

Telerehabilitation in a Developing Country toward the Tail End of the COVID-19 Pandemic: Is it Here to Stay?

Carl Froilan D. Leochico, MD, PTRP,^{1,2,3} Gabriel Angelo M. Montemayor, MD,⁴
Arianne Justine T. Obeles, MD⁴ and Bradley Ashley G. Ong, MD⁴

¹*Department of Rehabilitation Medicine, College of Medicine and Philippine General Hospital, University of the Philippines Manila*

²*Department of Physical Medicine and Rehabilitation, St. Luke's Medical Center, Global City and Quezon City*

³*School of Medicine, Saint Louis University, Baguio City*

⁴*College of Medicine, University of the Philippines Manila*

After two years of the Coronavirus Disease 2019 (COVID-19) pandemic, cases have generally begun to decline in the different regions of the world,¹ and consequently a lot of people are gradually returning to face-to-face interactions, including health-related activities. Based on scarce local literatures published recently, telerehabilitation was envisioned to be a viable solution to bridge the perennial gaps in the delivery of rehabilitation services across the Philippine archipelago, such as the lack of manpower and resources, aggravated by the pandemic.²⁻⁴

During the pandemic, we have seen how a lot of rehabilitation professionals have ventured into the practice of telerehabilitation despite their seemingly inadequate prior knowledge, skills, and experience in virtual care.³ Many rehabilitation centers in the government and private sectors have also come up with their own telerehabilitation programs to cater to their patients amid changing COVID-19 quarantine protocols.⁴ Having one of the longest lockdowns in the world, the Philippines can potentially continue to leverage telerehabilitation. However, there have been realities on the ground that challenge the continuity of telerehabilitation and may question whether telerehabilitation will be here to stay as we usher into the post-pandemic era.

In the Philippines, although it is recommended to employ synchronous methods for any telemedicine service using secure, encrypted platforms,⁵ the actual telerehabilitation practice (consisting of teleconsultation and teletherapy) remains far from ideal. Currently, telerehabilitation providers are generally flexible to the telecommunication method that is available to any patient for the purposes of equity and inclusion, ranging from phone call to text messaging, online chat or videocall using common social media platforms like Facebook Messenger™ or Viber™, and various videoconferencing applications like Zoom™ or GoogleMeet™. However, this freedom to use even non-encrypted methods may place both patient and rehabilitation provider at risk for data privacy and cybersecurity breaches. There are instances that patients follow and continue to message the doctor or therapist through personal social media accounts even beyond work hours and about non-health-related matters. In addition, most Filipino households live in a residential unit with a floor area of around 10-29 square meters,⁶ and consist of an average of 4.2 people with sometimes multiple families co-inhabiting.⁷ Practically, these inevitable living conditions may make privacy and confidentiality difficult to observe during telerehabilitation.

Compared to Internet-dependent methods, either phone call or text messaging seems to be more sustainable when conducting telemedicine in the Philippines and possibly other lower middle-income countries (LMICs).^{8,9} Although more than 90% of the country has a wireless network coverage,⁹ patients from rural areas typically lack prerequisite technologies, high-speed Internet, and stable cellular reception necessary for a smooth and safe video-based synchronous telerehabilitation encounter. The Philippines has an average Internet speed of 2.8 Mbps, ranking 104th among 160 countries, while developed countries in Asia like South Korea (23.6 Mbps) and Singapore (12.9 Mbps) rank 1st and 12th, respectively.¹⁰ Poor online connections during telerehabilitation may compromise the safety and accuracy of virtual assessment and management. They may also unnecessarily increase the time spent by clinicians from

Corresponding author: Carl Froilan D. Leochico, MD, PTRP
Department of Rehabilitation Medicine
Philippine General Hospital
University of the Philippines Manila
Taft Avenue, Ermita, Manila 1000, Philippines
Email: cdleochico@up.edu.ph

assisting clients troubleshoot technical glitches, thereby limiting the number of patients that can be seen in a virtual clinic period, and possibly contributing to telehealth fatigue. The downtime in the virtual clinic can also result from the long waiting time for patients to log in (which in other cases patients do not show up in the end), and the filling out of electronic medical records and switching from one platform or application to another for various documentations and processes. The lack of telehealth device and platform interoperability may also cause workflow delays and even clinician burnout.

In different LMICs, only about 35% of their citizens have access to the Internet, with Guinea, Somalia, Burundi, and Eritrea having lower than 2% coverage.¹¹ The cost of Internet subscription is also relatively higher in LMICs compared to developed countries. In Africa, an average-income citizen spends approximately 18% of monthly income to purchase 1-gigabyte data compared to 1% for a counterpart in Europe.¹¹ In the Philippines, only 18% of households have access to the Internet, and a monthly Internet bill in the country may cost around 2 to 5 times the minimum daily wage.¹² In addition, the frequent typhoons and other natural calamities that may further destabilize the signal transmission of telecommunication technologies, including cellular sites, can contribute to telehealth challenges. Furthermore, telerehabilitation fees are out-of-pocket expenses shouldered by the patients since PhilHealth (the government's national health insurance corporation) and many private health insurance companies do not cover telehealth services at present due to lack of local evidence and established guidelines. Hence, even with a well-designed telerehabilitation system, the different resources across residential locations, socio-economic strata, ethnic groups, literacy levels, technical proficiency levels, and other demographic variables may possibly widen the disparities in access to telerehabilitation and aggravate health inequalities.

In a national survey conducted among physiatrists in the Philippines, their most common apprehension about telerehabilitation was its inherent limitation in examining patients.³ Another local survey on physicians' perceptions on telemedicine reported technological illiteracy or lack of technical expertise among the main barriers to virtual evaluation and management of patients with cancer.¹³ Moreover, the current generations of clinicians in the Philippines have not undergone any formal training on virtual care during their formative years in allied rehabilitation school or medical and postgraduate education since telemedicine in general was never part of the standard clinical practice throughout the country pre-pandemic.¹⁴ To address this, many clinicians have turned to their colleagues, national specialty societies, online resources, conferences or webinars, and possibly other references, such as documents or circulars from the World Health Organization and the country's Department of Health, as their guide in conducting telemedicine during the pandemic.³ Furthermore, many

scholarly articles were recently published containing protocols on virtual examination and management of specific conditions. An infodemiological study showed an overall global demand for the acquisition of telerehabilitation knowledge during the height of the pandemic, and the Philippines ranked first among the countries with the highest online interest in "telerehabilitation" in the past 10 years.¹⁵

Even though a large majority of physiatrists in the country recognize the manifold benefits of telerehabilitation evident during the pandemic,³ many may be apprehensive about its continued use beyond the pandemic, especially since protection against liability risks (e.g., privacy, security, confidentiality, regulation, misdiagnosis, and adverse events) remains unclear in still-evolving telemedicine guidelines and legislations. In 2016, Patdu and Tenorio stated that there were no laws directly governing telemedicine practice in the Philippines.¹⁶ Hence, the National Telehealth Center of the University of the Philippines Manila formulated policies and procedures to improve the delivery of telemedicine services and health outcomes in the country, while being aligned with the Data Privacy Act of 2012 to ensure organizational, physical, and technical security measures were in place.¹⁶ In the years that followed, several congressional bills (e.g., The Telehealth Act of 2012 and 2014; The Philippine eHealth Systems and Services Act) have been proposed, but solutions to the gaps in the current legislation on telemedicine remain underway.¹⁷ The COVID-19 pandemic has nonetheless catalyzed the relatively rapid advancements in national legislation.

Lastly, given the rapid emergence of various telerehabilitation programs across the country because of the unprecedented need during the pandemic, there is a need to develop a standard set of outcome indicators to regularly evaluate the efficacy and quality of any form of virtual rehabilitation service delivery. The metrics may be divided into four domains: (1) implementation (outcome indicators: adoption or uptake, acceptance, ease of use, technical quality); (2) service (efficiency, effectiveness, safety, equitability, sensitivity to patients' needs, punctuality); (3) client- and clinician-reported outcome and experience measures; and (4) health system (health resource utilization, cost-effectiveness).¹⁸

Despite the challenges presented, telerehabilitation can be better viewed not merely as a stop-gap measure for the social restrictions brought by the pandemic, but rather as a service delivery option that can stay even when in-person healthcare delivery has completely resumed. There remains a call to address the challenges and improve the conduct of telerehabilitation in LMICs, such as the Philippines, if telerehabilitation will continue to stay. In order not to waste the multisectoral efforts and progress made in highlighting the benefits of telerehabilitation, the following can be instances wherein telerehabilitation can take precedence over in-person visits as quarantine restrictions are eased: (1) follow-ups for outpatients and post-hospital discharges; (2) prescription

refill; (3) monitoring of chronic conditions and control of health parameters; (4) environmental assessment and modification; (5) assistance to community-based physicians on behalf of patients needing recommendations from a remote rehabilitation provider; and (6) patients without the physical or financial means and social support to travel to the nearest rehabilitation center, if any.¹⁹ These examples can potentially justify the need to maintain and even further strengthen telerehabilitation, while balancing it with the need for standard in-person encounters beyond the pandemic.

Statement of Authorship

CFDL contributed as a content expert in the conceptualization of work, and drafting, revising, and approving all versions of the manuscript.

GAMM, AJTO and BAGO contributed in the conceptualization of work, literature review, and initial drafting of the paper and its subsequent revisions.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

The authors did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

- World Health Organization (WHO), WHO coronavirus (COVID-19) dashboard 2022 [Internet]. 2022 [cited 2022 Apr]. Available from: <https://covid19.who.int/>
- Leochico CFD. Adoption of telerehabilitation in a developing country before and during the COVID-19 pandemic. *Ann Phys Rehabil Med*. 2020 Nov;63(6):563–4. doi: 10.1016/j.rehab.2020.06.001.
- Leochico CFD, Rey-Matias BMV, Rey-Matias RR. Telerehabilitation perceptions and experiences of physiatrists in a lower-middle-income country during the COVID-19 pandemic. *PM R*. 2022 Feb;14(2):210–6. doi: 10.1002/pmrj.12715.
- Leochico CFD, Mojica JAP, Rey-Matias RR, Supnet IE, Ignacio SD. Role of telerehabilitation in the Rehabilitation Medicine training program of a COVID-19 referral center in a developing country. *Am J Phys Med Rehabil*. 2021 Jun;100(6):526–32. doi: 10.1097/PHM.0000000000001755.
- Department of Health & University of the Philippines Manila, Telemedicine practice guidelines [Internet]. 2020 [cited 2022 Apr]. Available from: <https://dmas.doh.gov.ph:8083/Rest/GetFile?id=655607>
- Statista Research Department, Percentage distribution of households living in residential units in the Philippines in 2020, by floor area 2021 [Internet]. 2021 [cited 2022 Apr]. Available from: <https://www.statista.com/statistics/1240662/philippines-households-living-in-residential-units-by-floor-area/>
- Philippine Statistics Authority (PSA) and ICF, Key findings from the Philippines national demographic and health survey 2017 [Internet]. 2018 [cited 2022 Apr]. Available from: <https://www.dhsprogram.com/pubs/pdf/SR253/SR253.pdf>
- Leochico CFD, Espiritu AI, Ignacio SD, Mojica JAP. Challenges to the emergence of telerehabilitation in a developing country: a systematic review. *Front Neurol*. 2020 Sep;11:1007. doi: 10.3389/fneur.2020.01007.
- Gavino AI, Tolentino PAP, Bernal ABS, Fontelo P, Marcelo AB. Telemedicine via Short Messaging System (SMS) in rural Philippines. *AMIA Annu Symp Proc*. 2008 Nov;952.
- Salac RA, Kim YS. A study on the internet connectivity in the Philippines. *Asia Pac J Bus Rev*. 2016 Aug;1(1):67–88. doi: 10.20522/APJBR.2016.1.1.67
- Babatunde AO, Abdulazeez AO, Adeyemo EA, Uche-Orji CI, Saliyu AA. Telemedicine in low and middle income countries: closing or widening the health inequalities gap? *Eur J Environ Public Health*. 2021;5(2):em0075. doi:10.21601/ejeph/10777
- Mirandilla-Santos MG. Bridging the digital infrastructure gap: policy options for connecting Filipinos [Internet]. 2021 [cited 2022 Apr]. Available from: <https://pidswebs.pids.gov.ph/CDN/PUBLICATIONS/pidspn2107.pdf>
- Cruz-Lim EMDG, Co HCS, Mendoza MJL, Dumlaio PE III, Lucero JAC, Yap BC, et al. Physicians' perceptions on the role of telemedicine in cancer care during and post-COVID-19 pandemic. *Acta Med Philipp*. 2021;55(2):264–70. doi:10.47895/amp.v55i2.2836
- Leochico CFD. Educating health care professionals about telerehabilitation: developing a curriculum map for high- and low-resource settings. In: Alexander M, ed. *Telerehabilitation: principles and practice*, 1st ed. Philadelphia: Elsevier; 2022. pp. 391–403.
- Leochico CFD, Austria EMV, Espiritu AI. Global online interest in telehealth, telemedicine, telerehabilitation, and related search terms amid the COVID-19 pandemic: an infodemiological study. *Acta Med Philipp*. 2022;56(11):66–75. doi:10.47895/amp.vi0.3037
- Patdu ID, Tenorio AS. Establishing the legal framework of telehealth in the Philippines. *Acta Med Philipp*. 2016;50(4):237–46. doi:10.47895/amp.v50i4.763
- Isip-Tan IT, Sarmiento FI, Fong M, Guzman A, Herber JM, Marcelo A, et al. Telemedicine: guidance for physicians in the Philippines [Internet]. 2020 [cited 2022 Apr]. Available from: <https://www.philippinemedicalassociation.org/wp-content/uploads/2020/05/1-Telemedicine-for-Health-Professionals.pdf>
- Rehabilitative Care Alliance, Considerations for the evaluation of virtual rehabilitation [Internet]. 2022 [cited 2022 Apr]. Available from: http://rehabcarealliance.ca/uploads/File/COVID-19/Evaluation_Considerations_for_Virtual_Rehab_-_ENG_-_Final.pdf
- Philippine General Hospital, Reiteration of guidelines in outpatient and telemedicine consultations [Internet]. 2022 [cited 2022 Apr]. (Grey literature).