Readiness and Acceptance of Philippine General Hospital Medical Staff for Telemedicine as Alternative Method of Patient Consultation during the COVID-19 Pandemic and Post-enhanced Community Quarantine Period

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ABSTRACT

Introduction. The coronavirus disease 2019 (COVID-19) pandemic prompted a shift from standard in-person consultation to non-patient contact methods such as telemedicine. To our knowledge, there was no published a priori evaluation of the telemedicine readiness and acceptance among the medical staff of the Philippine General Hospital (PGH) before implementing the institution's telemedicine program. The lack of this vital pre-implementation step is understandable given the unprecedented crisis. However, if telemedicine programs will continue in the post-quarantine period, it is crucial to determine the facilitators and barriers to the use of telemedicine.

Objective. This study determined the level of readiness and acceptance for telemedicine as an alternative method for patient consultation during the COVID-19 pandemic and post-enhanced community quarantine period among PGH medical staff (consultants, residents, fellows).

Methods. The cross-sectional study was conducted from October 2020 to July 2021. Medical staff from the 16 clinical departments of the PGH were selected by systematic random sampling. Inclusion criteria included appointment as medical staff in PGH or University of the Philippines College of Medicine (UPCM), voluntary informed consent, internet access, and technical capacity to access e-mail and SurveyMonkey™. The online survey consisted of two questionnaires. It collected data on the demographic profile and outcomes of interest (e.g., telemedicine readiness and acceptance). Technological readiness was determined through the 16-item modified version of Technological Readiness Index (TRI) version 2.0, while telemedicine acceptance was determined through the modified version of the 19-item Unified Theory of Acceptance and Use of Technology (UTAUT) questionnaire. Descriptive and analytical statistics were performed at a 95% confidence interval.

Results. The study had an 87% response rate with 205 respondents, 62% of whom were physicians in training (resident physicians and fellows). The respondents had a median age of 33 years and were mostly males. Only 19% had telemedicine experience before the pandemic. The majority (51%) learned telemedicine on their own. The most common devices used for telemedicine were mobile or smartphones (53%) and laptops (38%). The primary source of internet for telemedicine was mobile broadband (e.g., cellular data) (40%). The majority practiced telemedicine at their home or residence (51%), followed closely by the hospital or clinic (47%). The mean score of the respondents on TRI was 3.56 (very good technological readiness), and 4.00 (very good telemedicine acceptance) on UTAUT (behavioral intention to use the system). Performance expectancy (p = 0.02), effort expectancy (p = 0.03), and self-efficacy (p = 0.02) were significantly directly related to telemedicine adoption, while anxiety (p = 0.03) was significantly inversely related.

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Conclusion. The PGH medical staff were found to have very good telemedicine readiness and acceptance. This suggests a willingness to use telemedicine during the pandemic. Further studies on the organization and technical support system of the telemedicine program in the PGH are strongly recommended. The quality and efficiency of the program will strongly influence the continued use of telemedicine by the medical staff even after the pandemic.

Key Words: health services administration; telemedicine; telecommunications; telecare; teleconsultation; COVID-19

INTRODUCTION

The coronavirus pandemic crisis has alarming safety issues in handling and treating patients using standard in-person consultation and bedside patient care.[1,2] In the early part of the pandemic, the Philippine General Hospital (PGH) was designated as a COVID referral center and several hospital services were temporarily closed including its outpatient services. To date, there is still no effective cure for COVID.[3] With the apparent protracted period of the COVID crisis and the need for non-COVID patients to access medical and surgical care in PGH, physicians need to provide avenues to resume inpatient and outpatient consultation and management. The need for social and physical distancing has pushed the medical staff to limit in-person contact with patients. With these obstacles, offering telemedicine as the alternative method for patient consultation seems the most viable option. Telemedicine is the use of telecommunication technologies to deliver healthcare services from a distance.[4]

The PGH University of the Philippines (UP) Manila has expanded its *Bayanihan Na* Operations Center (BNOC) "Call Center" platform to provide telemedicine services for patients. Telemedicine is now part of the "new normal" for patients and their families for their healthcare. Readiness for this non-traditional approach to patient management needs to be systematically assessed at personal and institutional levels to sustain its operations for long-term success. Currently, there are 1,469 physicians in PGH, 63% of whom are training either as residents or fellows. With different tiers of medical staff, there are also differing levels of telemedicine knowledge, skills, and experiences. To our knowledge, there was no published a priori evaluation of the telemedicine readiness and acceptance among physicians before the implementation of the telemedicine program in PGH. The lack of this vital pre-implementation step is understandable given the unprecedented crisis. However, if telemedicine programs are to continue in the post-enhanced community quarantine (ECQ) period, it is crucial to take a step back and determine the facilitators and barriers to the adoption of telemedicine.

Figure 1 shows the conceptual framework for the study. The key research questions were on the willingness of medical staff to use telemedicine and whether they would use it as an alternative to in-person patient consultation during the pandemic, and continue to use it when the pandemic ends.

The Technology Readiness Index (TRI) is a reliable tool (Cronbach's alpha = 0.808) that determines a user's attitude towards a specific technology, which in this study is telemedicine.[5-7] It merely looks at their openness toward using telemedicine in any situation. This willingness to use technology can be motivated by their perceived usefulness

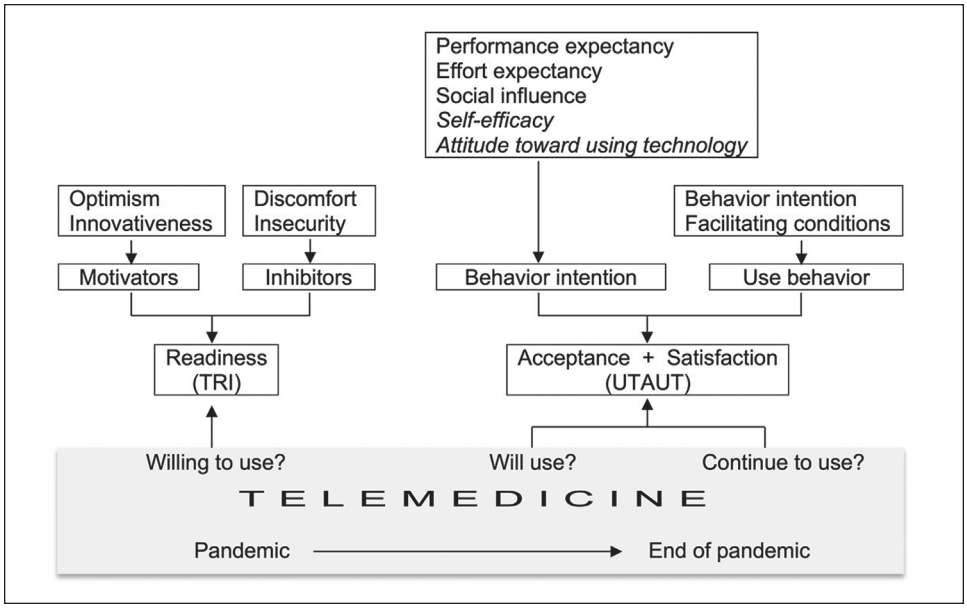

Figure 1. Conceptual framework with constructs of the Technology Readiness Index (TRI)[6,7] and the Unified Theory of Acceptance and Use of Technology (UTAUT).[8,9]

or benefits of the technology (optimism) and their interest in trying out and learning more about it (innovativeness). On the other hand, discomfort and insecurity can inhibit or discourage a person's use of telemedicine. Discomfort is the perceived inability to control technology, while insecurity stems from a person's belief that the technology has harmful effects.[5-7]

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a consolidation of various theories on the adoption of technology.[8] According to Momani, acceptance and satisfaction determine the successful adoption of technology.[8] Acceptance of technology will lead to its use, but continuous use of the technology will depend on how satisfying the user's experience was. The doctors' behavior intention and use behavior will show if they accept telemedicine, and are satisfied with its use as an alternative venue for consultations. Behavior intention is the degree to which a person will consciously plan the use of technology such as telemedicine.[9] Use behavior is acting on this plan.

Behavior intention is primarily evaluated by the UTAUT tool through questions related to three domains: performance expectancy, effort expectancy, and social influences. The performance expectancy will depend on the capability of telemedicine to deliver the beneficial effects that the user expected to see. Effort expectancy is the anticipated degree of ease in using telemedicine. Social influence refers to the effect of other persons on a physician's intent to use telemedicine. They could encourage, discourage or even mandate its use. Expanded UTAUT models have added self-efficacy and the attitude toward using technology in determining behavior intention.[9] Self-efficacy refers to the user's ability to handle the technology.

Behavior intention (the user's planned actions) and facilitating conditions will influence user behavior or the actual use of telemedicine. Facilitating conditions are the degree to which enabling factors in an individual's working environment are present to encourage the use of technology.[10] The organization, technical infrastructure, and existing support systems of the telemedicine program of PGH will strongly influence the user behavior of its medical staff. Investigating these variables is beyond the scope of this study. The study only looked at the general perception of the doctors regarding the enabling conditions for telemedicine in PGH, and the presence of training programs on telemedicine.

Technology readiness is said to be a stable characteristic that does not easily change.[5] In contrast, many variables, including gender, age, and experience can influence behavioral intention and use behavior.[8]

Put simply, the study aimed to determine if the medical staff of PGH is motivated to use telemedicine (readiness) and whether they have acted on this readiness by making plans to use it or by actually using telemedicine (acceptance and use) for patient consultations during the coronavirus pandemic. The study was focused on telemedicine as a form of technology. It did not evaluate the telemedicine programs being implemented in PGH. Assessing the satisfaction of the medical staff on their use of telemedicine during the period of study, and predicting its continued use after the ECQ, were beyond the scope of this research.

METHODS

The target population for this cross-sectional study was the medical staff of the PGH. Inclusion criteria for the participants were: 1) appointment as medical staff in PGH or University of the Philippines College of Medicine (UPCM), 2) voluntary informed consent, 3) internet access, and 4) technical capacity to access e-mail and SurveyMonkey™. The entire study was completed in ten months from October 2020 to July 2021.

The sample size was calculated based on a population size of 1,469 medical staff, hypothesized % frequency of outcome factor in the population of 50, design effect of 1, and a confidence interval of 95%. The computed sample size was at least 214 physicians. Participants from each of the 16 clinical departments were randomly selected proportional to their number of medical staff for balanced representation in the study. Participants who refused to join the study or who were no longer affiliated with the department due to retirement, discontinuation of training or resignation, after receipt of the invitation to the study, were replaced once. This method was used to maintain the proportion of samples based on the three professional groups per department.

The study commenced after approval from the University of the Philippines Manila Review Ethics Board (UPMREB Registration No. 2020-447-01). Communications with the survey respondents were channeled through the Chairperson and Chief Resident of each department.

The online survey instrument consisted of two questionnaires. The first questionnaire asked for demographic information. The second questionnaire evaluated the participants' level of 1) technological readiness using the 16-item modified version of Technological Readiness Index or TRI version 2.0, and 2) telemedicine acceptance and use through the modified version of the 19-item UTAUT questionnaire.

The TRI 2.0 is a 16-item questionnaire that evaluated the motivators and inhibitors of technology readiness. It was answered using a 5-point Likert scale. Four questions were assigned to each of the four dimensions of technology readiness: optimism, innovation, insecurity, and discomfort.

The UTAUT questionnaire had 19 items and was also answered using a 5-point Likert scale. The questions looked into the variables that influence behavior intention (BI) and user behavior or attitude (AT), namely: performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), self-efficacy, and attitude toward using telemedicine.[9]

The survey instrument was pilot-tested before the study proper. An expert-driven pretest was conducted by requesting two telemedicine experts from the National Telehealth

Center to review and give feedback on the content of the questionnaires. In addition, five senior residents and five consultants from the Department of Rehabilitation Medicine did the respondent-driven pretest. The revised questionnaires were subsequently pilot tested on 50 eligible participants. Only the results of the pilot test were included in the data analysis. All questionnaires could be accomplished in less than 30 minutes. Participants with late responses were followed up by email. Participants who did not submit their online survey after three follow-ups with approximately one-week intervals were considered drop-outs and were not replaced.

Descriptive statistics were used to present the demographic variables. Linear regression effect sizes were estimated with a 95% confidence interval and hypotheses were tested at an alpha of 5%. Subgroup analyses on age and prior telemedicine experience were also performed.

The highest possible score for the TRI and UTAUT is 5.0 and the lowest is 1.0, with scores being directly proportional to technological readiness and acceptance.[9] Both the total TRI score and the UTAUT mean score were interpreted as follows: 1.00–1.80 = poor, 1.81–2.60 = fair, 2.61–3.40 = good, 3.41–4.20 = very good, 4.21–5.00 = excellent.

A multivariable least-squares linear regression model was used to determine which of the following factors would influence acceptance and use of telemedicine: 1) technology readiness based on the TRI 2.0 score; 2) demographic factors of age, gender, and professional status; 3) prior telemedicine experience; 4) facilitating conditions; 5) performance expectancy; 6) effort expectancy; 7) self-efficacy; and 8) anxiety. Tests of assumptions were performed beforehand to ascertain the normality of data. Otherwise, non-parametric test statistics were conducted. All summary tables and multiple linear regression analyses were performed in RStudio (version 1.3.1073, https://www.R-project.org/).

RESULTS

A total of 205 out of 236 medical staff of the PGH included in the sampling frame, participated in the study with an 87% response rate. Selected demographic profile data are presented in Table 1. Ninety-five percent of the target participants completed the online survey. The four major clinical departments of PGH, Medicine, Pediatrics, Surgery, and Obstetrics-Gynecology, had the highest number of respondents.

The median age of the respondents was 33 years. There were slightly more male doctors (52%). More physicians in training participated in the study (62%), most of whom were resident physicians. Most of these trainees (44%) intend to set up their primary practice in the National Capital Region (NCR). The primary appointment of the consultants came from the College of Medicine (60%) and nearly all of them practice in the NCR (96%).

Table 2 summarizes the survey results on the participants' prior telemedicine experience. Only 39 (19%) respondents had one to three years of pre-COVID-19 telemedicine experience.

At the time of the survey, most respondents had an ongoing teleconsultation service in their departments (83%) and had been doing telemedicine for less than a year (73%). Only 68% of the respondents felt they were telemedicine-ready. Telemedicine was practiced either at home (51%) or in the respondent's workplace (47%). The most frequently used devices were a phone (53%) and laptop (38%). Most respondents used phone calls to communicate with patients (63%). Over half of the respondents used Viber, while 33% messaged clients through email and Facebook Messenger. Most respondents connected to the internet using mobile broadband (40%). Half of the 205 respondents learned to do telemedicine without any formal training. Of the 68 respondents who had training, approximately half attended a program in their clinical department, while half had it elsewhere. Not all the clinical departments of PGH offered a training program on telemedicine for their staff. Only 35% of the respondents were sure of having a training program on telemedicine for medical staff in their department. Nearly half of the respondents were uncertain about the availability of a training program on telemedicine for the non-medical and support staff of their department.

The overall median scores for both the TRI 2.0 (3.56) and UTAUT (4.0) suggest a very good level of telemedicine readiness, acceptance, and use. Figure 2 shows the median scores for the different domains evaluated by the TRI 2.0 and UTAUT questionnaires. Median scores for the TRI 2.0 motivators were high, while the median scores for the inhibitors were low. The domains in the UTAUT that can influence behavior intention and use intention for telemedicine had median scores ranging from 3.25 to 4.00 except for anxiety which had a lower median score of 2.75. Results of the linear regression (Table 3) on these factors showed that:

Performance expectancy ($p = 0.02$), effort expectancy ($p = 0.03$), and self-efficacy ($p = 0.02$) scores had a statistically significant positive influence on behavior intention.

Anxiety ($p = 0.03$) had a statistically significant negative influence on behavior intention and will be a barrier in the acceptance and use of telemedicine.

The telemedicine readiness score, demographic characteristics of the respondents, prior telemedicine experiences, and other UVAUT moderating variables (social influence, facilitating conditions, and attitude toward using telemedicine) had no statistically significant effect on the behavior intention and use intention.

DISCUSSION

The huge leap from the apparent low to high utilization of telemedicine from the pre-pandemic to pandemic period was facilitated by the global recommendation of the World Health Organization and local interim guidelines in

Table 1. Selected demographic characteristics (N = 205)

Characteristic	n (%)
Did the respondent complete the survey?	
Complete	195 (95.0)
Incomplete	10 (4.9)
Department	
Medicine	33 (16.0)
Pediatrics	24 (12.0)
Surgery	22 (11.0)
Obstetrics and Gynecology	18 (8.8)
Anesthesiology	16 (7.8)
Ophthalmology	13 (6.3)
Radiology	12 (5.9)
Neurosciences	10 (4.9)
Family and Community Medicine	9 (4.4)
Otorhinolaryngology	9 (4.4)
Orthopedics	9 (4.4)
Laboratories	8 (3.9)
Emergency Medicine	6 (2.9)
Dermatology	6 (2.9)
Psychiatry	5 (2.4)
Rehabilitation Medicine	5 (2.4)
Sex	
Male	105 (52.0)
Female	96 (48.0)
Unknown	4
Age *(median, IQR)*	33 (29, 44)
Unknown	4
Professional Experience	
Consultant	77 (38)
Fellow	34 (17)
Resident	90 (45)
Unknown	4
Year in Residency	
1st year	24 (19.0)
2nd year	26 (21.0)
3rd year	23 (19.0)
4th year	7 (5.6)
5th year	9 (7.3)
6th year	1 (0.8)
Not applicable *(if Fellow)*	34 (27.0)
Unknown	81
Year in Fellowship	
1st year	11 (8.9)
2nd year	14 (11.0)
3rd year	7 (5.6)
4th year	2 (1.6)
Not applicable *(if Resident)*	90 (73.0)
Unknown	81
In which region do you intend to set up your primary practice?	
National Capital Region (NCR)	54 (44.0)
Calabarzon (Region IV-A / Southern Tagalog)	30 (24.0)
Central Luzon (Region III)	8 (6.5)
Central Visayas (Region VII)	6 (4.8)
Soccksargen (Region XII)	5 (4.0)
Western Visayas (Region VI)	5 (4.0)
Davao Region (Region XI)	4 (3.2)
Bicol Region (Region V)	2 (1.6)
Cagayan Valley (Region II)	2 (1.6)
Zamboanga Peninsula (Region IX)	2 (1.6)
Caraga Region (Region XIII)	1 (0.8)
Cordillera Administrative Region (CAR)	1 (0.8)
Eastern Visayas (Region VIII)	1 (0.8)
Ilocos Region (Region I)	1 (0.8)
Mindanao (BARMM)	1 (0.8)
Northern Mindanao (Region X)	1 (0.8)
Unknown	81
Primary appointment in UP Manila	
University of the Philippines College of Medicine (UPCM)	46 (60.0)
Philippine General Hospital (Medical Specialist)	24 (31.0)
Other *(please specify)*	6 (7.8)
National Institutes of Health	1 (1.3)
Unknown	128
Region of current primary practice	
National Capital Region (NCR)	74 (96.0)
Calabarzon (Region IV-A / Southern Tagalog)	2 (2.6)
Central Luzon (Region III)	1 (1.3)
Unknown	128

Percentages were calculated using the number of respondents with valid (non-blank) answers to questions.

various healthcare settings to leverage telecommunications technology to obviate the need for physical contact and safely provide healthcare service from a distance.[11] This perceived benefit of being able to continue serving patients while staying safe may explain the high level of optimism (4.25) among the participants. However, the lower median score for innovativeness (3.5) suggests a hesitance among some participants to discover the full potential of telemedicine. The median scores of 2.75 for discomfort and insecurity in the TRI must also be addressed. Further research is needed to determine the negative perceptions that doctors have regarding telemedicine.

The slightly higher score for acceptance of telemedicine compared to technology readiness could be because, 1) participants were required to use telemedicine regardless of how they felt about this form of technology; and 2) the participants are familiar with the devices and platforms that were used for telemedicine. Mobile phones and laptops are often used by physicians in a training institution for teaching, learning, and communicating updates about patients. Communicating with colleagues, friends, and family through phone calls, Viber, email and social media is a common experience among physicians. The ease and confidence in using this telemedicine equipment, and the continued service to

Table 2. Prior telemedicine experience (N = 205)

Characteristic	n (%)
Has pre-COVID-19 telemedicine experience	
Yes	39 (19)
Unknown	4
Duration of pre-COVID-19 telemedicine experience *(years)*	
<1	17 (44.0)
>5	8 (21.0)
1-3	13 (33.0)
3-5	1 (2.6)
Unknown	166
Device most commonly used for telemedicine	
Laptop	76 (38.0)
Mobile phone	58 (29.0)
Smart phone	48 (24.0)
Desktop	10 (5.0)
Others *(please specify)*	5 (2.5)
Tablet	4 (2.0)
Unknown	4
Platforms used for telemedicine	
Phone call	129 (62.9)
Viber	111 (54.1)
Email	67 (32.7)
Facebook Messenger	67 (32.7)
Zoom	48 (23.4)
Telegram	25 (12.2)
Google Meet	9 (4.4)
WhatsApp	4 (2.0)
Primary source of internet for telemedicine	
Mobile broadband *(e.g., cellular data)*	80 (40.0)
Fiber broadband	46 (23.0)
DSL *(digital subscriber line)* broadband	37 (18.0)
Public wi-fi	15 (7.5)
Cable broadband	12 (6.0)
Others *(please specify)*	11 (5.5)
Unknown	4
Location of telemedicine practice	
Home / Residence	102 (51.0)
Hospital / Clinic	94 (47.0)
Others *(please specify)*	5 (2.5)
Unknown	4
Does your department have a telemedicine/ teleconsultation service?	
Yes	167 (83.0)
Unknown	4
Duration of telemedicine practice *(years)*	
< 1	121 (73.0)
1-3	42 (25.0)
3-5	3 (1.8)
Unknown	39
Are you telemedicine-ready?	
Yes	137 (68.0)
Unknown	4
Where did you get your training?	
I attended department training	35 (17)
I attended training given outside the department	33 (16)
I am self-taught	104 (51)
Does your department conduct training programs on telemedicine for medical staff?	
I don't know	32 (16)
No	98 (49)
Yes	69 (35)
Unknown	6
Does your department conduct training programs on telemedicine for non-medical staff?	
I don't know	88 (44)
No	97 (49)
Yes	14 (7)
Unknown	6
Does your department conduct training programs on telemedicine for support staff?	
I don't know	90 (45)
No	97 (49)
Yes	12 (6)
Unknown	6

Percentages were calculated using the number of respondents with valid (non-blank) answers to questions.

patients even under enhanced community quarantine support the positive influence of effort expectancy, self-efficacy, and performance expectancy on the behavior intention of the participants. With PGH being designated as a COVID-19 referral center, the pandemic has opened the eyes of the medical staff, regardless of sociodemographic variables and prior telemedicine experience and training, to the utility of telemedicine to prevent viral contagion, preserve the limited personal protective equipment, resources, and manpower of the hospital, and protect themselves and their families from sickness, while still being able to provide services and continue hospital operations albeit remotely.[12] Although the professional status of the participants did not influence the behavior intention, the consultants had the highest scores in performance expectancy and effort expectancy, and had the lowest scores in anxiety. The participants may be anxious about the quality of care and outcome of a teleconsultation when compared to an in-person consultation. The positive influence of performance and effort expectancy and self-efficacy on the acceptance of telemedicine is compatible with the results of a recent study that was done in a low-resource similar to PGH, by Shiferaw et.al.[13]

Training programs for all PGH staff involved in telemedicine could raise the TRI and UTAUT scores to an excellent level. Very few respondents had telemedicine experience before the pandemic. The pandemic catalyzed the use of telemedicine for healthcare service and teaching-learning even without proper awareness campaigns, work-

Table 3. Factors influencing telemedicine use behavior

Factors	Effect Size	95% CI[1]	p-value
UTAUT Domains			
Performance expectancy	0.30	0.06, 0.55	**0.016***
Effort expectancy	0.25	0.02, 0.47	**0.032***
Attitude toward using technology	-0.03	-0.26, 0.20	0.8
Social influence	0.20	-0.04, 0.44	0.095
Facilitating conditions	-0.08	-0.31, 0.16	0.5
Self-efficacy	0.28	0.06, 0.50	**0.014***
Anxiety	-0.18	-0.34, -0.02	**0.026***
TRI 2.0	-0.14	-0.43, 0.15	0.3
Department			
Medicine	—	—	
Anesthesiology	-0.39	-0.91, 0.13	0.14
Dermatology	-0.12	-0.81, 0.58	0.7
Emergency Medicine	-0.46	-1.2, 0.33	0.3
Family and Community Medicine	-0.19	-0.80, 0.41	0.5
Laboratories	0.41	-0.33, 1.2	0.3
Neurosciences	-0.24	-0.91, 0.42	0.5
Obstetrics and Gynecology	0.02	-0.46, 0.51	>0.9
Ophthalmology	0.40	-0.15, 0.95	0.2
Otorhinolaryngology	0.12	-0.47, 0.72	0.7
Orthopedics	0.05	-0.63, 0.73	0.9
Pediatrics	-0.21	-0.65, 0.23	0.3
Psychiatry	0.32	-0.35, 0.98	0.3
Radiology	-0.32	-0.95, 0.30	0.3
Rehabilitation Medicine	0.29	-0.41, 0.98	0.4
Surgery	0.01	-0.47, 0.48	>0.9
Sex			
Female	—	—	
Male	-0.15	-0.42, 0.12	0.3
Age	0.00	-0.02, 0.02	0.8
Professional experience			
Consultant	—	—	
Fellow	0.10	-0.37, 0.56	0.7
Resident	0.07	-0.42, 0.56	0.8
Pre-COVID telemedicine experience			
No	—	—	
Yes	0.10	-0.18, 0.39	0.5
Department has a telemedicine service			
No	—	—	
Yes	0.14	-0.30, 0.57	0.5
Telemedicine-ready			
No	—	—	
Yes	0.04	-0.25, 0.32	0.8
Department conducts telemedicine training			
No	—	—	
Not sure	-0.07	-0.47, 0.32	0.7
Yes	-0.01	-0.28, 0.25	>0.9

*Total observations: 143 (62 excluded due to missing or incomplete responses). [1]CI = Confidence Interval. *Statistically significant based on linear regression analysis (dependent variable: behavioral intention to use the system score). UTAUT: Unified Theory of Acceptance and Use of Technology. TRI: Technology Readiness Index 2.0.*

Figure 2. Median scores for the UTAUT and TRI and its various domains.

force training, capacity building, and national policy guidelines.[14] Most of the respondents learned the ropes of telemedicine on their own as there were no telemedicine training programs for medical staff, non-medical and clinical staff in their respective departments. Training in telemedicine in a developing country with limited resources like the Philippines has been challenging across medical specialties, e.g., in telepathology,[15] and among rural health physicians of the Doctors to the Barrios (DTTB) program of the Department of Health (DOH).[16] Training is essential if telehealth is to be sustained. Telemedicine in the country has evolved beyond a health delivery strategy to reach the poor in far-flung areas, to providing faster and farther virtual health care delivery to the general public. Like a domino effect, various hospitals began to modify their policies and operations towards telemedicine implementation, providing necessary organizational and technical support and infrastructure to the telemedicine workforce. This paradigm shift may even continue beyond the pandemic period after the telemedicine stakeholders (consumers and providers) have begun to realize the benefits of virtual care and how to mitigate its inherent limitations and risks (e.g., data privacy issues, technical difficulties, challenges in virtual examination).[14,17] To sustain eHealth in the country, the National Telehealth Center (NTTC) of the Philippines as the lead government agency, will need to push for the institutionalization of an eHealth structure and eHealth system.[18]

However, similar to other resource-limited countries, even after almost two years into the pandemic, telemedicine is still poorly integrated with the Philippines' health care and educational system due to various challenges.[19] Thus, studies on the readiness for and acceptance of telemedicine and how institutions adopted telemedicine are essential to minimize implementation failure, as these studies will help to inform faculty and health care personnel about successful adoption strategies. Awareness campaigns, workforce training, capacity-building, and developing and upgrading national policy guidelines on telemedicine are also important measures to ensure sustainable programs. In addition, studies on administrative support and funding, formulation of best practice guidelines, work reorganization, agreement on payment schemes and reimbursements, and measures to protect the data privacy and safety of stakeholders are recommended.[20,21] Moreover, technical factors should be addressed by improving the quantity and quality of tangible (e.g., telemedicine equipment and technical support) and intangible e-health resources.[8]

Determining contributors and inhibitors to the use of new technologies can help administrators or decision-makers plan for faculty training to further improve andragogy, research, and healthcare service delivery. Future studies should also focus on the development of user-friendly technologies to allay anxiety and improve performance expectancy, effort expectancy, and self-efficacy. Studies on the facilitating influences on the satisfaction with the offsite program are essential for the continued use of telemedicine even after the pandemic. As this study was done only in one health care institution, comparing our findings with other academic and health care institutions will further elucidate the factors influencing the readiness and acceptance of telemedicine in our country.

CONCLUSION

This study showed very good telemedicine readiness and acceptance among the PGH medical staff. Performance expectancy, effort expectancy, and self-efficacy were found to be directly related to telemedicine adoption, while anxiety with the technology was inversely related. This suggests a willingness to use telemedicine during the pandemic. Further studies on the organization and technical support system of the telemedicine program in the PGH are strongly recommended. The quality and efficiency of the program will strongly influence the continued use of telemedicine by the medical staff even after the pandemic.

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 funded by the 2020 Faculty Research Grant from the Expanded Hospital Research Office of PGH, University of the Philippines Manila.

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