The Impact of Telemedicine on Healthcare Delivery during and after the COVID-19 Pandemic: Opportunities, Innovations, Challenges, and Policy Implications

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ABSTRACT

This narrative review evaluates the implementation purposes of telemedicine in medical service delivery in the context of the COVID-19 pandemic. Telemedicine covering all forms of e-Delivery of healthcare has undergone massive changes in technology, comprising patient-specific interfaces and seamless integration with Electronic Health records. With telemedicine, healthcare professionals can telecommute and have virtual meetings with patients, provide remote consultations, monitor patients' conditions and facilitate the diagnostic processes. The COVID-19 pandemic accelerated the adoption of telemedicine, leading to a surge in users and highlighting its potential to revolutionize healthcare delivery. However, challenges such as inequitable access, data protection concerns, and healthcare professional adaptation remains. In addition, this review has a policies segment, highlighting the need of comprehensive policies and government aids in order to maximize telemedicine benefits and address its issues.

Keywords: Telemedicine, Healthcare Technology, COVID-19 Impact, Technological Advancements, Therapeutic Workflow, Remote Patient Monitoring and Healthcare Policy

INTRODUCTION

Digital medicine, where healthcare services are provided electronically at a distance, is a new kind of medical care that has completely changed the health care delivery landscape, specifically during the COVID-19 pandemic [1]. In the face of the unparalleled challenges brought about by the pandemic, healthcare systems were forced to quickly adopt new changes to maintain the provision of care to the patients while lowering the risk of transmission at the same time [2]. In view of this telemedicine became a priceless method that ensured the separation of patients and service providers in a safe and efficient way [3]. The COVID-19 pandemic underlined telemedicine's indispensable role in healthcare delivery, demonstrating its ability to transform the existing healthcare structure and tackle issues of access, efficiency, and fairness for all [4]. As a consequence of the imposition of social distancing and lockdowns to stop the dissemination of the virus in-person health encounters became more difficult which increased the demand for remote health services [5]. These technological advances allowed healthcare providers to deliver care remotely with a new ease and efficiency, by which the geographical barriers were overcomed and the access to underserved populations was expanded [6]. Telemedicine was widely adopted which enabled patients to communicate with their healthcare providers from their homes, hence, reducing patients' risk of getting infected [7].On the other hand, telemedicine has provided an important contribution especially to chronic disease management as well as specialized services including psychotherapy and remote monitoring [8]. Through digital tools and remote monitoring devices, healthcare providers can track patients' vital signs, medication adherence, and disease progression in the real time which gives possibility for timely interventions and personalized treatment plans [8]. Apart from better patient outcomes, this proactive care model also shields the healthcare system from having to deal with preventable hospitalizations and emergency department visits. Nevertheless, like any other innovative technology, telemedicine also has some challenges and limitations that must be tackled to realize its full potential [9]. Inequitable access to telemedicine services including those from low-privileged communities with low internet connectivity or digital literacy level is a major challenge [9]. Furthermore, data security and privacy issues, including the protection of medical data as it is transmitted through telemedicine platforms, entails strong safety measures and regulations that will safeguard patients confidentiality and trust [10]. Additionally, integrating telemedicine

into routine health care delivery requires healthcare professionals to change their workflow and use new technology which can be challenging especially in training, workflow integration and reimbursement models [11]. In view of this, policymakers and healthcare institutions should collaborate on the development of complete strategies and incentives to encourage telemedicine adoption and to get over the barriers to the execution. Finally, telemedicine has become a transformative agent in the healthcare system providing new opportunities to improve access, efficiency, and patient outcomes [12]. The COVID-19 pandemic ushered in the rapid and widespread adoption of telemedicine, accentuating its capacity to remake the old paradigms of care and address longstanding issues in healthcare delivery [13]. Nevertheless, the full realization of potential of

telemedicine calls for concerted efforts from policymakers, healthcare organizations, and technology providers who need to tackle the challenge of access, privacy, and professional adaptation [14]. Through enhancing telemedicine services and developing supporting policies, healthcare systems will be able to guarantee equitable access to quality care for all the individuals both during and after the pandemic [15].

Impact of Telemedicine on Healthcare Accessibility and Equity

Through its extensive applications, telemedicine puts in place the practice of eliminating the vast distances separating healthcare providers from their patients [16]. It is made possible through the use of communications and electronic data. This transformatory approach covers a range of services and apps. They are about to change the healthcare system from the traditional one depicted. Basically, telemedicine allows distant medical diagnosis, treatment and prevention of an illness or injuries through the use of high tech systems which enable medical data exchange and virtual consultations between provider and patient service units [17]. Furthermore, telehealth gives people more access to healthcare services which might not be readily available in deprived or isolated areas, and it makes delivery of health services fast and efficient with distance as a limitation [17]. Besides clinical interactions, it is rather the whole continuum of healthcare activities that telemedicine extends. It promotes the smooth transfer of medical information data, for study of and evaluation of health trends, research, and continuous professional education and training, of health care professionals [18]. Through the virtual platforms such as the interactive platforms, the practitioners can learn collaboratively, exchange their best practices, and keep informed about the new medical strategies thus growing the culture of being lifetime learners within the health community. Furthermore, under telemedicine, telehealth nursing, where trained nurses provide remote care and support to patients, effectively gauging their health status while giving advice on self-care practices, is also included [19]. By allowing patients to access their medical records and analyse data from different sources actively, this approach improves patient engagement, adherence to treatment regimens and at the same time, it empowers people to take full control of their health right in their homes. Moreover, telemedicine is another means to the remote monitoring of chronic disease patients and those currently recovering after an acute illness or surgery [19]. With the help of wearable devices and remote monitoring systems, healthcare service providers can track patients progress and lead to timely intervention with the aim of providing personalised care plan that will significantly improve health outcomes [19]. The transition to telemedicine opens up a new direction in healthcare where technology acts as a stimulus, enabler and towards achieving higher levels of efficiency and patient-centered care [18]. Through the utilization of information technologies, telemedicine is bringing forth the possibility of healthcare progress by the elimination of delivery limitations, consequently bringing high quality and cost effective healthcare closer and convenient to all [18-19].

Advancements in Telemedicine Technology

As soon as the initial stages of electronic health records (EHR) have been achieved, Clinical Decision Support (CDS) has been seen as an important clinical advantage in automation [20]. An important fact of the rise in telemedicine utilization during the COVID-19 pandemic is the swift improvements that make telehealth technology more accessible [21]. Along with the pandemic, mobile healthcare providers overcame first-ever need to be quick and technologies improved to advance the telehealth platform properties. It leaves however a space for the technological inventions which were of a big contribution to making telemedicine widespread [21]. During the aftermath of the COVID-19 pandemic, many have witnessed the increase in the use and applications of telemedicine, and this has been due to the imposed social distancing measures and quarantine orders [21]. For example, the Centers for Medicare and Medic aid Services have registered an astounding increase in telemedicine when they found that [22]. To reveal the behavioral change thusly, reflect on the fact that the user community from a single week of the onset of COVID-19 to the second last week of April due to the alert had surged from 13,000 person to a staggering 1.7 million users [22]. The pandemic worked as a catalyst that helped focus on the old telehealth systems and introduced new models for the increasing need for imparting healthcare services remotely [23]. Technologies introduced major upgrade across the interface cutting down the integration time with EHRs to advance diagnosis capability through use of artificial intelligence [23]. In addition, the improvement of video and audio quality through the development of high-speed internet infrastructure and deployment of 5G networks is an additional important factor that helped to upgrade the quality of telemedicine services [23].Thanks to these advancements, users of telemedicine did not only increase in number but also the overall smart remote care was found far more satisfactory and effective [24]. The expert approach was that

telemedicine technology serves as a vivid example of how a technology was a key factor that assisted in the shaping of the new healthcare delivery environment during and after the pandemic.

Using the therapeutic work flow approach in telemedicine care

In this figure (Fig. 1) you will see the simplified version of the workflow for the implementation of a culture-based telemedicine approach within healthcare services [25]. It guarantees a revolutionized facility each and every time the smallest detail is scrutinized. By starting with the patient's admission or detailed information, the interconnection from telehealth primary healthcare medicine facility is characterized [26].The pivotal stage in healthcare is when a specialist deploys their expertise to diagnose and treat the patient with utmost care, prioritizing their well-being above all else [27]. Although they have various aspects, telemedicine and technology of all kinds together enable hospitals to reach a brand new level of professionalism in administration and clinical medicine through telecommunication [28]. This technique, renowned for its effectiveness in various emergency scenarios, proves invaluable across critical and non-critical conditions alike. It plays a pivotal role in ensuring patients with chronic illnesses receive the necessary care and treatment [28]. They may choose to have crews with ambulances either in their hospitals or other healthcare workers who are there to meet those needs. On the other hand, telemedicine can be compounded of ambulance crews or other healthcare personnel who are staffed in the hospitals to meet with the needs [28]. Together with other features that will include the patient's treatment history, treatment responsiveness dynamics diagrams, and e-prescriptions in order to build a comprehensive telemedicine solution [29]. Also, telemedicine enables doctors to keep the channel open through the use of telephone or email without a fear that the effectiveness of treatment will be lost in the midst of chaos that pursues intersession periods [29]. Text messaging is a very key feature of this area. This function enables the doctor-patient relationship to be fostered though the quickest and most convenient way possible. In this manner, physicians' offices meetings could gain on the efficiency, and the communication of data and drugs could be simplified [23]. In the event where the health system is to thrive, monitoring could be used as a tool of measuring the level of quality [28]. The tracking tools of digital health services and the connectivity smart systems anywhere have become really important. These technologies enable patients with the dexterity to establish control over time while the visual assistance through simple video conferencing enhances their insight [23]. Catalog of the doctor reduces both the patients and the health care provider the time spent, namely refining the execution of the doctors-patient treatments [27]. Doctors are able to maintain their schedules through the appointment scheduling feature since the function will inform them about their schedules that they can review and check their colleagues' or patients' profiles to ensure the efficiency of the communication [29]. This system begin with patient queuing display and as offering of patient profiling filtration. When in emergencies, physicians can frequently change procedures without much inconveniences at all. Similarly cloud based medical record-keeping means the data protection in the virtual networking of healthcare services.
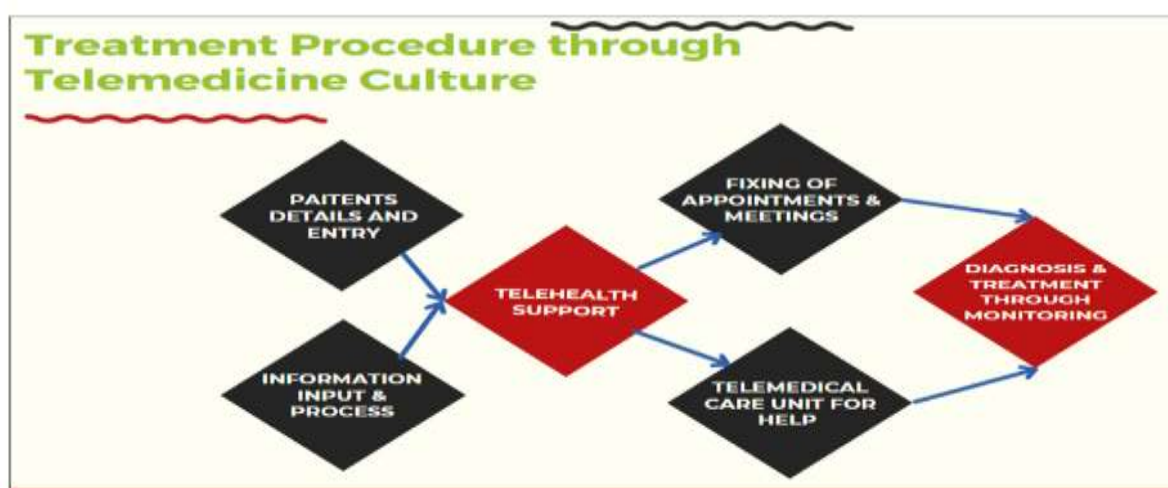

Fig. 1. Therapeutic work flow approach in telemedicine care [23].

A Comparison between High-Income Countries (HICs) and Low- and Middle-Income Countries (LMICs) on Telehealth during COVID-19 Pandemic

The telehealth utilization had been significantly underutilized both in HICs and LMICs compared to current trends that have created challenges of its adoption [23]. Nevertheless, specific niches of medical sectors, like telepsychiatric interventions and pediatric palliative care, were proved effective in using telemedicine, which led to cost savings, on premise or digital, for both caretakers and patients. Even though the upsurge of telehealth images and the immediate application of this technology at the facility level may be spoken of as accelerated

adoption, the comprehensive implementation in both HICs and LMICs still remains incomplete. Tables 1, 2 and 3 show adoption, application and challenges in both of HICs and LMICs over telehealth in COVID-19 Pandemic.

High-Income Countries (HICs)

Year	Author(s)	Key Findings
2021	James et al., [26]	The disruptive impact of COVID-19 has rapidly progressed the implementation and use of telehealth in Australian PHC as has occurred in other developed countries.
2022	Tang & Reddy, [27]	As cited in Tang & Reddy (2022), the U.S. saw an increase of 154% in telehealth visits at the end of March 2022 compared to the same period in 2019.
2021	Heneghan et al., [13]	A mixed-method study conducted in the UK and Canada postulates that although patient's satisfaction with telehealth in musculoskeletal physical therapy is widely reported as high as face-to-face care, widespread adoption of telehealth within physical therapy has been slow.
2021	Reisinger-Kindle et al., [28]	There were 698 (39%) telehealth visits out of a total of 1788 prenatal visits by 558 patients. This shows that there was high adoption of telehealth during COVID-19 in Springfield, Massachusetts.
2022	Alpert et al., [29]	Telemedicine was not utilized in cancer care before COVID-19. The COVID-19 pandemic forced health systems to quickly adapt to telehealth use for cancer treatment.
2021	Rangachari et al., [3]	While specialties like psychiatry, cardiology, and radiology are recording higher telehealth use, others like allergy-immunology, family medicine, and gastroenterology are recording lower telehealth use.

Low-and-Middle-Income Countries (LMICs)

Year	Author(s)	Key Findings
2021	Cruz et al., [30]	Based on responses from a study conducted in Mozambique, 69% of respondents were willing to use teleconsultation public health services for mild illness and review consultations. It was realised that respondents were willing to adopt to telehealth use due to its relatively cheaper price of services.
2021	Ranjbar et al., [31]	Out of a total of 523 nurses and midwives who participated in the study, 73.0% had positive attitude towards telenursing and telehealth. Higher education was positively associated with the understanding of telehealth.
2020	Kazi et al., [32]	Telehealth was initially in its infancy in LMICs, however, the COVID-19 pandemic accelerated the demand for telehealth following social distancing protocols globally.

Table 1: showing the adoption of telehealth during COVID-19 [23].

High-Income Countries (HICs)

Year	Author(s)	Key Findings
2021	Tsou et al., [34]	Telehealth is used in rural and remote emergency departments to effectively improve clinical care processes, and speed of care. Telestroke has been proven during the COVID-19 pandemic to be effective in the timely management of stroke conditions.
2022	Peixoto et al., [35]	In resource-challenged areas in Brazil, teleconsultation is a strategic technological tool for patients to access quality healthcare in a COVID-19 pandemic era where social distancing is a new normal.
2021	Freske & Malczyk, [36]	Implementation of telehealth in Nebraska has increased access to health services among rural residents and deeply impacted clinical practice. Clinicians in Nebraska plan to continue providing services via telehealth if policies and regulations are well-enacted post-COVID-19.
2021	Smith et al., [38]	Australia has implemented the Breastscreen Australia Remote Radiology Assessment Model (RRAM) to address the hurdle of inadequate access to a local radiological workforce in regional Australia. Majority of participants saw no difference between telehealth services and the onsite model.
2020	Evenski et al., [37]	The COVID-19 pandemic brought about the novel adoption of telehealth in the field of Orthopaedic Oncology, which is expected to positively impact healthcare access and compliance. 42% of participants in the Evenski et al., (2020) study rated tele-orthopedic services at 9.7 out of 10. This result is consistent with previous findings with telehealth in other specialties.

Low-and-Middle-Income Countries (LMICs)

Year	Author(s)	Key Findings
2020	Indria et al., [33]	During the COVID-19 pandemic era, 78% of clinicians who took part in a study organised in the city of Makassar in Indonesia indicated their satisfaction with telehealth systems. 69% of participants indicated that telehealth allowed for quicker diagnosis and treatment.
2022	Tahir et al., [5]	In South Africa, telehealth is perceived as a mitigator of healthcare provider shortages, and poor rural and remote access to healthcare services.
2021	Hoffer-Hawlik et al., [6]	The application of telehealth in the area of hypertension management in LMICs saw a significant reduction in blood pressure among hypertensive patients.

Table 2: Application of telehealth in specialised services & advantages during COVID-19 [25]

High-Income Countries (HICs)

Year	Author(s)	Key Findings
2022	Zaman et al., [39]	Although telehealth interventions that were designed to help people self-manage chronic diseases demonstrated positive effects, barriers to using telehealth interventions in older adults were identified and some were: knowledge gaps, lack of willingness to adopt new skills, and reluctance to technology use.
2021	Leone et al., [40]	A scoping review conducted in the UK showed that there were no established uniform guidelines for telehealth implementation.
2021	Naito et al., [41]	Although findings support the rapid adoption of telehealth in clinical care delivery in North America, the implementation of telehealth has faced critical challenges such as variations in state licensure requirements for telehealth, disparities in access to telehealth among disadvantaged populations, lack of consistency among individual investigational review boards (IRBs) on telehealth studies.
2020	Kho et al., [42]	The implementation of telehealth services often result in challenges stemming from the lack of attention to change management.

Low-and-Middle-Income Countries (LMICs)

Year	Author(s)	Key Findings
2020	Zobair et al., [43]	In a study conducted in rural Bangladesh, exemplary barriers to telehealth adoption that were identified and confirmed ($p<0.01$) were; lack of organizational effectiveness, health staff motivation, patient satisfaction, and trustworthiness. Lack of Information Communication and Technology (ICT) infrastructures and allocation of resources were identified as indirect barriers.
2022	Haroon et al., [44]	Telehealth system vulnerabilities may result in inappropriate access to patient information, medical device malfunction, or breakdown of health services that are provided, which may result in ethical and legal issues.
2022	Poonsuph, [45]	Existing telehealth services in Thailand is limited to only fundamental medical consultation services.
2021	Mahdi et al., [46]	Lack of governance and stakeholder support, lack of effective logistical and clinical procedures, and patients' ability to adapt to telehealth care are the barriers to the mass adoption of telehealth services in Pakistan.

Table 3: Challenges of Telehealth Implementation during COVID-19 [25]

Bridge the Healthcare Services Accessibility Gaps by Telemedicine

The provision of quality healthcare services is a basic human right, but cost and supply gap prevent some people, especially those in underprivileged populations and rural communities, from accessing those services [30]. Telemedicine, the utilization of technology for the delivery of healthcare remotely from one place to another, has proved to be a potential solution to the gaps highlighted [31]. This report evaluates the accessibility to telemedicine services, evaluates the efficiency of telemedicine in these populations, and relates the impact of telemedicine on primary healthcare in the rural areas [32]. Telemedicine opens the door to cross geographical boundaries and improves access to health care services [33]. In contrast, there are differences among the communities that have difficulties getting access to telemedicine even through they are in the same community. Factors that may include technological infrastructure, digital literacy, and socioeconomic status are contributing factors in this situation [34]. Understanding and overcoming these obstacles are necessary measures to guarantee that telemedicine is provided to all people without discrimination [35]. Telemedicine in its application has proven to be effective in seeking out those underserved populations such as rural areas, minorities, and the physically incapacitated persons [35]. Through use of remote consultations, virtual monitoring and digital health education, telemedicine allows medical caregivers to overcome geographical barriers and deliver healthcare beyond conventional healthcare facilities [36]. Furthermore, telemedicine has the chance to lessen the healthcare inequality gap through remote early treatment and preventive care for the undeserved communities. Rural areas encounter difficulties in acquiring healthcare services because of geographical separation and lack of healthcare practitioners [37]. Telemedicine has quickly become a pivotal element in the healthcare infrastructure that allows patients to reach healthcare professionals remotely [38]. Thanks to telemedicine, rural patients can get specialist consultations and other essential medical services without having to make a long and arduous journey. Similarly, telemedicine projects that address the particular requirements of rural populations have been successful in ameliorating their health situation and in decreasing healthcare disparities [38]. Telemedicine is of great value in improving the situation in the event of unequal access to healthcare facilities, especially among people of low classes and residents of the countryside [34]. Healthcare delivery can be improved by utilising technology for remote diagnosis and treatments leading to increased health equity, better outcomes, and reduced disparities in healthcare access [36]. Though this is true, progress to this goal is hindered by barriers to access, inequitable distribution of resources, and designing telemedicine initiatives specifically to address the uniqueness of different populations [37]. The interactions

between legislators, clinicians, technology engineers as well as local communities will serve as the bedrock of realising telemedicine's complete potential in overcoming the gaps in health services across locations [38].

Impacts of Telemedicine on the Quality of Care of COVID-19 Patients

The COVID-19 pandemic has made clear that creative healthcare methods are needed to maintain care provision and minimize transmission risk at the same time [39]. Telemedicine has in many ways come out clearly as a robust remedy which empowers medical professionals to diagnose, treat, and monitor patients remotely [40]. The report tries to assess the effect of telemedicine on the quality of the care in regard to COVID-19 patients, in comparison to the traditional in-person care [41]. Telemedicine provides several benefits in contrast

to in-office visits such as increased access, convenience as well as decreased risks of catching infectious diseases like COVID-19 [42]. While though, some doubts have been raised concerning the quality of care provided at a distance compared to the personal traditional consultations [40]. Although telemedicine is proven to be capable of treating minor illnesses and providing follow-up care for most of the patients, it may be less handy when it comes to the diagnosis and treatment of complex cases that require medical examination or manual intervention [41]. One of the major findings of the studies is that patients have high level of satisfaction with telemedicine consultations, especially during the COVID-19 pandemic [42]. The ability to consult with providers from home reduces the waiting times, while patients will appreciate the convenience of virtual visits [40]. In addition, telemedicine services are rendered for comparable clinical outcomes to conventional face-to-face care for many common conditions including but not limited to coronavirus management [41]. Although it is claimed that telemedicine is valuable, along with it there are some issues in preserving quality standards [42]. Technical issues including poor internet connection or inapt equipment/software can play an important role in disrupting effective communication among patients and health care providers [40]. Additionally, community conducting physical examinations remotely might affect diagnostic accuracy and therapeutic choices, especially in complex cases. Privacy and security concerns which along with the challenge of data transfer and storage, bring the great challenge for telemedicine expansion.

Participation and engagement of patients through Telemedicine portal during Pandemic period of COVID-19

Coronavirus pandemic led to the decentralized phenomenon in healthcare with telemedicine being the basis of it [43]. The telemedicine concept pertains to various technologies and communication channels which give the chance to the health professionals to provide care at a distance, such as online consultations, remote monitoring, and digital health apps. In this context, telemedicine interaction with the patient has to be explored as healthcare systems try to navigate the challenges of this crisis [44]. This is so important as it is meant to achieve the efficient delivery of care and also achieve desirable health outcomes. Using telemedicine, the patients can get qualified and affordable medical services while in the comfort of their own homes. In the virtual consultations, the patients talk with doctors without the patient having to go to the clinics and offices of their doctors [37]. It helps patients overcome the hustles presented by travel time and geographical constraints. Along with this, telemedicine can establish a systematic supervision of patients' health condition which, in turn, results in an early intervention and optimal adjustments of patients' therapy regimes [38]. Physically remote, but involving the patient actively in his/her own treatment, telemedicine, thus, stipulates the autonomy and emancipation of self-care in health [39]. Amongst all, telemedicine offers a great space where health information and resource materials are delivered directly to doctors' devices [40]. The interactive education sessions with digital health tools equip the patients with the comprehensive details about their diagnosis, treatment and health care tactics. Besides, telemedicine implements interactive communication between a patient and a health care provider that makes personalised assistance and guidance available live which are adaptable to particular needs of every individual [41]. Through this way, patients are paid with factual and recommendable resources which in turn increases their chance of involvement in decision making and active participation in their own care process. Even telemedicine has demonstrated positive effects it still faces challenges like the patient acceptance and engagement [42]. Technical defects, such as defects in a patient's health devices or a bad connection to the Internet, can lead to the absence of a virtual consultation. Furthermore, protecting their personal information in telemedicine platforms is also a paramount issue that can keep patients from using it [43]. The above obstacles can be tackled by an all-encompassing combination, such as digital infrastructure upgrading, patient education, and secure data storage. These three factors will be given emphasis which includes ease of access, security of the patient's information, and personalized approach by the healthcare providers for a high adaption and engagement in telemedicine.

Opportunities

Experts on telemedicine allow better access to health care services and in return; it caters for the people who live in remote areas or who cannot reach the hospitals due to various causes. Telehealth systems improve the capability of emergency response, minimize the time-consumption of diagnostic processes, and economize the health spending by doctors and patients [44]. The patients and doctors can still consistently be in touch with follow-ups after the appointments, the findings after the appointments, and the patient texting directly. Technological application, for example, allows a physician to make out a patient's video conference with ease

that has an ability to not only create but also to schedule their appointments [45]. It also streamlines and manages the patient profile efficiently.

Innovations

The fast pace of the creation of technologies in telemedicine as for instance user-friendly interfaces, EHRs and artificial intelligence for diagnostics leaves us with no other choice but to move fast. In distance clinical communication, 5G technologies enable real-time high-quality video or audio through the deployment of 3D telemedicine system [46]. An all-encompassing therapeutic process in telemedicine will be anchored by strategy that takes into consideration the patient's socioeconomic background and practice precision at every stage of delivery.

Challenges in using telemedicine

Inequitable Access: These disparities can be often a barrier to telemedicine in which the internet availability and user friendliness is a critical factor determining the efficiency of the technology [47].Nationwide Integration: The spread of telehealth services nationwide there is still an incomplete process, both in high-income and low and medium income countries this brings about a lot challenges [48].Data Protection: Guaranteeing the safety and privacy of patient data in telemedicine practices such as when cryptography of medical information records are used [49].Healthcare Professional Adaptation: One of the challenges entailed in fast integration of telemedicine is for healthcare experts to master it and work it out accordingly [50].

Ethical Considerations in using telemedicine

Patient Privacy: Confidentiality enhancement and privacy of patient data that is communicated over telemedicine platforms should be adequately implemented [51].Equitable Care: Striking the difference between biases and personalized care as the cornerstone of equitable services when implementing telehealth services [51]. Informed Consent: One of the primary ethical issues that have been raised for telemedicine is obtaining a valid informed consent from the patients for their telemedicine services or telemedicine consultations and putting across the limitations of virtual care [51-54].Quality of Care: Maintaining and overseeing the delivery of quality of care and services provided through telemedicine, as well as making sure that the set standards are met [51-54].

Policy Implications

Not having a unified national policies and regulations work for better telehealth acceptance at the world level justifies the call for a new policy and regulations for telehealth implementation at the country level [55]. Governmental policies are the right tools to utilize in order to encourage the transition of telehealth practices in the traditional medical systems [56]. Notable initiatives include acceptance of reimbursement programs for telehealth services and ensuring uninterrupted telehealth services within the current structure of the healthcare framework [57]. The effectiveness of telehealth can be improved by allocating state resources for upgrading existing infrastructure and provision of necessary equipment and tools. This could be purchasing insurance to highly vulnerable individuals, investing in broadband internet access, telecommunication networks, and buying telemedicine hardware. This effort will certainly recognize the residual gaps as well as lay a solid foundation required for smooth implementation and long-term expansion of telehealth as part of the health care system.

DISCUSSION

Telemedicine has proved itself to be among the most transformative forces in modern healthcare, offering a huge potential for greater accessibility, efficiency, and patient outcomes. The COVID-19 pandemic was a catalyst for telemedicine, proving that it is able to fast-forward virtual consultations, monitoring, and diagnosis. Thanks to technological advancements, like easy-to-use interfaces and high-speed internet infrastructure, telemedicine services can now be delivered remotely with previously unimaginable ease and efficiency. While these challenges remain as formidable obstacles to the widespread use of telemedicine, these include inequitable access, data security issues, and healthcare professionals' adaptation. Tackling these issues involves joint actions of policymakers, healthcare facilities, and technology vendors in creation of appropriate regulatory frameworks, investment in technological infrastructure, and provision of relevant training and support for healthcare workers. Nevertheless, telemedicine may be seen as the new framework to revolutionize healthcare delivery and to make access to high-quality care available to all, both now and in the future.

CONCLUSION

The telemedicine is the revolutionary phenomenon that can optimize the healthcare delivery by means of improving accessibility, efficiency, and treatment outcomes. The COVID-19 pandemic expedited the assimilation of telemedicine, manifesting its capability to overturn the existing healthcare delivery models. Nevertheless, issues of unbalanced access, data security risks, and adaptation of healthcare professionals are formidable barriers to the generalization of this technology. To overcome these challenges strong regulatory frameworks and support by government is needed to realise telemedicine uptake and the related risks. Through leveraging telemedicine and by implementing relevant policies, healthcare systems can guarantee equal access to high-quality treatment for all individuals, both during and after the COVID-19 pandemic.

Authors Contribution
OFC and UOPC did the writing of the original draft, review and editing and contributed to conceptualization and methodology. UOPC did the validation and supervision.

Data Availability Statement
The data underlying this article will be shared on reasonable request to the corresponding author.

Conflict of Interest
None declared.

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