the integration of TTM in telemedicine in Thailand (Web-1). This paper will examine the current state of telemedicine in Thailand, the challenges faced in its integration with TTM, and potential solutions to overcome them in order to improve healthcare access and quality in Thailand.

## **2 OBJECTIVE OF THE STUDY**

This paper aims to provide the adaptation of telemedicine in Thailand, specifically with the integration of Thai Traditional Medicine (TTM). Telemedicine is the use of technology to provide medical care remotely, and it has become a vital tool in delivering healthcare services, especially during the COVID-19 pandemic. However, the adaptation of telemedicine in different cultural contexts poses unique challenges, as TTM is deeply rooted in Thai culture and has been passed down through generations.

The paper will examine the current state of telemedicine in Thailand, the challenges faced in its integration with TTM, and potential solutions. By identifying the challenges and potential solutions for integrating TTM in telemedicine in Thailand.

## **3 ADVANTAGES OF THE STUDY**

One advantage of a study on the adaptation of Thai Traditional Telemedicine would be the opportunity to gain a deeper understanding of how traditional healing practices can be integrated with modern technology to improve healthcare outcomes in a specific cultural context. This information could then be used to inform the development of telemedicine programs in other cultural contexts, potentially leading to more effective and culturally sensitive healthcare delivery systems. Additionally, the study may also provide how traditional healing practices can be preserved and incorporated into modern healthcare systems, which is an important consideration for many communities.

## **4 LITERATURE REVIEW**

In this paper, the literature review focuses on Thai Traditional Medicine (TTM), telemedicine, and the Diffusion of Innovation theory. The literature review examines the current state of TTM in Thailand, including the challenges and opportunities for its safe and effective use. Additionally, the literature review explores the use of telemedicine, specifically traditional

telemedicine, as a tool for improving healthcare delivery and outcomes in Thailand and other developing countries. Lastly, the literature review delves into the Diffusion of Innovation theory and how it can be applied to understand the process of adopting new technology in healthcare.

#### **4.1 History of Thai Traditional Medicine**

Thai traditional medicine, or TTM, has a distinct and well-established concept, theory, and practice patterns that have been passed down through generations and formally recognized as "royal medicine" in the royal court. It is believed to have originated from ancient Indian civilization and is closely tied to Buddhism. Originally, it was thought to have roots in Ayurvedic medicine, a branch of Hindu medical science that existed before the time of the Buddha. However, research by Kenneth G. Zysk suggests that the earliest phase of Hindu Ayurveda was a magico-religious healing tradition based on the Veda scripture, which contained a lot of information on healing diseases. The oldest scripture, the Rgveda, was discovered 300 years before the Buddha's time, and it and the Atharvaveda were mainly focused on illnesses caused by evil spirits, and included prayers to gods for healing. In its early stages, Veda medicine was considered a form of black magic or supernatural arts, where evil spirits were believed to be the cause of physical illnesses. Sometimes, physical illnesses or injuries were thought to be the result of a violation of a taboo, a curse, or the act of a wizard. Over time, Hindu Ayurvedic medicine, which was previously a magico-religious healing tradition, evolved into an "empirico-rational healing tradition" derived from the medical system in Buddhist monasteries, which is based on the philosophy and teachings of Buddhism (Web-14).

Thai traditional medicine, also known as TTM, is a form of wisdom that has been passed down and used to serve Thai society for generations. In the early years of Siriraj Hospital, traditional practitioners still played a role in providing care for patients and traditional medicine was included in the medical curriculum. However, western medicine eventually became more popular in Thailand, leading to an emphasis on the study of scientific subjects and clinical practices, and an increase in the duration of western medicine instruction. As a result, traditional medicine was removed from the curriculum in 1915. Professor Dr. Ouay Ketusinh, a renowned western medicine professor at the Faculty of Medicine Siriraj Hospital, believed that for TTM to be established in the healthcare system and become sustainable, it must have the potential to develop and this potential comes from traditional practitioners who are not only professionally competent but also have knowledge of basic medical sciences similar to that of western medicine practitioners and other healthcare professionals. This field was later named Applied Thai Traditional Medicine to distinguish it from traditional TTM. In 1980, Professor Dr. Ouay Ketusinh established a foundation under the patronage of the Supreme Patriarch and HRH Prince Maha Chakri Sirindhon, and in 1982, he established a school, named Ayurved-vidyalaya (Jivaka Komarabhacca) to teach a three-year course in TTM based on his philosophy. In 2003, the Ayurved School was incorporated into the Faculty of Medicine Siriraj Hospital, Mahidol University as a new department named the Center of Applied Thai Traditional Medicine. The school replaced the old curriculum with a new four-year curriculum leading to a bachelor's degree in Applied Thai Traditional Medicine. In 2007, HRH Princess Maha Chakri Sirindhon graciously changed the name of the school to

"Ayurved Thamrong School," which means the school that is endowed with the knowledge of medicine (Web-15).

## 4.2 Thai Traditional Medicine

Thai traditional medicine is a way of healthcare for Thai people that is in line with Thai cultural and traditional practices. It involves the use of herbal remedies in the form of both food and medicine, and techniques such as steaming, rubbing, and massage. Thai traditional medicine diagnoses illness according to Thai beliefs, with knowledge based on Buddhist principles mixed with ritual beliefs. It has been passed down and taught through a wide range of teachings and knowledge transmission for many thousands of years and is considered an interesting aspect of Thai wisdom (Web-16).

Thai Traditional Medicine (TTM) is an ancient system of healthcare that has been widely practised in Thailand for centuries. It is based on the belief that good health is the result of a balance between the body, mind, and spirit, and that illness is caused by an imbalance in these three elements. TTM incorporates a wide range of therapeutic modalities, including herbal medicine, massage, meditation, and spiritual healing (Web-2).

TTM is a holistic approach to healthcare, which emphasises the importance of treating the whole person, rather than just the symptoms of an illness. It is based on the principles of balance and harmony, and practitioners believe that restoring balance and harmony to the body, mind, and spirit can lead to good health and well-being (Chokevivat, 2005).

Herbal medicine is a central component of TTM, and practitioners use a wide range of plants and plant-based remedies to treat a variety of health conditions. These remedies are often prepared and consumed in the form of teas, decoctions, pills, or topical ointments. Massage is another important modality in TTM, and practitioners use a variety of massage techniques, including traditional Thai massage, to promote healing and relaxation (Termwiset, 2016).

TTM also includes spiritual practices such as meditation and spiritual healing, which practitioners believe can help to balance the mind and spirit and promote good health.

TTM has been widely used in Thailand for centuries, and nowadays Thai people still rely on TTM for their primary healthcare needs. Despite this, TTM has not been fully integrated into mainstream healthcare systems, and there is a need for further research to evaluate the effectiveness of TTM and to develop strategies for integrating TTM into modern healthcare systems (Jehso, 2015).

## 4.3 Thai Traditional Medicine Regulation

In Thailand, the Ministry of Public Health is responsible for the regulation of TTM. This includes the registration and certification of TTM practitioners, the development of standards and guidelines for TTM practice and products, and the monitoring of TTM-related activities to ensure compliance with regulations (Web-3).

The Thai Food and Drug Administration (FDA) is also responsible for the regulation of TTM products, including herbal medicine. This includes the registration and certification of TTM products, the development of standards for TTM ingredients and the monitoring of TTM products to ensure compliance with regulations (Web-4).

#### 4.4 Telemedicine

Telemedicine is the use of technology, such as video conferencing and remote monitoring, to deliver healthcare services remotely. It is a rapidly growing field that has the potential to revolutionise the way healthcare is delivered, particularly in remote and underserved areas. Telemedicine allows healthcare professionals to diagnose, consult, treat, and monitor patients remotely, using a variety of technologies such as videoconferencing, remote monitoring devices, and electronic health records (Web-5).

Telemedicine can be divided into two main categories: synchronous and asynchronous. Synchronous telemedicine involves real-time communication between the healthcare provider and the patient, such as through video conferencing. Asynchronous telemedicine, on the other hand, involves the use of remote monitoring devices and electronic health records to collect and transmit patient data, allowing healthcare professionals to review the information at a later time (Web-6).

Telemedicine has many potential benefits, including increasing access to healthcare for patients in remote and underserved areas, reducing healthcare costs, and improving the quality of care. For example, telemedicine can be used to provide remote consultation for patients in rural areas, who would otherwise have to travel long distances to see a healthcare provider. It can also be used to monitor patients with chronic conditions, such as diabetes, and to provide follow-up care for patients after they have been discharged from the hospital (Zhang, 2022).

Despite its potential benefits, telemedicine is not without its challenges. One of the main challenges is the lack of regulation and standardisation in the field, which can lead to confusion and inconsistencies in the delivery of telemedicine services. This lack of standardisation can also make it difficult for healthcare providers to determine the quality and effectiveness of different telemedicine programs and technologies. Additionally, there are concerns about patient privacy and security when sensitive patient information is transmitted electronically. This can be especially concerning in countries where there are weak laws or regulations protecting patient privacy and data security. Moreover, there are also challenges related to access to technology and internet connectivity, which can limit the reach and effectiveness of telemedicine programs in certain areas. Moreover, there is a need for more training and education for healthcare providers to understand the benefits and limitations of telemedicine and to be able to use it effectively.

In conclusion, telemedicine is a rapidly growing field that has the potential to revolutionise the way healthcare is delivered, particularly in remote and underserved areas. However, more research is needed to fully understand the potential benefits and challenges of telemedicine and to develop strategies for effectively implementing telemedicine services in healthcare systems. This includes addressing the lack of regulation and standardisation, patient privacy and security, access to technology and internet connectivity, as well as training and education for healthcare providers.

#### 4.5 Thai Telemedicine

Thai telemedicine refers to the use of telecommunication and information technologies in order to provide remote medical services and consultation to patients in Thailand. This can include the use of video conferencing, remote monitoring, and electronic medical records to



facilitate the delivery of healthcare services to individuals who may be located in remote or underserved areas, or who may have mobility or transportation limitations (Web-7).

Telemedicine has been recognized as a key strategy for addressing the challenges of providing healthcare services in Thailand, particularly in light of the country's rapidly ageing population and increasing burden of chronic diseases (Web-8). By utilising technology to bridge geographical barriers, telemedicine has the potential to improve access to healthcare services, increase efficiency and reduce costs, and enhance the quality of care for patients.

However, despite the potential benefits of telemedicine, there are also challenges and barriers to its implementation in Thailand. These include issues related to infrastructure, regulations, and reimbursement, as well as concerns about data privacy and security (Web-9). Therefore, it is important that policies and initiatives are developed to support the growth of telemedicine in Thailand, while also addressing these challenges and ensuring that the needs and rights of patients are protected.

Shimizu, et al. (2018) reported that in 2005, Thailand became a member of TEMDEC and the seventh country to participate in telemedicine demonstrations, with the support of ThaiREN, the REN in Thailand. This program was carried out during the first meeting of the Asia-Pacific Advanced Network (APAN), a consortium of RENs in the region, which was hosted in Thailand. By the end of 2017, Thailand had taken part in various TEMDEC-organised telemedicine programs, comprising a total of 165 telemedicine connections. Siriraj Hospital, Mahidol University was the first institution to participate and had the most connections, while King Chulalongkorn Memorial Hospital joined two years later and had the second-most connections. Vajira Hospital joined in 2013 and had the third-highest number of telemedicine connections.

An increasing number of patients are choosing to bypass traditional medical consultations and instead turn to online resources to research their medical issues and purchase medication from local pharmacies. This trend has been further exacerbated by the Covid-19 pandemic, causing many patients to avoid visiting hospitals. To better serve these patients, the COO and co-founder of Doctor Raksa, Ms. Piyada Donchalermprak, along with her Singaporean co-founder, established a telemedicine startup company with the creation of a mobile application named "Raksa." This app, available on both the App Store and Google Play, allows patients to enter their medical information and consult with over 600 board certified physicians who can evaluate their condition and recommend appropriate treatment, including medication and dosage. Patients can also have their prescriptions filled and delivered by an online pharmacy. With a consultation costing only 200 baht, this service is cost-effective, saving patients both time and travel expenses. The usage of this service has seen tremendous growth with 70% of patients getting a successful doctor's resolution through the app. This also reduces crowds and congestion at hospitals and allows medical staff to focus on more critically ill patients. If a patient's problems cannot be diagnosed or treated remotely, doctors will refer them to their local hospital. The company aims to become a virtual hospital where all patient records, doctors, pharmacies, drugs, pharmacists, network hospitals and insurance are available through the application, with the goal of becoming the go-to source for health information rather than Google (Web-13).

#### 4.6 Advantages of Thai Telemedicine

Telemedicine in Thailand offers several advantages for the delivery of healthcare services, including (Khemapech, 2019):

1. Improved access to healthcare: Telemedicine can help to bridge geographical barriers and improve access to healthcare services for individuals in remote or underserved areas of Thailand, who may have limited access to healthcare resources.
2. Increased efficiency and cost savings: Telemedicine can reduce the need for patients to travel to receive healthcare services, which can save time and money. Additionally, the use of telemedicine can improve the efficiency of healthcare delivery by reducing the need for face-to-face consultations and enabling healthcare providers to remotely monitor patients.
3. Enhanced quality of care: Telemedicine can improve the quality of care by enabling healthcare providers to remotely monitor patients and make more informed treatment decisions. Additionally, the use of telemedicine can improve patient satisfaction by providing more convenient and accessible healthcare services.
4. Better management of chronic diseases: Telemedicine can help to better manage chronic diseases by enabling healthcare providers to remotely monitor patients and provide ongoing support and care.
5. Greater continuity of care: Telemedicine can help to improve continuity of care by enabling healthcare providers to remotely monitor patients and provide ongoing support and care.
6. Reduced transmission of infectious diseases: Telemedicine can reduce the risk of transmission of infectious diseases by reducing the need for face-to-face consultations, particularly during pandemics.
7. Access to specialized care: Telemedicine can help to provide access to specialized care for patients in remote areas, who may not have access to specialists in their local area .

#### 4.7 Disadvantages of Thai Telemedicine

Telemedicine, the use of telecommunication technologies to provide medical services remotely, has many advantages such as improved access to healthcare for patients in remote or underserved areas. However, it also has some significant disadvantages that must be considered.

One major disadvantage of telemedicine is the lack of physical examination. Telemedicine consultations are typically conducted through video conferencing, which means that the healthcare provider cannot physically examine the patient. This can lead to misdiagnosis or inadequate treatment plans, as the healthcare provider may not be able to detect certain physical symptoms or abnormalities.

Another disadvantage of telemedicine is the lack of continuity of care. Telemedicine consultations are often one-off interactions, which means that the patient may not have the opportunity to build a relationship with their healthcare provider. This can lead to a lack of trust and understanding between the patient and healthcare provider, which can negatively impact the patient's overall health outcomes.

Additionally, telemedicine can also be limited by technology and internet access. Patients in remote or underserved areas may not have access to reliable internet or the necessary

equipment to participate in telemedicine consultations. This can further exacerbate healthcare disparities and limit access to healthcare for these populations.

Finally, there are concerns about the security and privacy of telemedicine consultations. The use of telecommunication technologies can expose sensitive patient information to potential cyber attacks or breaches of privacy, which can have serious consequences for both the patient and the healthcare provider (Web-12).

#### **4.8 Diffusion of Innovation Theory**

Diffusion of Innovation theory is a model that explains how new ideas and technologies spread through a population. The theory was first proposed by Everett Rogers in his 1962 book, *Diffusion of Innovations* (Web-10). The theory suggests that the adoption of new ideas and technologies follows a predictable pattern and that this pattern can be divided into five stages: knowledge, persuasion, decision, implementation, and confirmation.

The first stage, knowledge, refers to the process of gaining awareness of a new idea or technology. During this stage, individuals may be exposed to information about the new idea or technology through various channels, such as word-of-mouth, mass media, or personal experience.

The second stage, persuasion, refers to the process of evaluating a new idea or technology. During this stage, individuals may seek out more information about the new idea or technology and consider whether it is something that they would like to adopt.

The third stage, decision, refers to the process of making a commitment to adopt the new idea or technology. During this stage, individuals may actively seek out a new idea or technology and decide to adopt it.

The fourth stage, implementation, refers to the process of putting the new idea or technology into practice. During this stage, individuals may take steps to acquire and use new ideas or technology.

The fifth stage, confirmation, refers to the process of evaluating the outcomes of the adoption of the new idea or technology. During this stage, individuals may evaluate the benefits and drawbacks of the new idea or technology and decide whether to continue using it or not.

The theory also proposed that the rate of adoption of new ideas or technology is not the same across all individuals, but it varies depending on their characteristics. Rogers identified five categories of adopters: innovators, early adopters, early majority, late majority, and laggards. Innovators are the first to adopt a new idea or technology, while laggards are the last to do so (Web-11).

In conclusion, the Diffusion of Innovation theory proposes that the adoption of new ideas and technologies follows a predictable pattern and that the rate of adoption varies across individuals depending on their characteristics. This theory has been widely used to understand how new ideas and technologies spread in different fields, including healthcare, technology, and communication.

## **5 METHODOLOGIES**

The methodology of this review paper on the adaptation of Thai Traditional Telemedicine will involve the use of the Diffusion of Innovation theory as a framework for understanding



the process of telemedicine integration with Thai Traditional Medicine (TTM) in Thailand. The study will have the following steps:

1. A comprehensive literature review will be conducted to gather information on the current state of telemedicine in Thailand, the challenges faced in its integration with TTM, and potential solutions. A variety of sources will be used, including academic journals, government reports, and online sources.

2. To analyse the collected data, the Diffusion of Innovation theory will be used as a framework to understand the process of adoption of telemedicine in the context of TTM in Thailand. The five stages of adoption will be used to understand the current state of telemedicine integration in Thailand and to identify potential solutions for future integration.

3. The data collected from the literature review will be analysed qualitatively to identify the challenges and potential solutions for integrating TTM in telemedicine in Thailand. The findings will be presented in a narrative format, highlighting the key findings, and discussing their implications for telemedicine integration in different cultural contexts.

4. The findings of this paper will be used to inform the development of telemedicine services in Thailand and other cultural contexts. For example, the review may suggest the use of telemedicine tools to facilitate the communication of visual cues used in TTM or the development of new technologies to support hands-on techniques.

## 6 RESULTS

The Diffusion of Innovation theory explains how new technologies and innovations spread through a population over time. According to this theory, the adoption of new technologies or innovations is a gradual process that occurs in five stages: knowledge, persuasion, decision, implementation, and confirmation.

The research topic "A Review of Adaptation of Thai Traditional Telemedicine" aligns with this theory as it illustrates how the adoption of traditional telemedicine takes place gradually over time, starting with early adopters, who are more likely to be willing to take risks and try new things. In the context of traditional telemedicine, the early adopters in this case would be healthcare providers and patients in rural and remote areas of Thailand who have limited access to healthcare resources. These early adopters would be the first to benefit from the improved healthcare access and increased patient satisfaction that traditional telemedicine can provide.

As the adoption of traditional telemedicine spreads, more healthcare providers and patients in other regions of Thailand would begin to see the benefits of the technology. This would lead to increased acceptance of the technology and a greater willingness to integrate it into the healthcare system. This is the persuasion stage, in which early adopters try to convince others to adopt the innovation.

In the decision stage, individuals consider whether to adopt the innovation or not. In the case of traditional telemedicine, this would involve healthcare providers and patients evaluating the benefits of the technology and deciding whether to integrate it into their healthcare delivery.

In the implementation stage, individuals actually adopt the innovation. This is when healthcare providers and patients begin to use traditional telemedicine in their healthcare

delivery.

Finally, in the confirmation stage, individuals evaluate the results of their adoption of the innovation. This is when healthcare providers and patients evaluate the benefits of traditional telemedicine and decide whether to continue using it or not.

As more people adopt traditional telemedicine, the technology will continue to spread and eventually reach a point of full diffusion, where it is widely accepted and used by the majority of the population. This will lead to improved healthcare delivery and outcomes in Thailand and potentially other developing countries with similar healthcare challenges and cultural backgrounds.

In summary, the research topic "A Review of Adaptation of Thai Traditional Telemedicine" aligns with the Diffusion of Innovation theory as it illustrates how the adoption of new technology takes place gradually over time, starting with early adopters and spreading to the rest of the population, eventually leading to a full diffusion, which can improve healthcare delivery and outcomes in Thailand and other developing countries.

The result of the adaptation of Thai Traditional Telemedicine using the diffusion of innovation theory has shown that the integration of TTM into telemedicine in Thailand is a complex process that requires a multi-faceted approach. The current state of telemedicine in Thailand is still in its early stages and is facing several challenges such as lack of infrastructure, limited access to technology, and lack of understanding of TTM among healthcare professionals.

One of the key challenges faced in integrating TTM into telemedicine in Thailand is the lack of standardisation and regulation of TTM. This has led to a lack of trust among healthcare professionals and patients in the effectiveness of TTM. To address this challenge, the integration of TTM into telemedicine in Thailand should be guided by a set of standards and regulations that ensure the quality and effectiveness of TTM.

Another challenge faced in integrating TTM into telemedicine in Thailand is the lack of trained healthcare professionals who are proficient in both TTM and telemedicine. To address this challenge, training programs should be developed to train healthcare professionals in TTM and telemedicine. This will help to improve the quality and effectiveness of TTM in telemedicine in Thailand.

The potential solutions for integrating TTM into telemedicine in Thailand include the use of technology, such as telemedicine platforms, to facilitate the delivery of TTM. This will help to overcome the barriers of distance and time and make TTM more accessible to patients. Additionally, the use of mobile health applications, such as mobile health clinics, can help to improve the accessibility and affordability of TTM in telemedicine in Thailand.

## **6.1 The Potential Solutions for Integrating Thai Traditional Medicine in Telemedicine**

Integrating Thai Traditional Medicine (TTM) into telemedicine in Thailand requires a multi-faceted approach to address the challenges that currently exist. Some potential solutions that could help to facilitate the integration of TTM into telemedicine in Thailand include:

1. Developing standards and regulations for TTM: One of the main challenges facing the integration of TTM into telemedicine in Thailand is the lack of standardization and regulation

of TTM. Developing standards and regulations for TTM can help to ensure the quality and effectiveness of TTM, and increase trust among healthcare professionals and patients in the effectiveness of TTM.

2. Providing education and training for healthcare professionals: Another challenge facing the integration of TTM into telemedicine in Thailand is the lack of trained healthcare professionals who are proficient in both TTM and telemedicine. Providing education and training for healthcare professionals can help to ensure that they are equipped with the necessary skills and knowledge to effectively deliver TTM through telemedicine.

3. Developing TTM-specific telemedicine platforms: In order to effectively integrate TTM into telemedicine, it may be necessary to develop TTM-specific telemedicine platforms that are tailored to the unique needs of TTM. These platforms could include features such as traditional Thai diagnostic tools and treatment options, as well as the ability to facilitate remote consultations with TTM practitioners.

4. Encouraging research on TTM: To better understand the effectiveness and safety of TTM, it is important to encourage research on TTM. This research could help to provide evidence-based support for the integration of TTM into telemedicine, and help to inform the development of standards and regulations for TTM.

5. Encouraging public awareness and education about TTM: To increase acceptance and understanding of TTM among the population, it is important to encourage public awareness and education about TTM. This could include providing information about TTM through telemedicine platforms, as well as through traditional media and community outreach programs.

6. Leveraging technology: Telemedicine can be integrated with TTM by leveraging technology such as remote monitoring, electronic medical records, and video conferencing which can help to improve the efficiency and effectiveness of TTM delivery.

## 6.2 Challenges

Telemedicine, which uses technology to provide medical care remotely, has become a crucial tool in delivering healthcare services in Thailand. With advancements in technology and the growing need for accessible healthcare, telemedicine has been widely adopted as a solution to overcome the barriers of distance and limited resources in rural and remote areas of the country. However, one of the key issues facing telemedicine in Thailand is the integration of traditional Thai medicine (TTM) into the system. TTM, which is deeply rooted in Thai culture and has been passed down through generations, poses unique challenges in integrating it into telemedicine such as the need for specialised knowledge and skills, and the need for specific equipment and technology to support TTM practices.

Another major challenge facing telemedicine in Thailand is the lack of standardisation and regulation. Without a clear framework for telemedicine services and regulations, there is a risk of inconsistent and substandard care, which can lead to confusion and mistrust among patients and healthcare providers. This lack of standardisation also makes it difficult for healthcare providers to deliver consistent and high-quality care to patients, which is critical to building trust and increasing the acceptance of telemedicine.

Despite these challenges, there is a growing body of research that suggests that telemedicine

has the potential to improve access to healthcare in Thailand, particularly in rural and remote areas. Studies have shown that telemedicine can be used to provide remote consultation, remote monitoring, and follow-up care, which can improve the quality of care and reduce healthcare costs. Telemedicine has been shown to be particularly beneficial in areas where access to healthcare is limited and resources are scarce, allowing healthcare providers to deliver care to patients who would otherwise have limited or no access to care.

### **6.3 Thai Traditional Medicine Regulation**

The implementation of traditional telemedicine in Thailand can help to address these challenges by providing a platform for TTM practitioners to access the latest scientific evidence and training, as well as allowing for improved communication and collaboration between TTM practitioners and allopathic healthcare providers. This can lead to increased consistency and quality of care for patients. Furthermore, traditional telemedicine can also facilitate the monitoring and evaluation of TTM practices and products, allowing for the identification of any potential safety risks and implementation of appropriate measures to address them.

However, while there is a regulatory framework in place for Thai Traditional Medicine (TTM) in Thailand, there are still challenges in ensuring its safe and effective use. These challenges include a lack of scientific evidence supporting the safety and efficacy of many TTM practices and products, as well as a lack of formal education and training for many TTM practitioners. To address these challenges, it is essential to implement policies and initiatives that support the growth of TTM in Thailand, such as promoting research and developing education and training programs for TTM practitioners. Traditional telemedicine can play an important role in achieving this by providing a platform for TTM practitioners to access the latest scientific evidence and training, as well as facilitating the monitoring and evaluation of TTM practices and products.

### **6.4 Cultural Context on Thai Traditional Telemedicine**

The development of Thai Traditional telemedicine (TTM) is closely tied to the cultural context of Thailand. TTM, which combines traditional Thai medical practices with modern telecommunication and information technologies, is rooted in the traditional Thai belief system and understanding of health and illness.

One of the main effects of TTM on Thai cultural context is the preservation and promotion of traditional Thai medical practices. TTM helps to ensure that these practices remain relevant and accessible to the current population, by incorporating them into modern healthcare delivery methods. This can help to preserve the cultural heritage of Thailand and promote the use of traditional Thai medical practices among the population.

Another effect of TTM on Thai cultural context is the improvement of access to healthcare for individuals in remote and underserved areas. In Thailand, many individuals in rural areas have limited access to healthcare resources, particularly specialised care. TTM can help to bridge this gap by providing remote access to healthcare services, including traditional Thai medical practices, which can be particularly beneficial for these individuals.

Additionally, TTM can also help to improve the continuity of care, as healthcare providers can remotely monitor patients and provide ongoing support and care, which can be beneficial

for patients suffering from chronic diseases.

However, there are also challenges related to the development of TTM in the Thai cultural context. One of the main challenges is the lack of standardisation and regulation of TTM, which can lead to a lack of trust among healthcare professionals and patients in the effectiveness of TTM. Therefore, it is important that policies and initiatives are developed to support the growth of TTM in Thailand, while also addressing these challenges and ensuring that the needs and rights of patients are protected. This could include the promotion of research and the development of education and training programs for TTM practitioners.

In summary, the development of TTM in the Thai cultural context has both positive and negative effects. On one hand, it helps to preserve and promote traditional Thai medical practices, and improve access to healthcare for individuals in remote and underserved areas. On the other hand, the lack of standardisation and regulation of TTM can lead to a lack of trust in the effectiveness of TTM among healthcare professionals and patients. Therefore, it is important to develop policies and initiatives to support the growth of TTM in Thailand, while addressing these challenges.

## 7 DISCUSSION AND CONCLUSION

The Diffusion of Innovation theory explains how new technologies and innovations spread through a population over time. The research topic "A Review of Adaptation of Thai Traditional Telemedicine" aligns with this theory as it illustrates how the adoption of traditional telemedicine takes place gradually over time, starting with early adopters in rural and remote areas of Thailand who have limited access to healthcare resources. These early adopters would be the first to benefit from the improved healthcare access and increased patient satisfaction that traditional telemedicine can provide. As the adoption of traditional telemedicine spreads, more healthcare providers and patients in other regions of Thailand would begin to see the benefits of the technology and be more willing to integrate it into the healthcare system.

The integration of TTM into telemedicine in Thailand is a complex process that requires a multi-faceted approach. The current state of telemedicine in Thailand is still in its early stages and is facing several challenges such as lack of infrastructure, limited access to technology, and lack of understanding of TTM among healthcare professionals. One of the key challenges faced in integrating TTM into telemedicine in Thailand is the lack of standardisation and regulation of TTM, which has led to a lack of trust among healthcare professionals and patients in the effectiveness of TTM. To address this challenge, the integration of TTM into telemedicine in Thailand should be guided by a set of standards and regulations that ensure the quality and effectiveness of TTM. Another challenge faced in integrating TTM into telemedicine in Thailand is the lack of trained healthcare professionals who are proficient in both TTM and telemedicine. To address this challenge, training programs should be developed to educate and train healthcare professionals in both TTM and telemedicine.

The adaptation of Thai Traditional Telemedicine using the diffusion of innovation theory has highlighted the challenges and potential solutions for integrating TTM into telemedicine in Thailand. By addressing these challenges and implementing the potential solutions, the integration of TTM into telemedicine in Thailand can be achieved, improving the accessibility



and effectiveness of healthcare for the population.

Telemedicine has the potential to improve access to healthcare in Thailand, particularly in rural and remote areas. However, the integration of TTM into telemedicine poses unique challenges, such as the need for specialised knowledge and skills, and the need for specific equipment and technology to support TTM practices. Further research is needed to fully understand the potential benefits and challenges of telemedicine in Thailand and to develop strategies for effectively implementing telemedicine services in the healthcare system.

The discussion of the research topic "A Review of Adaptation of Thai Traditional Telemedicine" in relation to the Diffusion of Innovation theory illuminates the gradual and incremental process of adopting new technology in the healthcare industry. It is essential to acknowledge that the Diffusion of Innovation theory is not only relevant to the healthcare sector, but to any field of innovation.

One of the key insights derived from this discussion is that traditional telemedicine possesses the potential to enhance healthcare delivery and outcomes in Thailand and other developing countries with similar healthcare challenges and cultural backgrounds. The theory emphasizes that the adoption of new technology is not an instantaneous process, but one that occurs gradually. This is why early adopters, such as healthcare providers and patients in rural and remote areas of Thailand, are the first to experience the benefits of improved healthcare access and increased patient satisfaction that traditional telemedicine can provide. Another salient point is that the theory accentuates the significance of persuasion and communication during the adoption process. The early adopters play a critical role in convincing and communicating the benefits of the innovation to the remainder of the population. This is a vital step that can aid in increasing acceptance and willingness to integrate traditional telemedicine into the healthcare system.

In conclusion, the research topic "A Review of Adaptation of Thai Traditional Telemedicine" aligns with the Diffusion of Innovation theory by emphasizing the gradual and incremental process of adopting new technology in healthcare. The theory explains how the adoption of new technology takes place in five stages: knowledge, persuasion, decision, implementation, and confirmation. By understanding the process of adoption, healthcare providers and policymakers can develop strategies to effectively integrate traditional telemedicine into the healthcare system. The research also highlights the importance of persuasion and communication in the adoption process. The early adopters play a crucial role in persuading and communicating the benefits of the innovation to the rest of the population. This is a vital step that can help to increase acceptance and willingness to integrate traditional telemedicine into the healthcare system. Furthermore, the theory also emphasizes the importance of evaluating the results of the adoption of the innovation in the confirmation stage. This is when healthcare providers and patients evaluate the benefits of traditional telemedicine and decide whether to continue using it or not. This step is crucial in ensuring that the technology is being used effectively and that it is meeting the needs of the population. Finally, this paper aims at the gradual and incremental process of adoption of new technology in healthcare, and the importance of persuasion, communication and evaluation in the adoption process. It could be a valuable tool to help healthcare providers understand the process of adoption of new technology in healthcare, and appropriate adaptation to the context.

It is suggested that further research is needed to understand the adaptation of traditional

telemedicine in Thailand and its potential to improve healthcare access, patient satisfaction, cost savings, health outcomes, cultural sensitivity and understanding of traditional medicine. The study will also provide potential global application of the findings of this research in other developing countries with similar healthcare challenges and cultural backgrounds. It is also suggested that policies and initiatives should be implemented to support the growth of Thai Traditional Medicine (TTM) in Thailand, such as promoting research and developing education and training programs for TTM practitioners. Traditional telemedicine can play an important role in achieving this by providing a platform for TTM practitioners to access the latest scientific evidence and training, as well as facilitating the monitoring and evaluation of TTM practices and products.

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