

Wheelchair Recipients' Perceived Barriers to In-person and Virtual Follow-up Consultations: A Cross-sectional Study

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ABSTRACT

Background. The Philippine General Hospital (PGH) is a tertiary government hospital that serves as the national referral center for Filipinos from across the country. In partnership with Latter-Day Saint Charities (LDSC), PGH has been serving patients in need of mobility devices, such as wheelchairs, through in-person services from screening to assessment, measurement, assembly, fitting, and mobility training. Given the patients' barriers to in-person follow-up consultations, regular healthcare provision has been challenging. The use of telerehabilitation, a form of telemedicine, has emerged as a practical and innovative solution, but it needs further evaluation.

Objectives. The study aimed to determine the wheelchair recipients' perceived barriers to in-person and virtual follow-up consultations.

Methods. This cross-sectional study involved a purposive sample of 413 patients who received a wheelchair from the LDSC through PGH. An original survey was prepared to determine patients' perceived barriers to actual in-person and potential virtual follow-up consultations. Consent was obtained prior to data collection. After the pretest and pilot testing were conducted, the final version of the survey was administered either electronically or through individual phone interviews. Descriptive statistics was used to analyze and present the data.

Results. A total of 113 wheelchair recipients participated, with an average of 42.9 years of age. The majority resided outside Metro Manila (53.1%), and 86.7% were within the income bracket of less than PhP 9,520 per month. The majority received a standard type of wheelchair (85.8%). The top 3 reasons hindering compliance to in-person consultation follow-ups were accessibility issues (82.3%), costs of travel (79.6%), and distance to hospital/wheelchair assessor (71.7%). With respect to potential virtual follow-ups, 72% expressed willingness to experience telemedicine/ telerehabilitation in the future, despite having neither prior awareness (50.4%) nor experience (74.3%) of it. The majority had access to mobile phones (98.2%), and 67% had stable internet access.

Conclusion. The main barriers to in-person follow-ups were related to accessibility, costs, and travel. Telehealth or telerehabilitation in particular, despite patients' interest and willingness to try it, still has yet to be optimized in our country. Internet connectivity can still be improved, as well as our stakeholders' level of telehealth awareness. Future efforts to improve and sustain the uptake of telehealth solutions are recommended, as well as studies comparing the cost-effectiveness of in-person versus virtual consultations especially among persons with lived experiences of disability.

Keywords: telehealth, telerehabilitation, physical medicine and rehabilitation, wheelchair, disability, Philippines



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INTRODUCTION

The Philippine General Hospital (PGH) is a tertiary government facility serving as the national referral center for indigent Filipinos across the archipelago. The Department of Rehabilitation Medicine (DRM) at PGH handles around 50-60 outpatient visits and 13 inpatient referrals daily.¹ DRM offers free rehabilitation services for various conditions, such as musculoskeletal, neurologic, cardiopulmonary, burn, and peri-operative issues.

In 2018, DRM partnered with Latter-Day Saint Charities (LDSC) to establish a program providing free wheelchairs to eligible patients. Since then, 413 wheelchairs have been distributed, such as through in-clinic visits and remote outreach programs.² Recipients were advised to follow up regularly with DRM to ensure proper use and maintenance of their devices. However, in-person follow-ups proved to be challenging due to factors like long distance travels, inefficient transportation, limited ambulance access, logistical concerns, mobility issues, and financial constraints.³

Given its longstanding history, in-person consultations remain to be the standard of care in the Philippines. However, the country's archipelagic and economic constraints among many other issues do not always facilitate in-person access to healthcare. There are about 7,641 islands across the country, with many regions being isolated, and the average monthly income remains low (USD 266) across the general population, hindering timely or regular adherence to medical follow-ups.⁴ Telerehabilitation, a form of telemedicine (i.e., use of telecommunication devices for healthcare), can be leveraged to provide consultations and rehabilitation therapy services over a distance, especially to those in geographically isolated and disadvantaged areas (GIDA).⁵ Leochico and Valera showed that telerehabilitation is feasible and practical to follow up wheelchair recipients experiencing various issues with in-person visits, such as logistical and mobility constraints.⁶ However, the case report only highlighted two cases of spinal cord injury, and research was recommended to further explore perceived barriers affecting in-person and virtual access to healthcare for this population and those with other causes of disability in general.

Despite its potential usefulness, telemedicine continues to face challenges especially in developing countries due to various human, cultural, organizational, and technical factors.⁷⁻⁹ In the Philippines, despite high social media usage, adoption of telerehabilitation faces similar barriers.¹⁰ Local studies are limited, and more primary data are needed from patients to understand barriers from their own perspective so proper planning and design of appropriate interventions can be facilitated by clinicians and program or policy makers.

OBJECTIVES

This study therefore had the following aims:

1. to determine the demographic characteristics and clinical profile of the wheelchair recipients since the start of the program of LDSC at PGH DRM until September 2020;
2. to determine their perceived barriers to in-person follow-up consultations with their wheelchair assessors/clinicians; and
3. to determine their perceived barriers to telerehabilitation as a potential alternative to in-person follow-up consultations.

METHODS

This descriptive cross-sectional study was reviewed and approved by the University of the Philippines Manila – Research Ethics Board (UPMREB) prior to study implementation.

Purposive sampling was employed in this study. Based on the census of PGH DRM, there were 413 recipients of the LDSC wheelchair program from May 2018 to September 2020.^{1,2} They were previously seen in-person either at the outpatient clinic or outreach programs across the country. Sample size was calculated to be 199 with a confidence level of 95% (Figure 1).

Sample Size for Frequency in a Population

Population size (for finite population correction factor or fpc) (N): 413
Confidence limits as % of 100 (absolute ± %) (d): 5%

Sample Size (n)

Confidence Level (%): 95%
Sample Size: 199

Equation

$$\text{Sample size } n = [Z^2 * (p) * (1-p)] / c^2$$

Where:

Z = Z value (1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal (0.5 used)

c = confidence interval, expressed as decimal (±5)

Figure 1. Sample size calculation based on Survey System.

The contact details of the identified recipients were gathered from the PGH DRM database.^{1,2} Informed consent was obtained prior to data collection. Verbal consent was obtained through voice and/or video call followed by electronic delivery of written consent. Inclusion criteria included access to a telecommunication device, residing in the Philippines, and able to understand and speak English or Filipino. There were no age restrictions. Either the patients themselves or their primary caregiver (on behalf of those with impairments in cognition and/or communication or under 18 years old) were recruited.

An original questionnaire was formulated by the study team based on the review of related literature and in consultation with local telerehabilitation experts. It underwent

Filipino translation by the Department of Filipino and Philippine Literature, University of the Philippines Diliman. Pretesting was done to establish the face and content validity of the questionnaire, and a pilot test helped to ensure the process of recruitment and data collection was appropriate and seamless. The questionnaire and procedures were revised accordingly, incorporating qualitative feedback from the experts, and pretest and pilot test participants. The final version of the questionnaire was administered via Google Survey or phone call, whichever was preferred by or available to each participant. With the former, a link to the online survey was sent to each participant's e-mail address. With the latter, the text included in the survey was carefully read out. Efforts from the study team were made to ensure each question was clearly heard and understood by the participants. Descriptive statistics was employed to analyze and present the data at 95% confidence interval.

Ethical Considerations

The principles in the Declaration of Helsinki were observed throughout the conduct of this study. Data privacy was maintained by keeping all gathered data anonymized. No remuneration was provided to any of the participants.

RESULTS

Out of the sample size of 199, 113 responded to the survey (56.8% response rate). The challenges experienced in reaching out to and recruiting previous wheelchair recipients into the study were as follows: 1) patient has passed away; 2) invalid or unreachable contact details; 3) no reply or callback from the contacted number despite multiple attempts to connect with them. The majority (52.2%) were males (Table 1), and the mean age of the participants was 42.9±25.3 years. The majority resided outside of Metro Manila (53.1%), mostly from Laguna (29.2%) and Antique (17.7%). Those residing within Metro Manila mostly came from Manila (9.7%) and Las Piñas (8.8%). In terms of household income, 86.7% earned less than PhP 9,520 (USD 162) per month. The majority (85.8%) received a standard type of wheelchair, and nearly half of the participants received their wheelchair in 2018.

The most common barriers to attending in-person follow-up consultations were as follows: difficulty in transfers, standing, or walking (82.3%); cost of travel (79.6%); distance to hospital/wheelchair assessor (71.7%); logistical concerns such as related to transportation (68.1%); and cost of meals (64.6%) (Table 2).

About half of the participants did not have prior telehealth awareness, and nearly three out of every four participants did not have prior telehealth experience (Table 3). Nonetheless, 72% expressed willingness to try telehealth in the future. Approximately nine out of every ten patients or their caregivers had some technical skills in engaging in a video call.

Table 1. Demographic Characteristics of Study Participants (N = 113)

Characteristics	n (%)
Sex	
Male	59 (52.2)
Female	54 (47.8)
City of Residence	
Antique	20 (17.7)
Batangas	1 (0.9)
Biñan	1 (0.9)
Cagayan	1 (0.9)
Caloocan	1 (0.9)
Cavite	8 (7.1)
Laguna	33 (29.2)
Las Piñas	10 (8.8)
Malabon	3 (2.7)
Mandaluyong	2 (1.8)
Manila	11 (9.7)
Marikina	1 (0.9)
Navotas	1 (0.9)
Pampanga	2 (1.8)
Quezon	1 (0.9)
Rizal	10 (8.8)
San Juan	1 (0.9)
Taguig	2 (1.8)
Valenzuela	3 (2.7)
Zambales	1 (0.9)
Type of Wheelchair Received	
Standard	97 (85.8)
Active	4 (3.5)
All-terrain	0 (0)
Supportive	5 (4.4)
Unknown	7 (6.2)
Year of Receipt of Wheelchair	
2018	51 (45.1)
2019	22 (19.5)
2020	40 (35.3)
Household Income Bracket (PhP)	
Less than 9,520	98 (86.7)
Between 9,520 - 19,040	12 (10.6)
Between 19,040 - 38,080	3 (2.7)
Between 38,080 - 66,640	0 (0)
Greater than 66,640	0 (0)

All the participants had technology access, whether they personally owned a device or could borrow from someone at home. In terms of equipment, 8% had a landline phone, and 98.2% had a mobile phone. Approximately 70-90% of participants had stable access to the internet, network signal, and electricity. More than 62% had access to a private space for potential telehealth consultations.

DISCUSSION

This study sought to determine the perceptions of the LDSC program wheelchair recipients seen by the PGH DRM with regard to barriers to previous in-person and potentially virtual follow-up consultations. Their most commonly perceived barriers to in-person follow-ups were mobility issues, costs of travel, and distance to the hospital or wheelchair assessors. With respect to telerehabilitation as

a potential alternative, the majority of the participants did not have prior awareness or experience of it. Nonetheless, about 72% expressed willingness to try it, while 13% were still undecided. The large majority of the participants possessed characteristics that could support their potential telerehabilitation use, such as technical skills, technology ownership, private space for telehealth, and stable internet access, telecommunication network signals, and electricity.

The majority of the participants had household incomes below the poverty line (threshold estimated at PhP 12,082).¹¹ In addition to financial constraints, the main hindrances to engaging in in-person consultations included difficulties with travel and accessibility. Given the geographical nature of the Philippines and the state of the country's public transportation system, traveling from outside of Metro Manila to Philippine

General Hospital can be difficult for many patients. Given that our study population consists of recipients of the Wheelchair Program of PGH and LDSC, having to traverse wide distances is even harder than the general population.

In line with this, the study sought to identify potential hindrances to telerehabilitation as a way of addressing the difficulties that come with in-person consultations for rehabilitation patients at PGH. Despite the emergence of telehealth becoming an established manner of delivering medical services abroad, countries in the global south, such as the Philippines, have yet to improve (if not fully adopt) this medium of service provision.¹⁰ Osman et al. discovered that the implementation of telehealth consultations may address some of the hindrances to in-person consultations reported by this study's participants.¹² They discovered that the adoption and implementation of telehealth consultations allowed for patients that resided in remote locations to have access to quality medical service. In line with the results of this study, the majority of the patients that were a part of the wheelchair program resided outside of Metro Manila, which can make it difficult for travel to their hospital or wheelchair assessor. Caffery et al., Hickey et al., and Almathami et al. also discovered that the implementation of telehealth services was reported to be beneficial for patients because it reduced travel time and expenses, which were found to be the major hindrances to in-person consultations for the participants of this study regardless of the location of their physician/wheelchair assessor.¹³⁻¹⁵

Despite the previous research done on the benefits of telehealth consultations for patients, researchers have also identified potential barriers to experiencing the benefits that may come with telehealth services. In other countries, it has been discovered that the major issue for patients engaging in telehealth consultations revolves around internet connectivity issues, resistance to technology, and difficulty expressing self

Table 2. Wheelchair Recipients' Perceived Barriers to In-person Follow-up Consultations (N=113)

Barriers	Yes, n (%)	No, n (%)
<i>Distance to the hospital/wheelchair assessor</i>	81 (71.7)	32 (28.3)
<i>Logistical concerns such as related to transportation</i>	77 (68.1)	36 (31.9)
<i>Cost of travel</i>	90 (79.6)	23 (20.4)
<i>Cost of meals</i>	73 (64.6)	40 (35.4)
<i>Patient will have to miss the day's work or wage</i>	21 (18.6)	92 (81.4)
<i>Patient's companion will have to miss the day's work or wage</i>	65 (57.5)	48 (42.5)
<i>Health issues (i.e., cannot tolerate travel due to medical problems; pressure injuries)</i>	61 (54.0)	52 (46.0)
<i>Difficulty in transfers, standing, or walking</i>	93 (82.3)	20 (17.7)
<i>Busy schedule</i>	54 (47.8)	59 (52.2)
<i>Appointment scheduling difficulty</i>	68 (60.2)	45 (39.8)
<i>Nobody will take care of the house</i>	25 (22.1)	88 (77.9)

Table 3. Wheelchair Recipients' Perceived Barriers to Potential Virtual Follow-up Consultations (N= 113)

Factors	Yes, n (%)	No, n (%)	Not Sure, n (%)
<i>Have you heard of telehealth before? (Prior telehealth awareness)</i>	51 (45.1)	57 (50.4)	5 (4.4)
<i>Have you had telehealth experience in the past? (Prior telehealth experience)</i>	24 (21.2)	84 (74.3)	5 (4.4)
<i>Are you willing to try telehealth to follow-up with your wheelchair assessor? (missing: n = 5) (Willingness to adapt)</i>	78 (72.2)	16 (14.8)	14 (13.0)
<i>Do you or does your companion know how to engage in a video call? (Technical skill)</i>	100 (88.5)	6 (5.3)	7 (6.2)
<i>Do you have a companion at home who is trained in healthcare (e.g., nurse, caregiver, midwife, physical therapist, doctor)? (Healthcare guidance)</i>	16 (14.2)	97 (85.8)	0 (0)
Technology access either personally owned or borrowed at home:			
Landline phone	9 (8.0)	103 (91.2)	1 (0.9)
Mobile phone	111 (98.2)	2 (1.8)	0 (0)
Tablet	23 (20.4)	90 (79.6)	0 (0)
Computer (desktop/ laptop)	18 (15.9)	94 (83.2)	1 (0.9)
<i>Stable access to internet</i>	76 (67.3)	22 (19.5)	15 (13.3)
<i>Stable telecommunication network signals (such as Globe, Smart, etc.)</i>	77 (68.1)	15 (13.3)	21 (18.6)
<i>Stable electricity</i>	99 (87.6)	10 (8.8)	4 (3.5)
<i>Private space for telehealth</i>	71 (62.8)	38 (33.6)	4 (3.5)

and symptoms over a virtual platform.¹⁵ Local research also showed that the most common challenges to widespread adoption of telehealth services included unreliable internet speed, but also skepticism and legal concerns, such as privacy issues.^{6,10,16,17}

However, the current study contributes to the existing literature on telehealth in the Philippines by illustrating that beyond internet connectivity and technological issues, legal concerns, and skepticism, the majority of the participants expressed that there was a gap in knowledge regarding telehealth/telerehabilitation services. As when we collected our data, approximately half of the participants had never heard of telehealth, and around 80% had never tried engaging in telehealth services in the past. It is important to note, however, that 72% of the participants expressed an interest in trying to avail of this service in the future.

Despite the expressed interest of individuals to engage in telerehabilitation services in the future, internet connectivity issues remained to be a major hindrance to actually being able to engage in said services. Furthermore, previous research on telehealth done in developed countries also mentioned how resistance to technology was an issue faced by medical patients availing of telehealth services.¹⁵ However, the current study demonstrated that the presence of a companion well-versed in technology could serve as a potential facilitator to engaging in said services. In line with the collectivistic nature of Filipino culture, the presence of extended family members residing in the same household may make it easier for people who have difficulty using technology to avail of these services. Mobile phones are readily available for a huge majority of our study population.

One of the perceived strengths of the study is the use of numerical data that can now provide concrete and up-to-date evidence of the barriers to in-person and virtual follow-up consultations. We also note the increased utilization of, and access to, technology in an otherwise sizable portion of the sample, which notably consists mostly of persons living below the poverty line. In a similar regard, gone are the days where only a fraction of the country (27% in 2010) had access to the internet as in this study consisting mostly of indigents, as high as 67% reported stable access to the internet.¹⁸

The study did not come without limitations. For instance, it had a small sample size that limits the potential generalizability of the results obtained. The computed sample size was also unable to account for the possibility of non-responses. Considering potential buffers for non-responses and/or dropouts, the following formula could have been used: recruitment sample size = effective sample size / (1 - non-response rate anticipated). With regard to the questionnaire that was originally developed for this study as no pre-existing tool was found that could help answer our research aims, content validity index and Cronbach's alpha coefficient were not computed. It could have been helpful if these and other psychometric properties were determined to provide a quantitative, objective measure of the questionnaire's

reliability and validity. The questionnaire could also be possibly used in future studies had its psychometric properties been more adequately established.

Given that the lack of awareness about telehealth service delivery still remains, future efforts can focus on improving awareness in this specific population. Follow-up instructions provided to wheelchair recipients as part of the program should clearly specify the available modes of consultation including either in-person or telehealth consultations. Instructions to set-up a telehealth consultation should be clearly defined in a manner appropriate to the comprehension and language of the targeted demographic.

In the event at some point in the future where we see increased utilization of telehealth, more studies focusing on its difference from traditional in-person consultations in terms of health outcomes, wheelchair use and condition, and other pertinent clinical concerns are recommended. Although the original thrust in the continuity of care of the wheelchair provisioning program is in-person assessment and monitoring, local studies have noted telerehabilitation as a viable option.

CONCLUSION AND RECOMMENDATIONS

The study identified significant barriers to in-person follow-ups, such as accessibility issues, travel constraints, and costs. While telehealth, including telerehabilitation, has demonstrated potential benefits, its adoption in the Philippines remains limited. To enhance the implementation of telerehabilitation as a viable alternative to in-person consultations, the following recommendations are proposed:

1. **Enhance Infrastructure:** Invest in improving internet connectivity and provide necessary technological tools to underserved areas. Ensuring that patients have access to reliable internet and appropriate gadgets is crucial.
2. **Increase Training and Awareness:** Develop comprehensive training programs for healthcare providers on effective telehealth practices and for patients and/or their caregivers on using telehealth platforms. Raising awareness about the advantages and functionality of telehealth is essential.
3. **Establish Protocols:** Create detailed protocols for telerehabilitation, including best practices for virtual assessments, treatment planning, and follow-up care. Guidelines should also address patient privacy, emergency handling, and troubleshooting.
4. **Supportive Policies:** Advocate for supportive policies and regulations that facilitate the use of telerehabilitation. This includes developing reimbursement structures for virtual consultations and recognizing telehealth services as equivalent to in-person care.
5. **Conduct Comparative Research:** Undertake studies to compare the effectiveness of in-person versus virtual consultations, particularly for individuals with disability. These studies should assess treatment outcomes, patient satisfaction, and accessibility among others.

By focusing on these areas, we can improve and sustain the adoption of telerehabilitation, making it a practical alternative to in-person follow-ups for those facing significant barriers to traditional in-person healthcare access.

Statement of Authorship

All authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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