A Web-based Survey on the Telerehabilitation Knowledge, Attitude, and Practice of Physical Therapists in a Developing Country during the COVID-19 Pandemic: An Analytical Cross-sectional Study

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ABSTRACT

Background and Objective. Pre-pandemic, various healthcare settings were not used to seeing patients virtually. The unprecedented need to adopt virtual care during the COVID-19 pandemic may have caught physical therapists (PTs) unready for it. This study aimed to determine the telerehabilitation knowledge, attitude, and practice of PTs in the Philippines during the COVID-19 pandemic and determine the association between demographic and study outcome variables.

Methods. This is an analytical cross-sectional study among members of the Philippine Physical Therapy Association, Inc. (PPTA) practicing in the Philippines. Purposive sampling (total enumeration) was employed. All PPTA members were invited to the study through e-mail and official social media group chats. A self-administered questionnaire was used to obtain data on telerehabilitation knowledge (through test questions on various theoretical aspects), attitude, and practice.

Results. The questionnaire items had a content validity index of >0.80. The study yielded a 40% response rate. Most respondents were practicing clinicians in urban-based, private rehabilitation centers. Approximately half had average telerehabilitation knowledge, while the majority had agreeable telerehabilitation attitudes across different constructs. Among the respondents, 15.9% used telerehabilitation pre-pandemic, while 64.8% used it during the pandemic. Hybrid (synchronous and asynchronous) telerehabilitation sessions usually lasted one hour per patient, mostly using Facebook Messenger.

Conclusion. Telerehabilitation was not widely practiced locally pre-pandemic, which may explain their average telerehabilitation knowledge. The positive telerehabilitation attitudes may represent a small group of PTs favoring telerehabilitation, while information from the larger population remains unknown. Early adopters of telerehabilitation may help introduce virtual care to colleagues and guide them in developing relevant knowledge and skills amid and beyond the enduring COVID-19 crisis.

Keywords: COVID-19, developing country, physical therapy, telerehabilitation, telehealth

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has significantly limited the number of patients served in-person by rehabilitation providers, including physical therapists (PTs), in the Philippines.[1] Since 2020, the intermittent COVID-19 surges in different parts of the archipelago, especially in the National Capital Region (NCR), have resulted in community quarantine protocols, physical distancing measures, required use of face mask and shield, on-and-off suspension of outpatient rehabilitation centers, and general apprehension of patients and families about leaving the house for "non-urgent" concerns leading to frequently missed, if not discontinued, physiotherapy sessions.[1,2] In the early part of the pandemic, the Philippine Physical Therapy Association, Inc. (PPTA) released an official statement to guide its members on the continued practice of physiotherapy in the midst of COVID-19. According to the statement, "if home health care is needed but not possible," telerehabilitation may be an option if the therapist has tried it before and the client fully understands and consents to the virtual set-up.[3] Meanwhile, PTs who have not tried telerehabilitation in the past were advised to read suggested relevant literature to understand its procedure before offering it to a patient.

Telerehabilitation (TR), alternatively called teletherapy, virtual care, or digital practice, is a subset of telehealth that provides rehabilitation services from evaluation to management and counseling over a distance through electronic means.[4] In the context of the pandemic, it can overcome not just the barriers of geographical and physical distancing, time, costs, and travel,[5] but also the anxiety about contracting COVID-19. TR, especially through video calls, was deemed by many physiatrists in the Philippines to be useful during and possibly beyond the pandemic, and physiotherapy was considered among the top TR services that could potentially be delivered effectively and safely.[6] However, TR was not widely practiced among PTs in the country before the pandemic. Hence, it is unknown whether Filipino PTs are ready for the sudden adoption of TR in their practice.

Figure 1 shows the conceptual framework of the study. The COVID-19 pandemic suddenly shifted the Filipino PTs' practice to TR. The knowledge, attitude, and practice during the pandemic needs to be described as this has been a relatively new setting in the PT practice in the Philippines. These three variables are affected by a multitude of factors, such as the PT's baseline TR knowledge, attitudes, and experiences.[4] In the different models and theories of user acceptance, age, gender, and experience are key moderators of acceptance.[7] The attitude constructs that are direct determinants of acceptance and usage behavior based on the Unified Theory of Acceptance and Use of Technology (UTAUT) domains are performance expectancy (PE), effort expectancy (EE), attitude toward behavior (ATT), facilitating conditions (FC), social influence (SI), and behavior influence (BI). PE refers to the degree to which an individual believes that using the system will help him attain job performance. FC is the environmental factors that can make a task easy to accomplish. EE refers to the level of easiness when using the system. ATT refers to positive or negative feeling about the system. SI refers to the degree to which an individual perceives that important others (such as relatives, peers and subordinates) believe they should use the new system. BI refers to the intent of the user to adopt and use the new technology.[7] Knowledge increases acceptance too. In a survey among rehabilitation professionals in Saudi Arabia, 46% were aware of TR, but had not used it.[8] The main factors for not using TR were the lack of knowledge of information technology, relevant procedures, and costs.[8,9] To improve the utilization of TR service in any healthcare setting, all the factors cited need to be addressed as patients rely on the TR perceptions and expertise of rehabilitation professionals, who are considered the major drivers of innovation in the field.[6,10] The Philippines, a developing country in Southeast Asia, has the longest and strictest lockdowns in the world;[9] hence, TR may seem like a safe, timely, and effective way for persons with

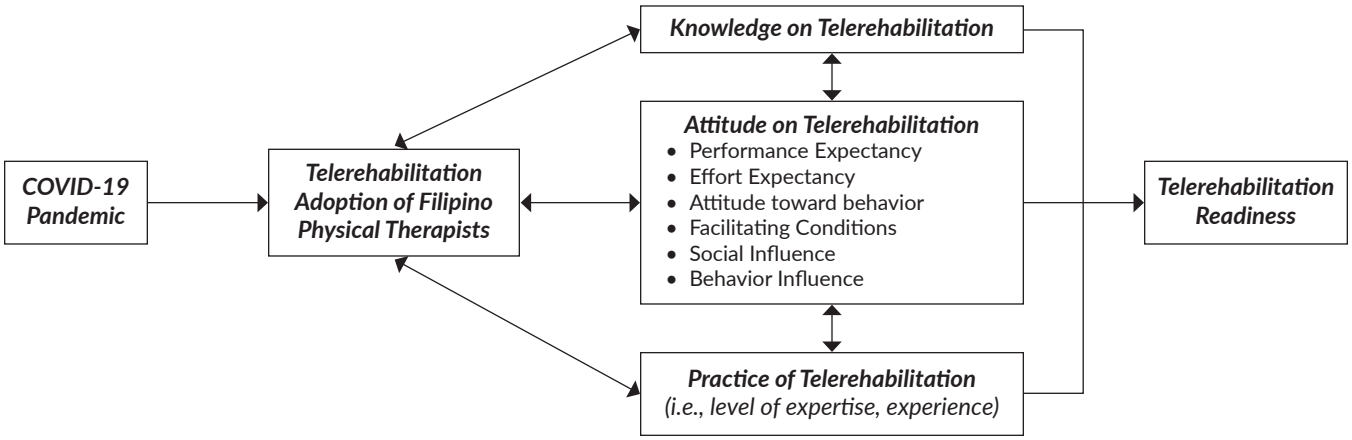

Figure 1. Conceptual framework of the description and association of the sociodemographic profile, knowledge, attitude, and practice of telerehabilitation.

disability.[10] However, there are no literature that described the physical therapy practice of TR at the start of the pandemic in the Philippines. Therefore, this study primarily determined the baseline TR knowledge, attitude, and practice of PTs in the Philippines during the COVID-19 pandemic and secondarily, the association between the sociodemographic profiles and study variables (i.e., knowledge, attitude, and practice of TR). Understanding these variables can help establish guidelines and quality programs that will increase acceptance and usage of TR in the Philippines.

METHODS

Study Design, Setting, and Population

A nationwide cross-sectional online survey was conducted for approximately one month (July 24 – August 31, 2021) after obtaining approval from the study institution's ethics review committee (Protocol number: FI-2020-044). The protocol was also reviewed and endorsed by the Board of Officers of the PPTA and registered in the Health Research and Development Information Network (HERDIN), the national health research repository of the Philippines (Registration number: PHRR210413-003461). The following were the criteria for study inclusion: (1) member of good standing, as recognized by the PPTA, (2) working as a PT, regardless of role (e.g., clinician, teacher, researcher, policy-maker, business owner, and/or administrator), anywhere in the Philippines before and/or during the COVID-19 pandemic, (3) with implied consent to participate in the study, and (4) with e-mail access or active social media account on Facebook™ or Viber™. These criteria were incorporated in the questionnaire. Only those who passed the inclusion criteria were able to access the questionnaire; otherwise, the respondents were directed immediately to the end page.

Sampling Method

Purposive sampling (total enumeration) was done to include all licensed PTs in the Philippines and active members of the PPTA (N = 5,694).[11]

Study Instrument

An original self-administered questionnaire was developed based on previous studies on TR.[6,7,12] Cultural adaptations were done to ensure the questionnaire's applicability in the Philippine setting. Two independent local experts in telehealth evaluated the face and content validity of the questionnaire.[13] The questionnaire underwent pretesting and several revisions to achieve a content validity index (CVI) of ≥0.80.[14] CVI was obtained by asking the experts to rate each question based on its relevance to the study and its clarity. Questions that are unclear and relevant were rephrased. All items in the questionnaire had an I-CVI of 1.00, and the total S-CVI of the questionnaire was 0.81, establishing the tool' 's content validity. The questionnaire was also deemed understandable during the pretest, establishing face validity.

The final version of the questionnaire obtained data on: (1) sociodemographic profile; (2) TR knowledge (based on the number of correct answers to test questions on various theoretical aspects of TR); (3) TR attitude (based on responses to questions adapted from the Unified Theory of Acceptance and Use of Technology [UTAUT]); and (4) TR practice or experience.

The TR knowledge section comprised four true-or-false and five multiple-choice questions on the scope, standards of practice, code of conduct and ethics, privacy and confidentiality, and benefits and limitations pertaining to TR. There was at least one item on each knowledge construct. The items were based on the Report of the World Confederation for Physiotherapy (WCPT) / International Network of Physiotherapy Regulatory Authorities (INPTRA) Digital Physical Therapy Practice Task Force.[15] The percentage of correct answers was obtained per respondent and categorized according to these levels of TR knowledge: low (≤ 49%), average (50 - 70%), and high (>70%).[16] Meanwhile, the TR attitude questionnaire consisted of 19 statements answerable using a six-point Likert scale (i.e., 5 - strongly agree, 4 - somewhat agree, 3 - neutral, 2 - somewhat disagree, 1 - strongly disagree, and 0 – not sure) to indicate one's level of agreement. The questionnaire integrates the five UTAUT domains. The UTAUT is robust enough to withstand translations and cross-cultural adaptations.[17] The responses were summarized in frequencies and percentages per TR attitude construct according to three levels: agreeable (strongly agree/ agree), neutral, and disagreeable (disagree/ strongly disagree). A mean score of >3 signified agreement.

Recruitment and Data Collection

All PPTA members in the country were invited to the study through e-mail and official social media group chats of the association's regional chapters. An e-poster with the survey link accompanied the invitation. The web-based survey, which was provided on Google Form™, contained the informed consent and respondent information sheet. Only those who agreed to consent were able to proceed to the next section of the questionnaire. The principal investigator cross-validated the respondents' names and information using the updated official membership list of PPTA to ensure the validity of submitted entries.

The entire questionnaire could be accomplished within 10 minutes. E-mail and social media message reminders were sent at different time points (i.e., after three days, one week, two weeks, and three weeks from the initial invitation) to remind potential respondents of the survey. Confidentiality and respect for privacy were observed throughout the study.

Data Analysis

Descriptive and analytical statistics were performed using the IBM Statistical Package for Social Sciences (SPSS) Statistics 22. All data were encoded using Microsoft Office Excel 2016, guided by a coding manual. To ensure

that the contents of the original questionnaire measured the study variables (knowledge, attitude, and practice of TR), item and scale-content validity indices (I-CVI and S-CVI, respectively) were computed. Frequency and percentages were used to summarize the result of the sociodemographic variables and the per-item analyses on the knowledge question. Mean and standard deviation (SD) were used on the age and knowledge score variables. Q-Q plot test was used to determine data normality. The mean score on each attitude construct was used in the analysis. Spearman's rank order correlation was used to determine associations between the continuous variables (i.e., knowledge score, mean score on each attitude construct, and age) and ordinal (i.e., length of TR use in practice and level of expertise). Rank biserial correlation was used for continuous and nominal (i.e., sex, work setting, and sector) variables. Alpha was set at 0.05. Correlation values were interpreted as: 0.10 – 0.39 (weak), 0.40 – 0.69 (moderate), and >0.70 (strong).[18] All p-values <0.05 were considered statistically significant.

RESULTS

The study yielded a low response rate of ~40% (145/360) and a 100% (145/145) completion rate. (Figure 2). Most respondents were practicing clinicians in urban-based, private rehabilitation centers within the NCR (Table 1). The mean age of the respondents was 34.5 [8.4] years (range: 23 - 58). The majority were females (58.6%). Twenty-three out of 145 respondents (15.9%) had some TR experience before the pandemic, while 94/145 (64.8%) experienced it during the pandemic, accounting for an increase of >75%

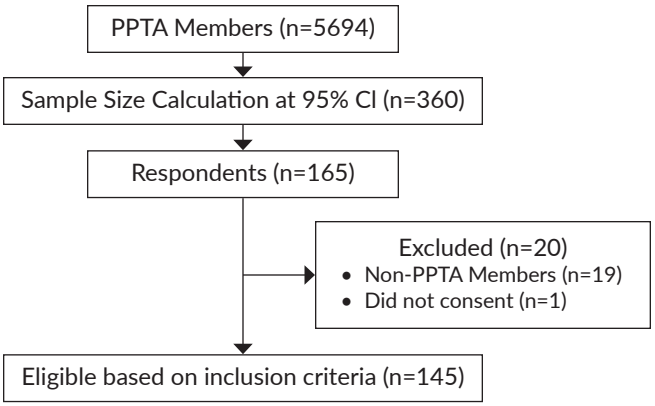

Figure 2. Selection process of participants eligible to take the survey. (*PPTA: Philippine Physical Therapy Association, Inc.)*

Table 1. Sociodemographic Profile of the Respondents (N=145)

Characteristic	n	%
Sex		
Female	85	58.60
Male	60	41.40
Role/s at work		
Purely administrative	5	3.45
Purely clinical	73	50.34
Purely research	0	0.00
Purely teaching	25	17.24
Multiple role/s	42	28.97
Practice setting		
Rural	11	7.59
Urban	105	72.41
Both	29	20.00
Geographical area/s of practice in the Philippines*		
Region 1	18	12.41
Region 2	3	2.07
Region 3	8	5.52
Region 4A	13	8.97
Region 4B	1	0.69
Region 5	5	3.45
Region 6	17	11.72
Region 7	16	11.03
Region 8	4	2.76
Region 9	4	2.76
Region 10	7	4.83
Region 11	5	3.45
Region 12	3	2.07
Region 13	1	0.69
Cordillera Administrative Region	2	1.38
Bangsamoro Autonomous Region in Muslim Mindanao	4	2.76
National Capital Region	56	38.62
Work sector/s*		
Community-based	4	2.76
Government institution	56	38.62
Private institution	81	55.86
Private/independent practice	38	26.21
Telerehabilitation experience before the pandemic		
With	23	15.86
Without	116	80.00
Unsure	6	4.14
Telerehabilitation experience during the pandemic		
With	94	64.83
Without	51	35.17
Unsure	0	0.00
Duration of telerehabilitation experience		
<3 months	31	21.38
3-6 months	17	11.72
6-12 months	14	9.66
>1 year	32	22.07
No experience	51	35.17
Self-perceived level of telerehabilitation expertise		
Unskilled	49	33.79
Learner	33	22.76
Mediocre	50	34.48
Expert	13	8.97
Form of telerehabilitation used		
Synchronous	40	27.59
Asynchronous	11	7.59
Hybrid	43	29.66
None (no experience with any form)	51	35.17

Table 1. Sociodemographic Profile of the Respondents (N=145) *(continued)*

Characteristic	n	%
Platform/s or telecommunication method/s used to conduct telerehabilitation*^		
Facebook Messenger™	75	79.79
Google Meet™	37	39.36
Phone call	48	51.06
Skype™	4	4.26
Telegram™	2	2.13
Text messaging	48	51.06
Viber™	36	38.30
WhatsApp™	7	7.45
Zoom™	57	60.64
None at all	1	1.06
Others (e-mail, FaceTime™, MS Teams™)	4	4.26
Case/s encountered in telerehabilitation*^		
Cardiopulmonary	4	4.25
Geriatric	40	41.49
Musculoskeletal	78	82.98
Neurologic	58	61.70
Pediatric	28	29.79
Sports and wellness	31	32.98
Others (COVID-19, Multisystem chronic kidney disease)	2	2.13
Task/s or service/s provided through telerehabilitation*^		
Securing of the informed consent form	53	56.38
Initial evaluation	62	65.96
Follow-up evaluation (re-evaluation)	53	56.38
Supervision of exercises	77	81.91
Instructions on the proper use of physical modalities	46	48.94
Patient counseling	53	56.38
Family/caregiver education	66	70.21
Providing instructional materials/resources (e.g., home exercise program)	75	79.79
Documentation of physiotherapy notes/ progress reports	49	52.13
Securing client feedback on telerehabilitation service	34	36.17
Interprofessional collaboration	33	35.11
Clinical supervision of students	34	36.17
Research	7	7.45
Average duration of telerehabilitation session (n=94^)		
30 minutes	26	27.66
1 hour	40	42.55
1.5 hours	17	18.09
2 – 3 hours	5	5.32
>3 hours	2	2.13
No answer	4	4.26
Method/s or application/s used for documentation or charting*^		
Google Drive (Google Docs/Spreadsheet)	37	39.36
Microsoft Word/Excel	42	44.68
Online telemedicine applications/software	4	4.26
Physical chart (paper-and-pen)	37	39.36
No form of documentation	11	11.70
Frequency of obtaining feedback on telerehabilitation service (n=94^)		
After every telerehabilitation session	42	44.68
Every week	10	10.64
Every month	7	7.45
At the end of all prescribed telerehabilitation sessions	16	17.02
No monitoring of feedback	15	15.96
Others	4	4.25
Professional fee for telerehabilitation service (n=94^)		
Less than charge for an in-person therapy session	28	29.79
Equal to charge for in-person therapy session	15	15.95
More than charge for in-person therapy session	0	0.00
Free service	51	54.26
Average professional fee amount (n=30), PhP (USD)		
<500 (10)	11	36.67
501 – 1,000 (10 – 20)	18	60.00
>1,000 (>20)	1	3.33

**Allowed multiple answers.*
^n=94: among respondents who had telerehabilitation experience.

in TR experience from baseline. Among those doing TR at the time of the study, 22.1% already had more than one year of TR experience. Most respondents felt they were in the mediocre (34.5%) or unskilled (33.8%) level of expertise in conducting TR.

Among the respondents, 35.2% had never used any form of TR. The respondents who have tried some form of TR mostly used the hybrid form (combined synchronous and asynchronous methods). Most of them used online platforms, such as Facebook Messenger™ (79.8%), Zoom™ (60.6%), and Google Meet™ (39.4%). Over 50% of TR users employed offline telecommunication methods (i.e., phone call, text messaging). Musculoskeletal (83.0%) and neurologic (61.7%) cases were usually encountered in TR. The least common cases handled in TR were cardiopulmonary (4.3%) and other medical conditions like COVID-19 infection and renal disease (2.1%).

Approximately 56.4% of the respondents accomplished an informed consent form for TR. The most common services provided by the respondents were: exercise supervision (81.9%), provision of instructional materials or resources such as home exercise program (79.8%), and family or caregiver education (70.2%). Some respondents utilized TR for interprofessional collaboration (35.1%) and/or clinical supervision of students (36.0%). More than half of the respondents documented their TR sessions by accomplishing physiotherapy notes (52.1%), mostly using Microsoft Office (44.7%). Feedback on the TR service was obtained from the clients by 44.7% of the respondents usually after every session. Other respondents said they obtained feedback after at least two sessions, after each activity, and after the patient receives the materials. The most common duration of a TR session was 1 hour (42.6%), and more than half of the TR users provided their services for free (54.3%). Among those

who charged for each TR session, the professional fee of the majority was less than their usual charge for an in-person physiotherapy session and mostly amounted between PhP 500 to 1,000 (USD 10 - 20). None of the respondents charged at a rate higher than for an in-person physiotherapy session.

The mean TR knowledge score of the respondents was 5.8 [1.3] out of 9 points. The majority (50.3%) had an average (i.e., with 50 – 70% correct answers) level of TR knowledge. Per-item analysis showed these topics with the greatest number of incorrect answers: guidelines on using proper TR platforms (93.1%), and scope of TR practice of PTs (71.7%) (Table 2). The items correctly answered by >90% of the respondents pertained to these topics: telehealth ethics (97.9%), quality of TR service (93.8%), and definition of TR (92.4%).

On TR attitude (Table 3), most of the respondents were agreeable to each statement for all constructs. The construct with the highest percentage of favorable responses (either agree or strongly agree) was performance expectancy (93.8%), while the lowest percentage belonged to behavioral intention (67.6%).

TR knowledge had no significant association with the sociodemographic variables of interest and had a weak positive association with the performance expectancy construct of TR attitude (r_s = 0.221, p = 0.008) (Table 4). The duration of TR experience during the pandemic had a very weak positive association with effort expectancy (r_s = 0.199, p = 0.01) and social influence (r_s = 0.204, p = 0.01), and a moderate positive association with behavioral intention (r_s = 0.371, p = 0.0001). The self-perceived level of TR

Table 2. Descriptive Per-item and Summative Analyses for the TR Knowledge of the Respondents (N=145)

TR topic per item	Correct		Incorrect	
	n	%	n	%
Q1: Definition of TR	134	92.41	11	7.59
Q2: Evidence of TR	83	57.24	62	42.76
Q3: Guidelines on the use of TR platforms	10	6.90	135	93.10
Q4: Scope of TR practice	41	28.28	104	71.72
Q5: Barriers to TR	81	55.86	64	44.14
Q6: Ethics in telehealth	142	97.93	3	2.07
Q7: Benefits of TR	118	81.38	27	18.62
Q8: Quality of TR services	136	93.79	9	6.21
Q9: Responsibility of TR service providers	101	69.66	44	30.34
Total score of the respondents (out of 9): *Mean (SD)*		5.83 (1.31)		
Percentage of correct answers and corresponding level of TR knowledge: *n (%)*				
>70% (high)		24 (16.55)		
50 - 70% (average)		73 (50.34)		
<50% (low)		48 (33.10)		

Table 3. Respondents' Level of Agreement with each Construct of the TR Attitudes (N=145)

Level of agreement per construct	PE n (%)	EE n (%)	ATT n (%)	SI n (%)	FC n (%)	BI n (%)
Strongly agree/ agree	136 (93.8)	115 (79.3)	122 (84.1)	109 (75.2)	113 (77.9)	98 (67.6)
Neutral	3 (2.1)	9 (6.2)	10 (6.9)	23 (15.9)	16 (11.0)	29 (20.0)
Disagree/ Strongly disagree	6 (4.1)	21 (14.5)	13 (9.0)	13 (9.0)	16 (11.0)	18 (12.4)

PE: Performance Expectancy, EE: Effort Expectancy, ATT: Attitude, SI: Social Influence, FC: Facilitating Conditions, BI: Behavioral Intention

Table 4. Correlation Matrix of Sociodemographic Variables, Knowledge, Attitude, and Practice

	Knowledge	PE	EE	ATT	SI	FC	BI
Sex	.065	.013	-.085	-.037	-.081	-.051	-.057
Age	.004	.013	.109	.059	.062	-.079	.066
Work setting	-.099	.011	.116	-.006	-.135	-.022	-.031
Duration of TR experience	.108	.114	.199*	.134	.204*	.124	.371*
Work sector	-.110	-.036	-.015	-.097	-.084	-.001	.036
Self-perceived level of TR expertise	.157	.183*	.231**	.162	.259**	.177*	.459**
TR knowledge	-	.221**	.160	.126	.068	.162	.069

*PE: Performance Expectancy, EE: Effort Expectancy, ATT: Attitude toward behavior, SI: Social Influence, FC: Facilitating Conditions, BI: Behavioral Intention. *Correlation is significant at the 0.05 level. **Correlation is significant at the 0.01 level.*

expertise of the respondents had a weak positive association with performance expectancy (r_s = 0.183, p = 0.027), effort expectancy (r_s = 0.231, p = 0.005) and facilitating conditions (r_s = 0.177, p = 0.033), and a moderate positive relationship with social influence (r_s = 0.259, p = 0.0001) and behavioral intention (r_s = 0.459, p = 0.0001).

DISCUSSION

Our study highlighted the descriptive data on TR practice in the Philippines during the COVID-19 pandemic. Respondents have average TR knowledge and a positive attitude toward TR. Experience and expertise are correlated with the ease of use, social support, usefulness, and the intention to use TR.

Despite several weeks of data collection and reminders to potential respondents, the study yielded a low response rate of ~40%. Nonetheless, the study produced several important data. There was a large percentage increase in the number of PTs who conducted TR since the pandemic began. According to Miller et al., 85% of PT sessions provided were telehealth months after the declaration of the COVID-19 pandemic. This rapid adoption of telehealth is in response to the need to deliver rehabilitation services to patients while protecting healthcare workers from the risk of disease transmission.[19] Despite this, critical factors, including governance, adequate infrastructure, knowledge, awareness, and 'users' skills and training, should be considered for the success and sustainability of TR.[20]

In the Philippines, the internet connection remained the top challenge in TR.[21] Urban areas generally have better connectivity, with Metro Manila having the highest access, whereas rural areas have less digital infrastructure.[22] The majority of the rural population has an internet speed of <3.2 Mbps on fixed broadband and mobile data.[22] This is below the minimum required to conduct video calls on accredited platforms, like Zoom™ and Google, based on Healthcare Insurance Portability and Accountability Act (HIPAA). Considering also that the Philippines is frequently hit by typhoons, power and internet signal stability is a challenge. Good quality internet connection is one of the key factors of TR success.[20]

Most respondents had prior telerehabilitation TR experience of more than one year when the study was conducted. They must have started incorporating TR in their usual work shortly after the pandemic began. This coincided with the March 2020 official statement on PT practice during the pandemic released by PPTA. This included TR as an alternative to home health care and the suggested reading materials to guide PTs when conducting TR.[3] The increased use of TR during the pandemic may have been brought about by various needs, such as but are not limited to the following: unprecedented need to reconnect with former patients amid physical distancing; need to accommodate new patients requiring rehabilitation services; need to augment one's own clinical practice and/or income; need in data collection for researches, and need to incorporate in teaching undergraduate students.

Interestingly, the majority still perceived themselves as unskilled or mediocre in TR. In the Philippines, TR is not part of the curriculum and internship training. This could have influenced the perception and confidence of the respondents in using TR. This implies a strong need to increase 'PTs' TR knowledge and skills through seminars, training, and integration to the educational curriculum. These will inevitably increase PTs' digital practice confidence and eventually help recalibrate their PT practice by combining digital practice with face-to-face to improve patient outcomes.

Hybrid type was preferred when conducting TR, but synchronous mode was observed in most TR sessions.[23] Regardless of the mode, TR could be comparable with conventional rehabilitation and better than no rehabilitation at all.[24] The usual length is one hour similar to the frequency range (10 minutes to 1 hour) used in surgical patients.[25] Facebook Messenger™ was the most used online platform due to its free or low-cost feature,[26] being a locally available platform,[1] and patients are accustomed to it in their social life.[27] In developing countries, the use of secure platforms with end-to-end encryption in all TR encounters might not be practical, especially when most patients belong to the lower socioeconomic strata without access to stable internet and video-capable technologies.[1] Traditionally, only HIPAA compliant applications are recommended to be used in TR. However, FaceTime™ and Facebook Messenger™ video chat can now be used to provide services during the COVID-19 national public health emergency,[28] assuring that all other strategies to mitigate all the data privacy and patient safety issues are in place.[1]

The common clinical conditions handled were musculoskeletal and neurological conditions. Exercise supervision, instructional materials dissemination, and education rank the top spots of TR services provided by PT practitioners.[24] It is also interesting to note that informed consents were provided and interprofessional collaboration was conducted. Informed consent was included in the interim guidelines released by PPTA. The utilization of TR for interprofessional collaboration gives us a possible future direction of rehabilitation care delivery in the Philippines.

Most practitioners provide TR free of charge when it comes to payment or reimbursement. This can be due to the lack of specific guidelines in setting the standard payment scheme and solidarity with the people during this pandemic. In the literature, the amount of reimbursement, known as payment parity, also varies, and reimbursements for telehealth are often not equivalent to an in-person visit.[29] The professional fee ranged from PhP 500 – 1,000 (USD 10-20).

The overall TR knowledge of the respondents was average while the majority have a positive attitude on the use of TR. Aloyuni et al. similarly reported the PTs in Saudi Arabia had sufficient TR knowledge.[30] Sidelil et al. reported

also that most of the healthcare professionals in Amhara, Ethiopia had good attitude towards TR.[31] In our study, only a few got the correct answers on the guidelines and scope of TR. Based on the context of the question on these two knowledge constructs, they thought using any social media platform could be safely used in TR, and the patient's geographical location determines the scope of digital practice in PT. This strongly suggests the need for policies, specific guidelines, and training.

A study that showed positive impressions and high acceptance rates among healthcare providers regarding TR supports the result of this study.[32] This dramatically impacts the use of TR since lack of acceptance could be a reason for its poor reception and sustainability.[12] It also showed a positive correlation between the knowledge and attitude of respondents, such that those with greater knowledge of TR have a more positive attitude. Specifically, it is associated with the performance expectancy aspect of attitude. This means that they believe the TR enhances their job performance. This is an important thing to highlight since PE is the strongest predictor of the intention to use a system.[12]

Also, we found that self-perceived level of expertise and years of TR have a strong positive correlation. However, care must be taken as several factors may come into play. Exploring these factors is beyond the scope of this study. Experience is a requirement for competence, but it is not the sole factor that influences expert practice.[33] Both were also correlated with EE, SI, and BI. Sidelil et al. reported experience was associated with attitude towards TR in Amhara, Ethiopia. However, it did not use the UTAUT model to further investigate the attitude constructs. In our study, it is worth noting that, though both had a weak correlation with EE and SI, those with greater experience agreed that support in TR could be provided by their facility and people who influence their training and that it is easy and simple to use. Venkatesh et al. similarly reported that those with little experience with a new technology find it more effortful to use the system.[7] Experience could have helped them gauge the level of professional and technological support one needs when conducting TR and appreciate its usefulness in one's task. Longer experiences that may likely increase their expertise would also drive them to use TR. We recommend early exposure, like incorporating TR during the internship year and ensuring ease of technological access and professional support when conducting TR. These could increase the acceptance and readiness of Filipino PTs in TR.

Limitations and Recommendations

Lastly, there are several limitations in the study. The response rate was also low and clustered mostly from NCR and only those who are active PPTA members. This may have limited the generalizability of our findings. Including Filipino PTs and ensuring equal sample representation in all regions would be best. The study was conducted a year after the pandemic and may capture only the initial and novel data on TR knowledge, attitude, and practice. Future studies may look at the status of TR now that there was an ease in the community restrictions. This may provide an idea on the sustainability of TR in the Philippine setting. The study primarily focused on the descriptive data of the knowledge, attitude, and practice. Other researchers may establish the causal relationship among these variables.

CONCLUSION

This is the first study in the Philippines conducted nationally to describe 'PTs' knowledge, attitude, and current practice on TR. Most of the respondents had average knowledge on TR. There was a large increase in the use of TR during the pandemic. Most were already using it for more than one year, with Facebook Messenger™ as the usual platform. A hybrid of synchronous and asynchronous methods was used, and the usual sessions lasted for one hour. The professional fee was less than a face-to-face therapy session. All respondents had positive attitudes towards TR.

The TR interest, awareness, and adoption among PTs in a developing country, such as the Philippines, does not seem to parallel countries with established telehealth services and curricula since pre-pandemic. Positive attitudes about incorporating telehealth innovations in clinical practice and teaching may be a good starting point for PTs to enhance their knowledge, skills, and experiences with virtual care amid and possibly beyond the COVID-19 pandemic. A call for strategies to bridge local TR gaps, such as the lack of clear national TR guidelines and reliable technological resources, is recommended to leverage the benefits of virtual care to address the perennial issues of limited access to in-person rehabilitation services throughout the archipelago.

Data Availability Statement

The data supporting the findings of this study are available from the study team upon reasonable request.

Statement of Authorship

KERS and CRDR contributed in the conceptualization of work, questionnaire development, data collection, analysis of data, drafting and revising of manuscript, and final approval of the version to be published. CFDL contributed in the conceptualization of work, questionnaire development, analysis of data, drafting and revising of manuscript, and final approval of the version to be published.

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REFERENCES

1. 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.
2. 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.
3. PPTA releases statement on COVID-19 [Internet]. [cited 2022 Mar 5]. Available from: https://www.philpta.org/post/ppta-statement-on-covid-19
4. Brennan DM, Barker LM. Human factors in the development and implementation of telerehabilitation systems. J Telemed Telecare. 2008;14(2):55–8. doi: 10.1258/jtt.2007.007040.
5. McCue M, Fairman A, Pramuka M. Enhancing quality of life through telerehabilitation. Phys Med Rehabil Clin N Am. 2010 Feb;21(1):195–205. doi: 10.1016/j.pmr.2009.07.005.
6. Leochico CFD, Rey-Matias BM V, 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.
7. Venkatesh V, Thong JYL, Xu X. Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. MIS Q. 2012;36(1):157–78. doi:10.2307/41410412
8. Zahid Z, Atique S, Saghir MH, Ali I, Shahid A, Malik RA. A commentary on telerehabilitation services in Pakistan: current trends and future possibilities. Int J Telerehabil. 2017 Jun;9(1):71-6. doi: 10.5195/ijt.2017.6224.
9. Hapal K. The Philippines' COVID-19 response: securitising the pandemic and disciplining the pasaway. J Curr Southeast Asian Aff. 2021;40(2):224–44. doi:10.1177/1868103421994261
10. Blandford A, Wesson J, Amalberti R, AlHazme R, Allwihan R. Opportunities and challenges for telehealth within, and beyond, a pandemic. Lancet Glob Health. 2020 Nov;8(11):e1364–5. doi: 10.1016/S2214-109X(20)30362-4.
11. Philippine Physical Therapy Association I. COVID-19 Impact Survey. 2020.
12. Ullah S, Maghazil AM, Qureshi AZ, Tantawy S, Moukais IS, Aldajani AA. Knowledge and attitudes of rehabilitation professional toward telerehabilitation in Saudi Arabia: a cross-sectional survey. Telemed J E Health. 2021 May;27(5):587–91. doi: 10.1089/tmj.2020.0016.
13. Yusoff MSB. ABC of content validation and content validity index calculation. Educ Med J. 2019;11(2):49–54. doi:10.21315/eimj2019.11.2.6
14. Davis LL. Instrument review: getting the most from a panel of experts. Appl Nurs Res. 1992 Nov;5(4):194–7. doi:10.1016/S0897-1897(05)80008-4
15. Report of the World Physiotherapy/Inptra Digital Physical Therapy Practice Task Force International Network of Physiotherapy Regulatory Authorities. 2019.
16. Zayapragassarazan Z, Kumar S. Awareness, knowledge, attitude and skills of telemedicine among health professional faculty working in teaching hospitals. J Clin Diagn Res. 2016 Mar;10(3):JC01–4. doi: 10.7860/JCDR/2016/19080.7431.
17. Oshlyansky L, Cairns P, Thimbleby H. Validating the Unified Theory of Acceptance and Use of Technology (UTAUT) tool cross-culturally. British Computer Society Conference on Human-Computer Interaction. 2007. doi:10.1145/1531407.1531429
18. Dancey CP, Reidy J. Statistics without Maths for Psychology. 7th ed. Pearson; 2017.
19. Using Telehealth to Expand Access to Essential Health Services during the COVID-19 Pandemic | CDC [Internet]. [cited 2022 Feb 20]. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/telehealth.html
20. Bahari M, Jafni TI, Miskon S, Ismail W. A review of success/failure factors influencing healthcare personnel for telerehabilitation. 2019 6th International Conference on Research and Innovation in Information Systems (ICRIIS), Johor Bahru, Malaysia, 2019. pp. 1-7. doi: 10.1109/ICRIIS48246.2019.9073677.
21. 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.
22. National ICT Household Survey 2019 | ICT Knowledge Portal [Internet]. [cited 2022 Feb 20]. Available from: https://dict.gov.ph/ictstatistics/nicths2019/
23. Werneke MW, Deutscher D, Grigsby D, Tucker CA, Mioduski JE, Hayes D. Telerehabilitation during the COVID-19 pandemic in outpatient rehabilitation settings: a descriptive study. Phys Ther. 2021 Jul;101(7):pzab110. doi: 10.1093/ptj/pzab110.
24. Serón P, Oliveros MJ, Fuentes-Aspe R, Gutiérrez-Arias R. Effectiveness of telerehabilitation in physical therapy: a protocol for an overview in a time when rapid responses are needed. Medwave. 2020 Aug;20(7):e7970. doi: 10.5867/medwave.2020.07.7970.
25. van Egmond MA, van der Schaaf M, Vredeveld T, Vollenbroek-Hutten MMR, van Berge Henegouwen MI, Klinkenbijl JHG, et al. Effectiveness of physiotherapy with telerehabilitation in surgical patients: a systematic review and meta-analysis. Physiotherapy. 2018 Sep;104(3):277–98. doi: 10.1016/j.physio.2018.04.004.
26. Rabanifar N, Abdi K. Letter to Editor: Telerehabilitation: A Useful and appropriate approach for people with disability in COVID-19 pandemic. Med J Islam Repub Iran. 2021 Feb;35:18. doi: 10.47176/mjiri.35.18.
27. Ashry AH, Alsawy MF. Doctor-patient distancing: an early experience of telemedicine for postoperative neurosurgical care in the time of COVID-19. Egypt J Neurol Psychiatr Neurosurg. 2020;56(1): 80. doi: 10.1186/s41983-020-00212-0.
28. Key changes made to telehealth guidelines to boost COVID-19 care | American Medical Association [Internet]. [cited 2022 Feb 20]. Available from: https://www.ama-assn.org/practice-management/digital/key-changes-made-telehealth-guidelines-boost-covid-19-care
29. Telehealth Systems - StatPearls - NCBI Bookshelf [Internet]. [cited 2022 Feb 20]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK459384/
30. Aloyuni S, Alharbi R, Kashoo F, Alqahtani M, Alanazi A, Alzhrani M, et al. Knowledge, attitude, and barriers to telerehabilitation-based physical therapy practice in Saudi Arabia. Healthcare. 2020 Nov;8(4):460. doi: 10.3390/healthcare8040460.
31. Sidelil H, Demissie A, Debalke G, Fikade B, Hailegebreal S, Tilahun B. Attitude towards tele rehabilitation-based therapy services and its associated factors among health professional working in specialized teaching hospitals in Amhara region, Northwest Ethiopia. Inform Med Unlocked. 2023;36:101145 doi:10.1016/j.imu.2022.101145
32. Albahrouh SI, Buabbas AJ. 'Physiotherapists' perceptions of and willingness to use telerehabilitation in Kuwait during the COVID-19 pandemic. BMC Med Inform Decis Mak. 2021 Apr;21(1):122. doi: 10.1186/s12911-021-01478-x.
33. Jensen GM, Shepard KF, Hack LM. The novice versus the experienced clinician: insights into the work of the physical therapist. Phys Ther. 1990 May;70(5):314–23. doi: 10.1093/ptj/70.5.314.