Level of Doctors' Satisfaction in Ophthalmology Telemedicine at the Philippine General Hospital

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ABSTRACT

Objectives. This quantitative, cross-sectional, descriptive research aims to determine the level of satisfaction of doctors using telemedicine in Ophthalmology.

Methods. An online questionnaire was sent to ophthalmologists at the Philippine General Hospital, a tertiary referral center, that partially shifted to ophthalmology telemedicine during the COVID-19 pandemic.

Results. Respondents perceived telemedicine positively in terms of usefulness (Mean 2.92, Slightly Satisfied), ability to do quick follow-ups and patient updates (Mean 2.90, Slightly Satisfied), simplicity, and ease of use of technology (Mean 2.78, Slightly Satisfied). They were least satisfied with its effectiveness (Mean 2.37, Slightly Dissatisfied).

Conclusion. Ophthalmologists expressed only slight satisfaction with telemedicine. The telemedicine platform was simple and useful for end-users, but some aspects may be improved based on questionnaire results.

Keywords: COVID-19, telemedicine, ophthalmology, job satisfaction

INTRODUCTION

Several degrees of community quarantine and travel restrictions were enforced initially in the entire Luzon, especially the National Capital Region (NCR) and in later time, all over the Philippines due to the COVID-19 pandemic. Over 3.6 million infections and over 54,000 deaths have been reported as of February 9, 2022.[1] With the Philippine General Hospital (PGH) being declared one of the COVID-19 referral hospitals of the country[2], patients of the Department of Ophthalmology and Visual Sciences (DOVS) of the University of the Philippines - Philippine General Hospital (UP-PGH) had to shift to telemedicine to address their concerns regarding their eye conditions. Telemedicine is a fast-changing health care delivery system. The word telemedicine is used to define "the provision of medical services across distance," "healing at a distance," or "the use of technologies to remotely diagnose, monitor, and treat patients."[3] It is the practice of medicine using technology to deliver care from a distant location. A physician in one location uses a telecommunications infrastructure to deliver care to a patient at a distant site.[4] This intervention was done to minimize the chances of disease transmission, with fewer doctor to patient physical contact, and less crowding in the clinics or hospital facilities.

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Telemedicine comprises four (4) main groups which are all utilized in Ophthalmology telemedicine: a. live bi-directional communication between the doctor and the patient using the internet; b. asynchronous or store and forward (i.e., emailing of images, diagnostic tests to a physician for their evaluation; c. remote monitoring of patients; and d. mobile health, patient training using mobile phones, video chat, etc.[5] The estimated mobile phone users locally was as high as 167.32 million in 2019[6] therefore mobile phones are widely used in telemedicine practice in the Philippines. FB Messenger and Viber are the commonly used smartphone applications since they provide users a good grasp of video chat functions over the mobile phone.[7] In this same paper, approximately 53% of Filipinos are smartphone users. Smart phones are also equipped with 4 to 9 Megapixel cameras, which will be useful for sending images of the patient and pertinent laboratory results.

Telemedicine in Ophthalmology was shown to have the following beneficial uses: triage acute problems, medication reconciliation to improve adherence, reassurance, follow-up of chronic eye conditions, reassess care plans, reschedule upcoming patient appointments or procedures, and marketing Telehealth services.[8] Caffery et al. described 62 distinct teleophthalmology models of care such as screening for eye diseases, different consultation services, triage, remote supervision, education or training, and urgent or emergency services.[9]

This research aimed to quantify the doctors' degree of fulfillment of expectations with regard to telemedicine. Specifically, the study aimed to: 1) describe the profile of the Department of Ophthalmology doctors in terms of age, gender, and position; 2) describe the level of satisfaction in using telemedicine services in relation to perceived usefulness, simplicity and ease of use, effectiveness, and ability for quick follow-ups/patient updates; and 3) identify recommendations to further improve current telemedicine practices in Ophthalmology. As the primary user of telemedicine, it is important to get the sentiments of the ophthalmologists when taking care of patients via this platform. While telemedicine is practiced differently among various branches of medicine, it is important to have a process of outcomes' assessment and continuous re-evaluation from both the users and the clients.

MATERIALS AND METHODS

The quantitative cross-sectional descriptive study was conducted at the Department of Ophthalmology and Visual Sciences of the Philippine General Hospital, a tertiary referral center that had to partially shift to telemedicine during the COVID-19 pandemic. Approval from the Institutional Review Board was obtained.

Convenience sampling was used. Inclusion criteria were use of the ophthalmology telemedicine platform from June

Table 1. Reliability Testing of Survey Questionnaire

	Cronbach Alpha	Average interim covariance	Number of statements
Perceived Usefulness	0.63	0.162	3
Ease of Use	0.804	0.337	3
Effectiveness	0.763	0.198	3
Ability to do quick follow ups	0.876	0.362	3
Average	0.768		

to December 2021, and consent for participation in the study. Based on these criteria, the projected number of respondents was 39, and all were included as data subjects. The research covered four aspects of telemedicine: ease of use, effectiveness, ability to do quick follow-ups, and perceived usefulness.

Instrumentation

A sample questionnaire was pilot tested for reliability and internal consistency using 20 respondents. The sample questionnaire contained three statements for each construct: 1) perceived usefulness; 2) simplicity and ease of use; 3) effectiveness; and 4) ability to do quick follow-ups. The questionnaire asked respondents to rate the statements based on a 4-point Likert scale: 1 for Strongly Dissatisfied, 2 for Slightly Dissatisfied, 3 for Slightly Satisfied, and 4 for Strongly Satisfied.

Results for reliability and internal consistency are seen in Table 1 with the average Cronbach Alpha being 0.768 which is considered acceptable. Three content experts performed principal component analysis of the questionnaire before it was released to study participants.

Data Gathering

Written consents were obtained from the respondents with regard to their participation in the survey. Questionnaires were then distributed to residents, fellows, and medical specialists using Google Forms. Participants' names were anonymized, with participants advised to use their UP email to make sure their connections and access to the google forms were encrypted. The study took two weeks for distribution of surveys and collection of data. Respondents who did not reply within two weeks were reminded via SMS. Data was collated from Google forms in a spreadsheet format.

Data Processing and Analysis

Data was encoded and analyzed using Google forms.

Frequency and percentage distribution were used to describe the profile of the respondents in terms of age, gender, and position in the department. Mean and standard deviation were then used to analyze the Likert scale responses.

Recommendations will be made to improve upon discovered weaknesses of the telemedicine services based on the results.

RESULTS

Population

The response rate was 100%. A total of 39 respondents participated in the survey representing the entire population of doctors who utilized the telemedicine platform from June to December 2021. Table 2 shows the demographics of the respondents. More than half (22 or 56.41%) of the respondents identified themselves as males, while the remaining (17 or 43.59%) are females. The age of the respondents ranged from 27-39 years. There were 2 age brackets which had 17 respondents (43.59%): 27-30 years and 31-34 years, and 5 respondents (12.82%) were 35 years old and above. In terms of position, most (66.67%) of the

Table 2. Profile of the respondents

	Frequency	Percent
Age		
27-30 years	17	43.59
31-34 years	17	43.59
35 and above	5	12.82
Total	39	100
Gender		
Male	22	56.41
Female	17	43.59
Total	39	100
Position		
Resident	26	66.67
Fellow	9	23.08
Medical Specialist	4	10.26
Total	39	100

respondents were residents in training. This is followed by those who were fellows in training and medical specialist, at 23.08% and 10.26%, respectively.

Levels of Satisfaction

Table 3 indicates the level of satisfaction of the respondents on the telemedicine services. It summarizes the characteristics of the indicators included in the model, reporting the statements, its mean, standard deviation, and its corresponding descriptive statement within the 4-point Likert scale.

In terms of perceived usefulness, the respondents were slightly satisfied as evidently shown in its mean response of 2.92 with a standard deviation of 0.46. The respondents on the average were slightly satisfied to lower healthcare cost to patients because of telemedicine (3.21); as well as access to healthcare with telemedicine (3.15). On the other hand, they are slightly dissatisfied with the doctors' time savings because of telemedicine (2.41).

With regard to simplicity and ease of use, the respondents, in general, were slightly satisfied as indicated in its mean response of 2.87 with a standard deviation of 0.50. On average, the respondents were slightly satisfied with the ease of use of telemedicine equipment (2.87); and with the reliability of their internet connection while doing telemedicine (2.89). Also, they were slightly satisfied with regard to the interconnectivity of telemedicine with their electronic medical records (2.69).

As to effectiveness, the respondents on average were slightly dissatisfied as shown in its mean response of 2.37 with a standard deviation of 0.44. The respondents generally

Table 3. Level of Satisfaction in Telemedicine

Constructs	Mean	SD	Interpretation
Perceived usefulness (Mean 2.92, Slightly Satisfied)			
Access to healthcare with telemedicine	3.15	0.59	Slightly Satisfied
Doctors' time savings because of telemedicine	2.41	0.79	Slightly Dissatisfied
Lower healthcare cost to patients	3.21	0.57	Slightly Satisfied
Mean Response	2.92	0.46	Slightly Satisfied
Simplicity and ease of use of technology (Mean 2.78, Slightly Satisfied)			
Ease of use of telemedicine equipment	2.87	0.57	Slightly Satisfied
Reliability of my internet while doing telemedicine	2.77	0.71	Slightly Satisfied
Interconnectivity of telemedicine with electronic medical records	2.69	0.83	Slightly Satisfied
Mean Response	2.78	0.50	Slightly Satisfied
Effectiveness (Mean 2.37, Slightly Dissatisfied)			
Improvement of patient's eye conditions because of telemedicine	2.51	0.51	Slightly Satisfied
Ability to diagnose conditions correctly in telemedicine	2.31	0.57	Slightly Dissatisfied
Quality of healthcare delivered to my patients through telemedicine	2.28	0.56	Slightly Dissatisfied
Mean Response	2.37	0.44	
Ability to do quick follow-ups/patient updates (Mean 2.90, Slightly Satisfied)			
Timeliness of follow-ups using telemedicine	2.95	0.65	Slightly Satisfied
Ability to monitor chronic conditions with telemedicine	2.77	0.67	Slightly Satisfied
Patients' ability to update me regarding the status of their eye condition	2.97	0.71	Slightly Satisfied
Mean Response	2.90	0.58	Slightly Satisfied

Note: 1.00-1.75 – Strongly Dissatisfied; 1.76-2.50 – Slightly Dissatisfied; 2.51-3.25 – Slightly Satisfied; and 3.26-4.00 – Strongly Satisfied.

were slightly satisfied with the improvement of patients' eye conditions because of telemedicine (2.51). However, they were slightly dissatisfied with the doctor's ability to diagnose conditions correctly in telemedicine (2.31); as well as to the quality of healthcare delivered to their patients through telemedicine (2.28).

In terms of ability to do quick follow-ups/patient updates, the respondents generally were slightly satisfied as evidently shown in its mean response of 2.90 with a standard deviation of 0.58. On average, they were slightly satisfied with the patients' ability to update them regarding the status of their eye condition (2.97); and with the timeliness of follow-ups using telemedicine (2.95). Further, they were slightly satisfied with the ability to monitor chronic conditions with telemedicine (2.41).

DISCUSSION

The COVID-19 pandemic forced the Department of Ophthalmology and Visual Sciences to shift to telemedicine to deliver needed care and limit physical contact between doctors and patients, and among patients themselves. Shifting to telemedicine limits the ability of the attending physician to fully examine their patients (i.e., inability to use a slit lamp microscope, to measure intraocular pressure, examine the patient's fundus, lack of diagnostic equipment, etc.). Oftentimes, the physician using telemedicine relies on the patient's history and clinical presentation, and some visual cues seen during video teleconferencing. Telemedicine allows the attending physician to prioritize patients requiring immediate face-to-face consultation and do quick follow-ups on post-operative patients.

Health care professionals' satisfaction is as important as patient satisfaction in telemedicine delivery. More research is required to understand how healthcare professionals perceive the increasingly prevalent telemedicine programs. Doctors are one of the important stakeholders in the practice of telemedicine. It is important to involve them in the construction and evaluation of telemedicine programs because it was shown that providers had better perception of telemedicine if they were involved in the development. A study by Huang showed that providers were satisfied in proportion to their participation in telemedicine design.[10]

Telemedicine requires certain skills in the following areas: digital communication skills, clinical acumen, and knowledge of technology and equipment to be used, while adhering to ethical practice. Sapci and Sapci recommended skills training for telemedicine in nursing students. The proposed learning outcomes may also apply to doctors: a.) knowledge and attitude towards telemedicine on how it can be fully utilized and how information can be shared, and b.) technological skills in equipment use and managing data derived from telemedicine.[11]

Results from this study were consistent with other studies done in Spain[12], UK[13] and Uganda[14] that showed

the willingness of health workers to adopt telemedicine and remote consultations as a replacement to face to face consultation. Elawady also suggests mandatory training for all health workers engaging in telemedicine.[13]

CONCLUSION AND RECOMMENDATIONS

This research on the level of satisfaction on Ophthalmology telemedicine in the Philippine General Hospital has the following conclusions: With regard to the various aspects of telemedicine, the respondents are most satisfied with the perceived usefulness of Ophthalmology telemedicine, although the doctors are slightly dissatisfied with the time spent by the doctors performing telemedicine. This is followed by ability to do quick follow-ups / patient updates, simplicity and ease of use, and least satisfied with effectiveness.

The authors recommend further research on the effectiveness aspect of telemedicine which got the lowest average among the four aspects reviewed. A qualitative study on this topic can be done to explore why the respondents felt that telemedicine has poor ability to diagnose conditions correctly (Mean 2.31 Slightly Dissatisfied) and why the quality of healthcare delivered (Mean 2.28, Slightly Dissatisfied) through telemedicine needs improvement. Training sessions on diagnosing different eye conditions can be conducted and attendees can be encouraged to share best practices. Another area of improvement that could impact the overall level of satisfaction on Ophthalmology telemedicine is the doctors' time savings due to telemedicine (2.41 Slightly Dissatisfied). This can also be addressed during telemedicine training sessions and regular sharing of best practices in Ophthalmology telemedicine. Time motion studies on Ophthalmology telemedicine can be performed to determine possible sources of delay. Patient satisfaction can also be studied in order to further improve the telemedicine platform. The researchers believe that continued training and discussion of telemedicine through case studies and workshops will also improve the other aspects of telemedicine. As more physicians participate in telemedicine, a larger sample size may be obtained that would allow additional subgroup analysis based on telemedicine user profile.

Disclaimer

Views expressed in this article are from the authors and not an official position of the Philippine General Hospital.

Statement of Authorship

Both authors contributed in the conceptualization of work, acquisition and analysis of data, drafting and revising of manuscript, and final approval of the version to be published.

Author Disclosure

Both authors declared no conflicts of interest.

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