Continuing Care through Telerehabilitation for Patients in a COVID-19 Referral Center in the Philippines: A Case Series

Ramon Angel P. Salud, MD, MBA, Carl Froilan D. Leochico, PTRP, MD, Sharon D. Ignacio, MD, Jose Alvin P. Mojica, MD, MHPEd and Cynthia D. Ang-Muñoz, MD, MSc

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

ABSTRACT

In April 2020, the Department of Rehabilitation Medicine (DRM) of the University of the Philippines - Philippine General Hospital (UP-PGH) transitioned to a telerehabilitation program called ITAWAG, an acronym for **I**ntroducing **T**elerehab **A**s a **W**ay to **A**ccess **G**eneral rehabilitation medicine services. This was in response to the designation of UP-PGH as a COVID-19 referral center and the abrupt closure of all its in-patient and out-patient rehabilitation services. Eleven previous in-patients and out-patients with musculoskeletal and neurologic impairments continued their rehabilitation programs remotely, either through a phone call or video call. Their clinical outcomes and the implementation of the ITAWAG program were monitored to determine the effectiveness of an offsite continuing care program. Using the Clinical Global Impressions-Severity (CGI-S) scale, eight patients had a reduction in the severity of their illness, while the remaining three clients had no change. Feedback surveys showed that most clients and caregivers (68%) and health providers (77%) were satisfied with the program's implementation and its outcome. A frequent complaint was the poor phone reception and internet connection. As threats of a COVID-19 outbreak continue, telerehabilitation gives patients a safe, affordable, and convenient alternative for follow-up and continuity of care in medical rehabilitation. Integrating the ITAWAG program into the initial facility-based rehabilitation management can enhance its value in optimizing functional gains and resolving its shortcomings.

Key Words: Telerehabilitation; rehabilitation medicine; Philippines; COVID-19; continuity of care

INTRODUCTION

On March 15, 2020, Metro Manila was locked down to contain the spread of COVID-19.[1] The Philippine General Hospital (PGH) was designated a COVID-19 referral center, and all ongoing facility-based rehabilitation services and follow-up consultations were canceled.

The Department of Rehabilitation Medicine (DRM) had been providing offsite rehabilitation consultations and therapy to a remote community in Alfonso, Cavite since 2017 as part of its community-based rehabilitation program.[2] With the closure of all in-patient and out-patient services, the department opened its existing telerehabilitation program to patients needing continued rehabilitation care. Aptly called ITAWAG (meaning "to call") – an acronym for Introducing Telerehab As a Way to Access General rehabilitation medicine services, stakeholders communicate via phone for a consultation, therapy, and follow-up.

This case series reports the first cases managed under the ITAWAG program from June to August 2020 to determine the program's clinical effectiveness and stakeholder satisfaction. It is hoped that the lessons gained can guide

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

similar telerehabilitation endeavors in other resource-limited healthcare settings.

Patient Information and Clinical Findings

The clients invited to the ITAWAG program were former out-patients and in-patients of DRM whose rehabilitation management was discontinued without achieving the desired functional outcomes. Table 1 summarizes the demographic and clinical profiles of the program's first eleven patients. Six of the eleven clients were females. The ages varied widely, with two clients each in the pediatric and elderly age groups, and the rest representing early, middle, and late adulthood. The disorders were either neurologic or orthopedic with pain, impaired movement, limited capacities in communication and performing commons tasks as the most common rehabilitation concerns. Nearly half of the clients (5/11) resided near PGH, while the rest were about 16-33 kilometers away.

Table 1. Demographic and clinical information and outcomes of the initial cases enrolled in ITAWAG

Medical diagnosis	Age / Gender	Rehabilitation problems	Approach	IC-FC*	Rehabilitation outcomes
Transfemoral amputation, right	25 / Female	Severe difficulty with community ambulation needing assistance	Home program training via video call	17 days	• Improved standing balance • Increased muscle strength in upper limbs
Supraspinatus tendinitis	23 / Male	Chronic shoulder pain	Home program training via video call	23 days	• Targeted functional range of shoulder motion reached without pain
Systemic Lupus Erythematosus & Scleroderma with spine osteoporosis	55 / Female	Low back pain; compression deformity spine	Medical consult via audio call	28 days	• Back pain resolved with prescribed medications • Cause of pain and deformity confirmed through the requested diagnostic tests • Scheduled for bracing
Down Syndrome	6 / Female	Impaired language; limited capacity to communicate	Rehabilitation therapy via video call	48 days	• Minimal improvements in communication skills • Improved oromotor coordination • Increased engagement in activities
Laceration injury, R arm s/p neurovascular & muscle repairs	25 / Male	Residual median nerve deficits	Home program training via audio call	51 days	• Noted sensorimotor improvements in hand • Dropped out of the program due to poor internet connection
Old stroke	33 / Female	Dysarthria; residual hemiparesis with mild difficulty in walking; and severe difficulty in bimanual activities needing assistance	Rehabilitation therapy via video call	34 days	• Increased clarity in speech • Able to ascend and descend the stairs • Improved hand function with mild difficulty in bimanual activities; no assistance needed • Able to do domestic chores • Improved ankle and shoulder mobility
Cerebrovascular Disease s/p craniectomy; Epilepsy	42 / Male	Hemiparesis; dysarthria; moderate difficulty in transfers and mobility with assistance	Home program via audio call	20 days	• Stands and walks with a quad cane with minimal difficulty with one-person assist
Knee osteoarthritis (OA), hyperuricemia, old stroke, carpal tunnel syndrome (CTS)	64 / Male	Knee pain; shoulder pain and LOM	Home program training via video call	36 days	• Decreased pain with prescribed medications and activity modification • New findings noted in the wrist
Autism Spectrum Disorder	11 / Male	Poor attention span and difficulty in communicating	Rehabilitation therapy via online audio call	37 days	• Increase in attention span with fewer tantrums • No significant improvement in communication • Shifted to the home program due to poor call quality
Cervical radiculopathy, CTS	52 / Female	Recurrent neck and back pain; bilateral wrist pain with paresthesia	Home program training via video call	56 days	• Pain relieved with increased function after pain medication, activity modification, and exercise • Discharged from rehab
Osteoporosis	68 / Female	Hip pain with limited standing tolerance	Medical consult via audio call	20 days	• No improvements with prescribed medications and activity modification • New symptoms in hand and upper back

**IC-FC - Duration, initial consult to follow-up consult*

Telerehabilitation Intervention and Outcomes

ITAWAG is a simple telerehabilitation program accessible to clients with any type of phone, launched and advertised nationally through the official DRM Facebook™ page on May 21, 2020. Former DRM patients were also informed by their resident physician-in-charge through text or social media messages. The advertisement contained details of the program, including its process, benefits, limitations, translated in Filipino, and the hotline number for registration. To join the program, patients were required to have 1) a companion who could supervise and assist them during telerehabilitation, 2) access to a local health facility in an emergency, and 3) informed consent. Figure 1 shows the pathway of care under ITAWAG.

From June 1 to July 4, nineteen former DRM patients called the ITAWAG hotline. Upon reaching, each patient talked to the telerehabilitation resident on duty, who explained the program's concept, procedure, advantages, disadvantages, and limitations. Of the eight clients who did not join, two refused to consent, while the rest did not respond to follow-up calls. Informed consent was given verbally, and a soft copy was emailed to the department. Once with approval, the patients were told of the measures taken to ensure safety and data privacy. Each patient underwent an initial phone interview with a resident physician where demographic data was obtained, followed by the history and virtual physical examination. While all patients received advice from the resident physiatrist, the plan of care varied. Some only needed medical advice, while others required rehabilitation therapy, either under the supervision of a therapist (teletherapy) or as a home program.

The majority (10) showed improvements under the ITAWAG program, with gains in mobility and self-care, and domestic tasks. The slightest change was seen in the communication skills of the two pediatric cases with developmental disorders. Two clients dropped out because of the poor call quality during consultations.

All stakeholders in the program (patients, caregivers, physicians, therapists) were required to complete the satisfaction survey after each client meeting. The 5-item Likert scale survey is a standard tool DRM used to evaluate its ITAWAG program before the pandemic. The results of the study are presented in Figure 2. The feedback of the clients and health providers was similar in their dissatisfaction with the use of a phone attributed to either poor internet connection or poor phone signal. Most patients (82%) expressed satisfaction over the quality of care given by their doctors. All who underwent teletherapy expressed satisfaction with the quality of care provided. The clients complained mainly about the difficulty in communicating well during teleconsultations due to the lack of better telecommunication services and equipment, making telerehabilitation

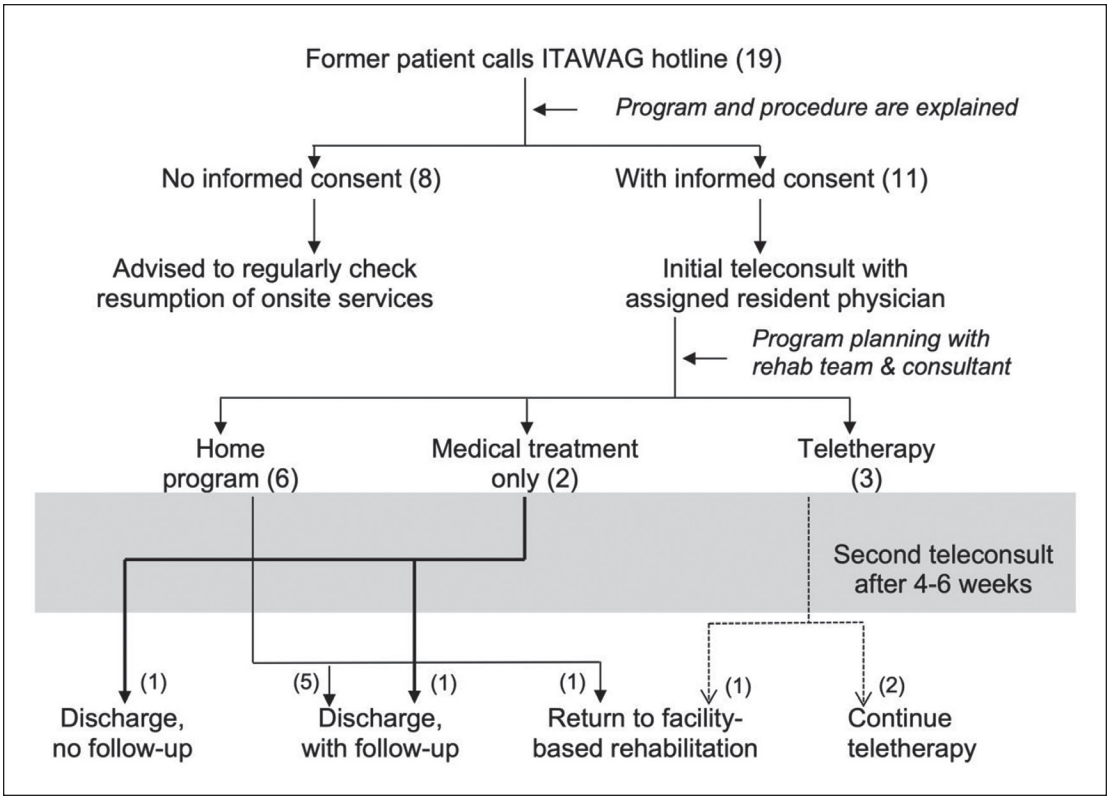

Figure 1. Pathway of care (ITAWAG). The numbers represent the patient count during the study period (June 4 to August 5, 2020).

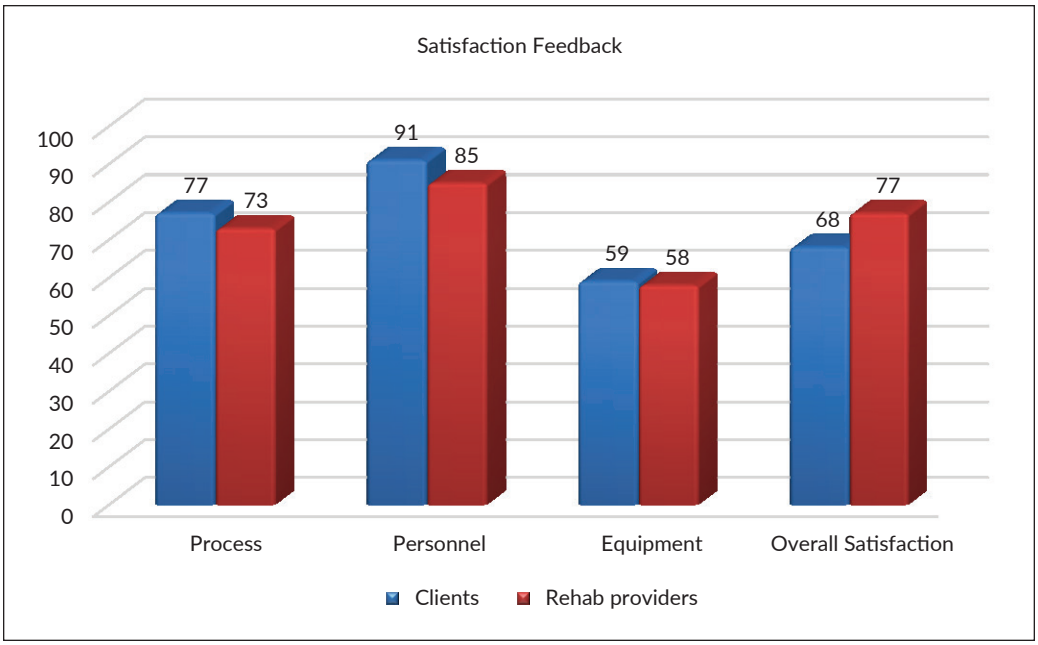

Figure 2. Percentage of clients (11) and telerehabilitation health providers (26) who expressed satisfaction with the process, personnel, and equipment of the ITAWAG program.

less acceptable. On the part of the healthcare providers, the abrupt shift from in-person consultations to virtual, coupled with their inexperience with telerehabilitation, made it hard to adjust to the program.

No adverse events (fall, cardiopulmonary distress, or irate complaint) were documented throughout the 77-day observation period of the ITAWAG program. The Clinical Global Impression-Severity (CGI-S) scale was used to document the improvement after telerehabilitation. The CGI-S score reflects different domains, including physician-observed and patient-reported symptoms, pain-related behavior, and clinical dysfunction during the past seven days. It is one of the outcome measures used globally for telerehabilitation, whose validity has been established in relation to other robust rating scales.[3-5] Table 2 shows the CGI-S scores of the eleven patients based on the evaluation of the physiatrist-in-charge from the initial teleconsultation and the follow-up teleconsultation 4-6 weeks later. Eight of the eleven patients showed improvements. The follow-up scores of the remaining three patients were the same as that of the initial teleconsultation. One patient showed no improvement in her clinical status. In the other two cases, there were no changes in the disease-related symptoms of the client, but with improvement in their ability to do common tasks.

Table 2. Clinical Global Impression-Severity (CGI-S) scale scores of patients at initial and follow-up telerehabilitation consultations (N = 11)

Patient #	Initial telerehab	Follow-up
1	3	2
2	2	2
3	3	2
4	3	2
5	4	3
6	3	2
7	4	4
8	3	2
9	3	2
10	3	1
11	3	3
Average CGI-S	3.09 ± 0.51	± 0.75

CGI-S scores: (1) normal/ not at all ill; (2) borderline ill; (3) mildly ill; (4) moderately ill; (5) markedly ill; (6) severely ill; or (7) among the most extremely ill patients

DISCUSSION

Follow-up consultations are essential in continued rehabilitation care. The eleven patients who availed of the ITAWAG program aptly represent the cases that regularly follow-up with rehabilitation team members. The rehabilitation program changes in neurologic and orthopedic disorders as patients recover and show increased capacities in moving and performing tasks. The pediatric and elderly clients represent cases that need regular follow-up because of the changes in functional capabilities and personal needs with age. The 33-year old client with an old stroke had significant functional gains through teletherapy because she had the advantage of being trained in her actual environment. The clients with pain were also adequately managed offsite.

While ITAWAG proved helpful and relevant, two major challenges need to be addressed. First, the unreliable

phone and internet services led to two clients dropping out of the program. Second, there was a lack of preparation when rehabilitation providers transitioned from face-to-face demonstrations to giving instructions over the phone without seeing the patient. Integrating telerehabilitation into the facility-based rehabilitation program can help resolve these challenges. Clients who will need long-term follow-up and continued care should be prepared to transition to ITAWAG even while undergoing an onsite, professionally supervised management. Patients and their caregivers should be taught proper monitoring and reporting using their preferred communication technology. Print and visual media can be given to clients upon discharge from the initial onsite care. These will be used as reference points when follow-up consultations are done by phone. The authors also recommend using a satisfaction feedback survey and an outcome measure (e.g., CGI-S) for all clients in the program.

The use of telehealth has increased on a global scale.[6] The Department of Health has taken steps to expand its use locally.[7] Government support and intervention are vital in attaining maximum efficiency for the ideal telehealth system.[8,9] A poor telecommunication system stands as one of the most significant limitations to the growth and adoption of telemedicine.[10] With ITAWAG, teletherapy was only feasible through video calls. Teaching the home program was easier through a video call because the health providers could demonstrate the desired positions and movements. With the continued rise in smartphone users and cheaper call and data plans, the program will likely shift from text and phone calls to video conferencing, which is superior for its potential to provide clinical effectiveness similar to in-person meetings.[11,12]

Telerehabilitation is a viable alternative to onsite rehabilitation during crises and disasters.[13] The early experiences with the ITAWAG program showed that continuing rehabilitation care in the actual environment of patients makes functional training more relevant. Physiatrists were able to give practical advice that considered the real-life experiences of the patients. Including and planning telerehabilitation as part of the initial facility-based rehabilitation management of clients will enhance the value of ITAWAG and address the program's shortcomings.

Statement of Authorship

All authors contributed to the conceptualization of work, acquisition and analysis of data, drafting, revision, and approval of the final version submitted.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

The study was personally funded.

REFERENCES

1. Office of the President of the Philippines Malacanang. Memorandum from the Executive Secretary on Community Quarantine over the Entire Luzon and Further Guidelines for the Management of the Coronavirus Disease 2019 (COVID-19) Situation [Internet]. Official Gazette Of the Philippines. 2020 [cited 2020 Aug 26]. Available from: https://www.officialgazette.gov.ph/2020/03/16/memorandum-from-the-executive-secretary-on-community-quarantine-over-the-entire-luzon-and-further-guidelines-for-the-management-of-the-coronavirus-disease-2019-covid-19-situation/.
2. Leochico CF, Mojica JA. Telerehabilitation as a Teaching-Learning Tool for Medical Interns. PARM Proceedings (Official Journal of the Philippine Academy of Rehabilitation Medicine). | Request PDF. PARM Proc [Internet]. 2017 [cited 2020 Aug 26];9(1):39–43. Available from: https://www.researchgate.net/publication/319204674_Telerehabilitation_as_a_teaching-learning_tool_for_medical_interns_PARM_Proceedings_Official_Journal_of_the_Philippine_Academy_of_Rehabilitation_Medicine.
3. Veras M, Kairy D, Rogante M, Giacomozzi C, Saraiva S. Scoping Review of Outcome Measures Used in Telerehabilitation and Virtual Reality for Post-stroke Rehabilitation. J Telemed Telecare. 2017 Jul 1;23(6):567–87.
4. Busner J, Targum SD. The Clinical Global Impressions Scale: Applying a Research Tool in Clinical Practice. [Internet]. Vol. 4, Psychiatry (Edgmont (Pa.: Township)). 2007 [cited 2020 Aug 26]. p. 28–37. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20526405%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC2880930.
5. Guelfi J. Clinical Research in Psychopharmacology: New Standards for Drug Development: An Application to Antidepressants. Eur Psychiatry. 1990;5(5):289–94.
6. Latifi R, Doarn CR. Perspective on COVID-19: Finally, Telemedicine at Center Stage. Telemed e-Health [Internet]. 2020 May 14 [cited 2020 Aug 26]; Available from: www.liebertpub.com.
7. Department of Health. DOH Boosts Telemedicine Services for NCR; Service to Expand to Other Regions Soon [Internet]. c2020 [cited 2020 November 20]. Available from https://doh.gov.ph/doh-press-release/DOH-BOOST-TELEMEDICINE-SERVICES-FOR-NCR-SERVICE-TO-EXPAND-TO-OTHER-REGIONS-SOON.
8. Raths D. Expanding Internet Access Improves Health Outcomes [Internet]. Government Technology. 2020 [cited 2020 Aug 26]. Available from: https://www.govtech.com/network/Expanding-Internet-Access-Improves-Health-Outcomes.html.
9. Rural Health Information Hub. Connectivity Considerations for Telehealth Programs - RHIhub Toolkit [Internet]. 2019 [cited 2020 Aug 26]. Available from: https://www.ruralhealthinfo.org/toolkits/telehealth/4/connectivity.
10. Gerber C. Growth of Telemedicine Slowed by Internet Access Challenges [Internet]. Government Technology. 2019 [cited 2020 Aug 26]. Available from: https://www.govtech.com/health/Growth-of-Telemedicine-Slowed-by-Internet-Access-Challenges.html.
11. Statista. Number of Smartphone Users in the Philippines from 2017 to 2020, with Forecasts until 2026 [Internet]. c2021[cited 2020 December 3]. Available from https://www.statista.com/statistics/467186/forecast-of-smartphone-users-in-the-philippines/.
12. Dinevski D, Kelc R, Dugonik B. Video Communication in Telemedicine. In: Advances in Telemedicine: Technologies, Enabling Factors and Scenarios. InTech; 2011.
13. Latifi R, Doarn CR. Perspective on COVID-19: Finally, Telemedicine atc Stage. Telemed e-Health [Internet]. 2020 May 14 [cited 2020 Aug 26]; Available from: www.liebertpub.com.