Evaluating the Usability of the Expanded Telerehabilitation Program Implemented by Philippine General Hospital during the COVID-19 Pandemic: A Cross-sectional Study

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ABSTRACT

Background. The Department of Rehabilitation Medicine of the University of the Philippines-Philippine General Hospital (UP-PGH) established its telerehabilitation service program in 2017. The program previously catered to patients in a partner rural community by providing teleconsultation and teletherapy over a distance. With the unprecedented coronavirus disease 2019 (COVID-19) pandemic, the program has expanded its service to outpatients previously managed face-to-face by the department, regardless of location.

Objectives. This study aimed to evaluate the usability of the telerehabilitation service program at UP-PGH when it was expanded during the pandemic and to associate telerehabilitation usability ratings with the participant groups, demographic characteristics, and prior telemedicine knowledge and experience.

Methods. This cross-sectional study involved the doctors, physical therapists, occupational therapists, psychologists, patients, and patients' carers, who participated in at least one telerehabilitation session and consented to respond to a digital survey thereafter. Total enumeration sampling of all telerehabilitation participants was employed. The study outcome was the usability of the expanded telerehabilitation program based on the System Usability Scale (SUS) benchmarked at 68. Descriptive and inferential statistics were done at a 95% confidence interval. The participants' responses to open-ended questions regarding telerehabilitation experience and recommendations were also presented.

Results. The participants consisted of 19 doctors, 11 therapists, 37 patients, and 74 caregivers. The majority of the participants were female and lived in urban areas. The primary online telerehabilitation platforms used were Viber™ and Zoom™. The mean of overall SUS scores was below average for health providers [doctors (mean = 61.71), therapists (mean = 67.73)]; and above average for end-users [patients (mean 74.56), and carers (mean = 71.89)]. There was a significant difference in the overall SUS scores between doctors (mean: 61.7) and patients (mean: 74.6), $p<0.05$. In terms of videoconferencing platform, participants reported significantly higher system usability for those who used either Zoom™ (mean: 75.0) or Viber™ (mean: 69.3), as compared to Google Meet™ (mean: 53.1), $p<0.05$. There was no significant difference in the overall SUS scores across sexes, places of residence, primary telerehabilitation techniques used, prior telemedicine knowledge, and experience. The majority viewed telerehabilitation as a valuable method to provide service during the pandemic, but they were mostly concerned with technical problems, particularly an unstable Internet connection.

Poster presented and won 2nd place in the Philippine Academy of Rehabilitation Medicine (PARM) Annual Scientific Research Forum on February 20, 2021 (virtual format).

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Conclusion. The expanded telerehabilitation service program of the PGH was perceived as useful by patients and caregivers but not by the health providers. While the program succeeded in providing continued outpatient rehabilitation services during the pandemic, the challenges experienced by its telehealth providers must be investigated and addressed.

Key Words: telemedicine, telerehabilitation, physical and rehabilitation medicine, technology assessment, delivery of healthcare, Philippines

INTRODUCTION

In 2017, the World Health Organization (WHO) launched the Rehabilitation 2030 initiative, entitled "Call for Action," to address the unmet needs for rehabilitation services around the globe.[1] To assist the different countries, a resource guide entitled, "Rehabilitation in health systems: Guide for action" was developed.[2] In the guide, WHO encouraged planning new programs, strengthening existing ones, and developing systems that involve or support rehabilitation.[2] However, inadequacies in national policies and standards, service delivery, accessibility, and resource allocation continued to hinder persons with disabilities (PWD) from accessing face-to-face rehabilitation services in low to middle-income countries like the Philippines.[3] In line with universal health coverage, local efforts, such as telehealth, were initiated to improve access to healthcare services, including rehabilitation.[4-5]

In response to WHO's "Call for Action," the Department of Rehabilitation Medicine in the Philippine General Hospital (PGH-DRM) established its telerehabilitation program in collaboration with the Community Health and Development Program (CHDP) of the University of the Philippines Manila (UPM) to provide consultation and therapy to patients in a partner rural community over a distance using information and communications technology.[6,7] The telerehabilitation protocol has undergone several iterations through the years to adapt to the changing needs, technical resources, manpower, and preferences of stakeholders (i.e., patients, carers, telerehabilitation providers).

In March 2020, with the onslaught of the COVID-19 virus, in-person rehabilitation services were temporarily discontinued in many, if not all, hospitals in the country to protect the health of the patients and healthcare providers, prioritize urgent medical care to patients with COVID-19, and preserve the limited number of personal protective equipment. Being the country's national university hospital and the Philippines' biggest tertiary referral center, the PGH strove to continue catering to the needs of its indigent patients amid the disruption of workflow caused by the COVID-19 pandemic. It was, therefore, appropriate to leverage cost-effective telecommunication technologies to provide access to quality tertiary healthcare for PWD, whose rehabilitation needs remained unmet amid the pandemic.[8] Since the start of the enhanced community quarantine period, patients previously receiving in-person rehabilitation medicine services have been unable to continue their regular consultations and therapy sessions.[7] Consequently, the PGH-DRM expanded its telerehabilitation program to serve new patients and old patients who were previously seen in-person by the Rehabilitation Medicine service but were unable to access center-based follow-up consultation and therapy due to the general community quarantine for public health and safety.[7] Telerehabilitation was initially offered to previously managed patients. Eventually, it included new patients who needed rehabilitation consult or therapy provided by paramedical services such as physical therapy, occupational therapy, speech therapy, and psychological services. The expanded telerehabilitation program at PGH used both asynchronous and synchronous methods of communication. The former was used to provide printed, videotaped home exercise programs or both, while the latter was used for teleconsultations by audio or video calls.

Filipinos can take advantage of technology to access healthcare, particularly rehabilitation medicine services, being tagged as the world's social media capital.[9] With the relatively lower cost, greater availability, and wider reach of technology (such as smartphones, tablets, computers, internet) as compared to previous years, there is a way for access between patients and rehabilitation medicine physicians and therapists, minimizing the barriers of distance, time, costs, and disability.[10] And yet, telemedicine was not widely practiced before the pandemic, more so telerehabilitation. Possible reasons for this are the healthcare professionals' fear of using new technology, resistance to change, lack of telemedicine training, lack of established telerehabilitation protocols, and unresolved ethical and data privacy-related issues.[11,12]

The 2017 telerehabilitation program of the DRM was well-planned. It was pilot tested and found to be a feasible alternative to in-person rehabilitation to patients in the community.[5,13] The partner community was trained to conduct telerehabilitation before implementing the program, which was ideal.[14] However, because there was an urgent need to modify the existing telerehabilitation program to adapt to the unprecedented circumstances brought about by COVID-19, the program's expansion to all outpatients of the department did not go through a proper pre-implementation stage. Both telerehabilitation providers in the department and the targeted users did not have a formal orientation or training. Neither was their time to do a pilot test.

With the expanded telerehabilitation service program already in operation, it was necessary to evaluate the system to have a basis for continued improvements. A study by Little and colleagues in 2017 utilized the System Usability Scale (SUS) to evaluate the usability of a mobile application to support patients rehabilitating in the community.[15] The SUS is a quick and easy yet reliable, valid, and freely available tool that has become an industry standard in evaluating

technology-related products and services, including hardware, software, mobile devices, and websites the past 25 years.[10,16-19] The scale has also been used for telemedicine programs, including telerehabilitation services.[11] SUS scores help determine the acceptability of a system to its users.[16]

This study, therefore, aimed to determine the perceived usability of the COVID-19-catalyzed expanded telerehabilitation service program of the DRM based on its users' (i.e., patients, carers, telerehabilitation providers) SUS ratings, initial telerehabilitation experience, and recommendations. It also aimed to determine the association of the SUS ratings with the participants' demographic characteristics and prior telemedicine knowledge and experience.

METHODS

Study Design, Setting, and Population

This was a cross-sectional study conducted at the PGH. It involved Rehabilitation Medicine staff which consisted of residents, physical thera-pists (PT), occupational therapists (OT), speech-language pathologists (SLP), psychologists, as well as adult patients and carers aged 18 years or above. Eligible participants must have engaged in at least one telerehabilitation session with either provider or consumer. All telerehabilitation sessions followed the expanded telerehabilitation guidelines of the DRM. The other inclusion criteria were as follows: able to understand written or spoken English or Filipino language, and with personal access to technology (i.e., phone, tablet, computer, or Internet). The following were the exclusion criteria: pay or private patients; unable to respond to the survey due to lack of consent; and unable to comprehend verbal or written instructions.

Sampling Design, Sample Size, and Study Period

Purposive sampling in the form of total enumeration was employed. There was no required minimum number of respondents per category. Commencing from study approval by the institutional review board, data collection ran for almost three months, from August 10, 2020, to October 31, 2020.

The combined sample size for patients and caregivers was 109, while the sample size for the Rehabilitation Medicine staff was 28. The computations were based on the following: average weekly teleconsultations (i.e., 10-15); the number of residents manning the telerehabilitation service (i.e., 3-4/ month); the number of paramedical staff (i.e., PT, OT, SLP, Psychologists) operating the telerehabilitation service (i.e., 10-12/month).

Study Procedure and Instrument

The telerehabilitation providers collected the data. The average duration for study participation was 10 to 15 minutes. The telerehabilitation providers were trained to ensure data privacy by maintaining environmental requirements expected of a telemedicine encounter (e.g., room was quiet, private, distraction-free, without bystander not actively involved in the patient's care). Technical requirements included the use of an encrypted platform. The study investigators collated the telerehabilitation electronic medical record data and transcribed them into the data collection form.

New or previously seen patients scheduled via the hospital's Outpatient Consultation Request and Appointment (OCRA) system were asked to participate in the study. The informed consent form to participate in the study was read or sent to each participant through phone, audio, video, email, or instant messaging. Patients and carers answered the SUS tool incorporated in the data collection form administered by a telerehabilitation provider. The questionnaire was responded to either through an online survey (i.e., Google Survey™) or verbally through a phone call or video call. The telerehabilitation providers were also asked to answer the SUS questionnaire. All respondents accomplished the questionnaire only once, right after their first telerehabilitation experience. Both the validated English version of SUS and a version written in Filipino were available to respondents. A Filipino linguistics professor reviewed the translation, and content validation was done by telerehabilitation experts in the study hospital (Appendices A and B).

Aside from the SUS, the data collection form also contained the following independent variables: participant group (i.e., patient, carer, doctor, or therapist), age, birth date, sex, place of residence (i.e., urban or rural), primary telerehabilitation techniques used (i.e., text message, phone call, online instant messaging, online audio call, online video call), primary online telerehabilitation platform used if applicable (i.e., Google Meet™, Telegram™, WhatsApp™, Viber™, or Zoom™), and prior telemedicine knowledge and experience, and recommendations.

Investigating the reasons behind the participants' SUS scores is beyond the scope of this study. The SUS score was obtained for the initial telerehabilitation experience to determine if the users were likely to repeat the experience or not.

Data Analysis Plan

Descriptive statistics (i.e., frequency and percentage) were used to present the aforementioned independent variables, which were all categorical data, except for age (discrete numerical data, for which mean and standard deviation were reported).

The SUS is a mixed tone questionnaire that had ten questions with Likert-scale responses (i.e., from strongly disagree to strongly agree), coded from 1 to 5 and reverse-coded to ensure consistent scoring wherein the odd-numbered items corresponded to a positive tone while the even-numbered items corresponded to a negative tone. The numerical scores per item were summed and multiplied by 2.5 to obtain the overall SUS score (i.e., 0 to 100).[9] The overall system score for SUS equivalent to an average experience or 50th percentile would be 68. Below this benchmark (< 68),

the experience would be below average, while a score > 68 would correspond to an above-average experience.[20,21] The total SUS scores for overall and across groups were presented in means and standard deviations. The means and standard deviations of overall scores were tested for group differences according to the aforementioned independent variables using Welch's analysis of variance (ANOVA) (for more than two groups) or t-tests (for two groups), wherever applicable. All data were presented at a 95% confidence interval.

The study investigators transcribed the participants' telerehabilitation experiences and recommendations. Similar responses were grouped and summarized per participant group.

RESULTS

There were 141 participants in this study: 111 for the patient/ caregiver group and 30 for the telerehabilitation provider group (i.e., 19 doctors, 7 physical therapists, 3 occupational therapists, 1 psychologist). The breakdown of ages, gender, place of residence, primary telerehabilitation technique used, and primary online telerehabilitation platform used are shown in Table 1.

The mean age of participants, regardless of group, was 35 years. The majority of participants were aged 30-39 years (37.59%). The majority were female (80.14%) and came from urban areas (87.94%). For the primary telerehabilitation technique used, 113 (41%) participated in video calls, while 74 (27%) used phone calls and 53 (19%) used text messaging. For participants who used an online telerehabilitation platform, Viber™ ranked first (45.39%), followed by Zoom™ (39.72%). Ninety participants (63.83%) had prior knowledge or awareness regarding the use of telemedicine or telerehabilitation, and 73 (51.77%) had prior actual experience.

Table 2 shows the SUS scores. There was a significant difference in overall SUS scores among participant groups. The lower mean score obtained from the doctors (61.71) with a sample size of 19 and the higher mean scores obtained from the patients (74.56) with a sample size of 37 was statistically significant in terms of SUS scoring as presented in Appendix C. The rest of the comparisons show no significant differences using a 95% confidence interval.

There was a significant difference in overall SUS based on the primary online telerehabilitation platform used. The means for the SUS based on the primary online telerehabilitation platform used between Viber™ (mean of 69.30) and Google Meet™ (mean of 53.125) were significantly different ($p<0.05$) (Appendix D). Likewise, Zoom™ (mean of 75) and Google Meet™ (53.13) had a significant difference with a p-value of <0.01 (Appendix D).

There was no significant difference in overall SUS based on sex, place of residence, primary telerehabilitation technique used, prior knowledge or awareness regarding telemedicine or telerehabilitation, and prior actual experience with telemedicine or telerehabilitation.

Table 1. Characteristics of Respondents (N=141)

Characteristics	n (%) or Mean (SD) / Median
Participant group	
Patient	37 (26.2)
Carer	74 (52.5)
Doctor	19 (13.5)
Therapist	
Physical therapist	7 (4.96)
Occupational therapist	3 (2.13)
Speech-language therapist	0 (0.00)
Psychologist	1 (0.71)
Age, years	
Mean (n =)	35.62 (2.65) / 32
18-29 (n = 46)	25.74 (2.64) / 26
30-39 (n = 53)	32.96 (2.63) / 32
40-49 (n = 27)	43.70 (3.01) / 42
More than 50 (n =15)	60.71 (5.27) / 59.5
Sex	
Female	113 (80.14)
Male	28 (19.86)
Place of residence	
Urban	124 (87.94)
Rural	17 (12.06)
Primary telerehabilitation technique/s used	
Text message	53 (19.27)
Phone call	74 (26.90)
Online instant messaging	22 (8.00)
Online audio call	13 (4.72)
Online video call	113 (41.00)
Primary online telerehabilitation platform used	
Viber™	64 (45.39)
Zoom™	56 (39.72)
Not applicable *(any offline method used)*	12 (8.51)
Facebook Messenger™	5 (3.55)
Google Meet™	4 (2.84)
Telegram™	0 (0.00)
WhatsApp™	0 (0.00)
Any prior knowledge or awareness regarding telemedicine or telerehabilitation	
Yes	90 (63.83)
No	43 (30.49)
Not sure	8 (5.67)
Any prior actual experience with telemedicine or telerehabilitation	
Yes	73 (51.77)
No	68 (48.22)
Not sure	0 (0.00)

N/ n – Number; % – percentage based on the overall number of participants; SD – Standard deviation.

The feedback and recommendations of the study participants are listed in Appendices E, F, and G. The clients liked how telerehabilitation allowed them to continue with their rehabilitation care safely. The telerehabilitation providers were happy to stay in touch with their patients and continue serving them despite the pandemic's restrictions. Both clients and health providers expressed frustration over the poor Wi-Fi and data service and recommended more reliable internet connections. Conducting the telerehabilitation session was also difficult with technology-challenged clients.

DISCUSSION

Before the pandemic, the DRM Outpatient Department had an average daily census of 70 patient consults with resident physiatrists (Rehabilitation Medicine physician) and 35-40 outpatients undergoing various forms of therapy with the paramedical staff. After an initial medical consultation, each patient often has 3 to 4 rehabilitation therapy sessions scheduled over two to four weeks before returning to the resident physiatrist for follow-up. Patient and caregiver instructions on disability prevention, functional training, and their home program are often extensive and require demonstrations by the rehabilitation providers and even simulations. The urgent need to find an alternative way of delivering rehabilitation services during the COVID-19 lockdown forced the UP-PGH DRM to expand its three-year telerehabilitation program from serving a small rural community to serving its outpatient unit. The expanded program used available technologies and organized itself as it was implemented. It was essential to determine the acceptability of this alternative service delivery to both the rehabilitation medicine professionals and patients to ensure that they would repeat the telerehabilitation experience after the first teleconsultation.

Over the past 25 years, the SUS has often been used to assess the acceptability of products and services quickly.[18] The SUS scores of the patients and carers were 74 and 72, respectively. A raw score of 74 is equal to the 70th percentile and suggests that DRM clients consider the expanded telerehabilitation to be good and acceptable.[16-19] In contrast, the SUS scores of the health providers fall below the 50th percentile. They suggest that while the telerehabilitation program is perceived as okay, they have a marginal or low acceptance of this alternative system of delivering outpatient care. The statistically significant difference in the SUS scores of the two groups might be due to the marked difference in their roles. In the doctor-patient relationship, the health providers are responsible for diagnosing and managing the health problems. At the same time, the patient is a recipient of the care and often plays a passive

Table 2. SUS Scores according to Participant Characteristics (N = 141)

Participant Characteristics	Mean (SD) Scores Overall SUS
All participants	70.90
Participant group	
Patient (n=37)	74.56
Carer (n =74)	71.89
Doctor (n =19)	61.71
Therapist (total=11)	67.73
Physical therapist (n=7)	70.71
Occupational therapist (n=3)	65.00
Speech-language therapist (n=0)	—
Psychologist (n=1)	67.50
f-statistic (df), p-value	3.17 (3.37), 0.04*
**Note: Therapist (n=11) was considered as one group in the f-Test.*	
Age group	
18-29 (n=46)	68.39
30-39 (n=53)	72.50
40-49 (n=27)	72.78
More than 50 (n=12)	67.5
f-statistic (df), p-value	0.31 (3.50), 0.82
Sex	
Female (n=113)	71.04
Male (n=28)	70.36
t-statistic (df), p-value	0.21 (49), 0.83
Place of residence	
Urban (n=124)	70.66
Rural (n=17)	72.65
t-statistic (df), p-value	0.45 (20), 0.66
Primary telerehabilitation technique used	
Text message (n=53)	69.15
Phone call (n=74)	68.13
Online instant messaging (n=22)	70.23
Online audio call (n=13)	59.04
Online video call (n=113)	72.02
f-statistic (df), p-value	

Participant Characteristics	Mean (SD) Scores Overall SUS
Classification of telerehabilitation technique used	
Online instant messaging (n=2)	72.50
Online video call (n=52)	73.56
Phone call (n=12)	71.46
Text message (n=5)	59.50
Three or more techniques (n=46)	70.54
Two or more techniques (n=24)	67.81
f-statistic (df), p-value	0.59 (5.9), 0.71
Primary online telerehabilitation platform used	
Google Meet™ (n=4)	53.13
Telegram™ (n=0)	—
WhatsApp™ (n=0)	—
Viber™ (n=64)	69.30
Others (Zoom™) (n=56)	75
Others (Facebook Messenger™) (n=5)	61
Not applicable *(any offline method used)*	70.71
(n=12)	9.78 (4.15), 0.00*
f-statistic (df), p-value	
Any prior knowledge or awareness regarding telemedicine or telerehabilitation	
Yes (n=90)	71.11
No (n=43)	70.52
Not sure (n=8)	70.63
f-statistic (df), p-value	0.02 (2.18), 0.98
Any prior actual experience with telemedicine or telerehabilitation	
Yes (n=73)	70.69
No (n=68)	70.55
Not sure	
t-statistic (df), p-value	-0.23 (135), 0.82
**Note: t-test was used since no observations for "Not Sure"*	

*N/ n – Number; % – percentage based on the overall number of participants; SD – Standard deviation; df – degree of freedom; *p-value: ≤0.05 is statistically significant.*

role. From the verbal anecdotes of doctors and therapists, it was noted that compared to face-to-face consultations, the time it took to set up a telerehabilitation session was much longer. The doctors and therapists found it hard to do consultations and treatment sessions remotely and claimed telerehabilitation was more time-consuming and marred with slow internet connectivity. Even before the COVID-19 pandemic, internet connectivity was an identified barrier to telerehabilitation despite being in an urban setting.[13] In a low-resource setting, such as the Philippines, internet connectivity is the most significant barrier in conducting a proper telerehabilitation session.[12] Aside from the unreliable internet service, the telerehabilitation providers are used to physical charting pre-pandemic. Using new technology such as electronic charting, prescription, diagnostic requests may have contributed to their below-average experience with the system. The physicians and therapists also suggested that clients be interviewed and oriented before scheduled for the first teleconsultation and teletherapy session. The preferred communication device can be tested in the initial meeting, and instruct the patient on the equipment and set-up used during their sessions with the health providers. The PGH should also improve its internet service.

The above-average experience of the patient and carers could be explained by the convenience and safety of telerehabilitation over facility-based consultations and therapy. Clients are spared from traffic, long queues, travel and food expenses, and the risk of getting infected with the COVID-19. It was important for the patients to accept telerehabilitation as an alternative to face-to-face consultations and therapy because the foremost concern of the PGH was to continue servicing its financially-challenged clients amidst the restrictions set by the pandemic.[22,23] Their SUS scores are encouraging because of the higher possibility of clients repeating the telerehabilitation experience. The lower SUS score of the greater than 50-year-old age group needs further investigation. This age group has an increased need for rehabilitation services but is more likely to be wary about using technology-based medical services.

The expanded telerehabilitation program prioritized using communication technologies that were familiar and accessible to the users. Thus, a variety of devices and platforms were used. It was essential to cater to the needs of its stakeholders depending on their capability for online/offline telerehabilitation.[12,13] To evaluate and treat patients, the health providers must observe the patient and perform maneuvers. Understandably, both are more easily done through a video call and will be very difficult with text messaging. This could explain the high SUS score of video calls and the very low SUS score of text messaging. Matching the SUS scores of the devices and platforms with the type of information being exchanged by the users would have been more meaningful.

On the other hand, this may conflict with the priority given to accessibility and familiarity with the technology. The PGH is a government hospital with limited funding. Its clients are primarily from low to middle-income families. This could explain why both video and phone calls got high SUS scores. While smartphones with video capability are a better match for the type of information delivered by telerehabilitation providers, a basic phone with no data subscription is more affordable for financially-challenged clients.

An added advantage of the SUS is its reliability even with small sample sizes. Although very few participants chose Google Meet™, the low SUS score could be because the users are not familiar with the application or are not adept at delivering rehabilitation services.

In summary, the SUS helped determine the acceptability of telerehabilitation to health providers and their clients as an alternative mode of delivering outpatient services. Even if the SUS does not explain why a product or service is usable or unusable, it still helps identify specific aspects of the telerehabilitation program that need further investigation and improvement.[17] Since the SUS was taken after the first telerehabilitation experience, the results of this study can also be treated as a baseline or reference for analyzing future improvements to the expanded telerehabilitation program. The SUS tool can be routinely used to evaluate the program at the beginning, midpoint, and end of the telerehabilitation experience. Increasing SUS scores towards the completion of an episode of care will better reflect the effectiveness of the offsite program. The DRM management should set a goal of achieving SUS scores above 81 or the 90th percentile. Users who give this rating are likely to promote the telerehabilitation program. Future studies can look into the factors influencing a user's SUS score. Studies will be invaluable to compare the health outcomes and functional outcomes between the traditional facility-based rehabilitation service and the telerehabilitation program.

CONCLUSION

Telerehabilitation assures continued and safe access to rehabilitation services during the COVID-19 pandemic. The expanded telerehabilitation program of the UP-PGH DRM was perceived as usable and acceptable by the patients and caregivers for the delivery of outpatient rehabilitation services. Still, it was only marginally acceptable to the health providers. Reliable communication technologies, and strategies to expedite the patient assessment, rehabilitation therapy, and documentation, must be implemented to improve the program's usability. Further studies are needed to guide and prioritize improvements. Attaining SUS scores in the 90th percentile for both the initial and discharge telerehabilitation experiences will lead to the promotion and continued use of telerehabilitation, no longer as a stopgap response to a pandemic, but instead as a response to the call for universal health coverage for the many Filipino persons with disability in dire need of rehabilitation services.

Statement of Authorship

All authors contributed in the conceptualization of work, acquisition and analysis of data, drafting and revising and approved the final version submitted.

Author Disclosure

All authors declared no conflicts of interest.

Funding Source

The study was personally funded.

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APPENDICES

Appendix A. System Usability Scale

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. I think that I would like to use this system frequently.					
2. I found the system unnecessarily complex.					
3. I thought the system was easy to use.					
4. I think that I would need the support of a technical person to be able to use this system.					
5. I found the various functions in this system were well integrated.					
6. I thought there was too much inconsistency in this system.					
7. I would imagine that most people would learn to use this system very quickly.					
8. I found the system very cumbersome to use.					
9. I felt very confident using the system.					
10. I needed to learn a lot of things before I could get going with this system.					

Appendix B. System Usability Scale (Filipino Version)

	Lubhang hindi sumasang-ayon	Hindi sumasang-ayon	Hindi mapalagay	Sumasang-ayon	Lubhang sumasang-ayon
1. Sa tingin ko ay gagamitin ko ang sistemang ito nang madalas.					
2. Masyadong komplikado ang sistemang ito.					
3. Madaling gamitin ang sistemang ito.					
4. Sa tingin ko ay kakailanganin ko ng “technical support” para magamit ang sistemang ito.					
5. Magkaka-ugnay ang mga proseso sa sistemang ito.					
6. Sa tingin ko ay masyadong maraming prosesong hindi magkakatugma sa sistemang ito.					
7. Sa aking palagay ay madaling matututunan ng maraming tao ang sistemang ito.					
8. Masyado akong nahirapan sa paggamit ng sistemang ito.					
9. May kumpiyansa ako sa paggamit ng sistemang ito.					
10. Kinailangan kong matuto ng maraming bagay bago magamit ang sistemang ito.					

Appendix C. SUS Score by Respondent Group

	diff	CI (lo)	CI (hi)	t stat	Df	p-value
Doctor-Carer	-10.2	-20.8	0.43	2.60	33	0.06
Patient-Carer	2.7	-6.4	11.84	0.78	74	0.86
Therapist-Carer	-4.2	-18.0	9.70	0.87	15	0.82
Patient-Doctor	12.9	1.2	24.59	2.94	42	0.03
Therapist-Doctor	6.0	-9.3	21.30	1.10	21	0.70
Therapist-Patient	-6.9	-21.4	7.69	1.33	19	0.56

Appendix D. SUS Score by Platform

	diff	CI (lo)	CI (hi)	t stat	df	p-value
GoogleMeet™ – FB Messenger™	-7.88	-40.4	25	0.98	4.9	0.85
Not Applicable – FB Messenger™	8.38	-23.4	40	0.92	7.8	0.88
Viber™ – FB Messenger™	8.49	-24.2	41	1.07	4.7	0.81
Not Applicable – GoogleMeet™	16.25	-1.5	34.2	2.85	14.0	0.08
Viber™ – GoogleMeet™	16.37	4.9	28	4.86	8.4	0.01
Zoom™ – GoogleMeet™	21.88	10.4	33	6.44	8.8	<0.01
Viber™ – Not Applicable	0.12	-16.9	17	0.02	15.2	1.00
Zoom™ – Not Applicable	5.62	-11.4	23	1.02	15.5	0.84
Zoom™ – Viber™	5.51	-3.0	14	1.78	116.9	0.39

Appendix E. Telerehabilitation Experiences and Recommendations from Patients and Caregivers

Positive Experiences

1. *Maganda siyang gamitin kung hindi malubha ang kundisyon ng pasiyente ngayong pandemya* (Good for use for patients with non-serious conditions during the pandemic)
2. *Mas mainam po ngayon ang ganitong sistema pansamantala para sa safety ng lahat* (The system now is more appropriate temporarily for the safety of all)
3. *Nakakatulong ito sa mga taong marunong sa ganitong teknolohiya* (Helpful for those who have the appropriate technology)
4. *Madali at may sistema lalo na sa panahon ng pandemya* (It is easy and there is a system especially in the time of pandemic)
5. *Maganda din po ang telerehabilitation kasi po iwas face to face lalo na may pandemya pa tayo at ginagamit ang PGH bilang COVID-19 hospital lamang* (In spite of face-to-face, telerehabilitation is a good alternative for now at the time the PGHis only dedicated for COVID-19 patients)

Negative Experiences

1. *Mabagal na internet connection* (Poor internet connectivity)
2. *Mahirap sa simula sa mga taong hindi ganun kasanay sa techie* (Difficult at first for those who are not technologically adept)
3. *Mas lubos na magagamit lamang ito ng mga taong may stable at mabilis na internet connection* (Only applicable for those with stable signal and internet connection)
4. *Mahirap po ito sa simula dahil hindi po ito personal* (Period of adjustment is needed because it is not done in person)

Recommendations

1. *Mas maganda siguro kung ipopromote ang telemedicine upang mas marami tayong kababayan ang mahihikayat at magpatingin* (Information pertaining to telerehabilitation should be disseminated so that it may reach more patients)
2. *Lahat ng reseta ay isend po sa email* (Prescriptions should be sent via email)
3. *Kung may tools na magagamit, maganda masabi na sana sa text bago magsimula ang session* (Tools to be used for teletherapy should be sent to the recipients via SMS prior to the teletherapy session)
4. *Sana hindi po papalit-palit ng therapist sa kada session* (The therapist should be constant for the patient for all of the sessions)
5. *Mas maayos na internet connection* (Need for a stable internet connection)

Appendix F. Telerehabilitation Experiences and Recommendations from Doctors

Positive Experiences
1. Usefulness, ease, and practicality of telerehabilitation, especially during a pandemic for all practicing physicians
2. Usefulness in patients who have difficulties following up in person for various reasons such as distance, cost, time, and handicap
3. A good tool for follow-up during the COVID-19
4. Accessibility of phone calls on the side of the patient
5. Familiarity of some patients to applications such as Viber or Zoom
Negative Experiences
1. Need for internet connection and specific applications in video calls
2. The difficulty of some patients to learn or use telerehabilitation which causes frustration on their part leading to avoidance of the consultation altogether
3. Having to compensate for the lack of physical examination by learning certain approaches of performing a virtual exam
4. Longer consults in telerehabilitation vs. actual face to face consult
5. A lot of clerical work involved on the part of the physician (i.e., scheduling, follow-ups, sending of documents)
Recommendations
1. Faster and more stable internet connection
2. Inclusion of a secretary or clerical staff in the team
3. Development of a dedicated electronic medical record (EMR) system/software/application for telerehabilitation for the use of physicians and the paramedical team for easier integration of plans and programs
4. Provision a short video infographic demonstrating the steps for initial consult and follow-up that can be displayed on the department website
5. Inclusion of telemedicine in the training program of all residency programs across the Philippines

Appendix G. Telerehabilitation Experiences and Recommendations from Therapists

Positive Experiences
1. Ability to provide rehabilitation services in the middle of the pandemic
2. Ability to reach more people, especially those who have difficulty in transportation and those who live in far-flung areas or geographically challenged areas
3. As fulfilling as the usual face-to-face sessions and patients appreciate the help
4. Reported satisfaction of patients in their performance
5. Noted improvements on patients undergoing telerehabilitation
Negative Experiences
1. Difficulties in terms of communication (particularly when using online platforms) between the therapist and the patient
2. Inconsistency of the system relies heavily on the capability of the staff and patient to access a stable internet connection
3. Difficulty in providing instructions and explaining to patients some movements that need demo
4. Safety issues, especially if practicing higher risk exercises (balance, standing, ambulation)
5. Difficulty in assessment since a lot is dependent on subjective information and observation
6. Exhausting on the part of the therapists since preparations take longer
Recommendations
1. The setting of guidelines/inclusion criteria for patients who are eligible to participate in the program
2. Screening if there are available caregivers, especially for geriatric patients
3. Better internet connection for the therapist and the patients
4. Provision of a centralized telemedicine system, with scheduling and charging system
5. Better orientation for patients regarding the use of different online platforms for video call