

Physicians' Perceptions on the Role of Telemedicine in Cancer Care During and Post-COVID-19 Pandemic

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ABSTRACT

Objectives. This study aims to determine perceptions of physicians in our institution on the role of telemedicine in cancer care during the COVID-19 pandemic and to assess its perceived benefits and barriers.

Methods. This is a cross-sectional study of physicians involved in cancer care in a tertiary referral hospital in the Philippines. We administered a 21-item online survey questionnaire between August to October 2020.

Results. We received and analyzed 84 physician responses. Ninety-six percent of physicians currently use telemedicine, an increase from 59% pre-pandemic. Eighty-nine percent use telemedicine for follow-up virtual consults, while 75% use telemedicine for case discussions in multidisciplinary meetings. The mean number of monthly patient consults conducted through telemedicine increased to 29.5 (SD: 24.8) from a pre-pandemic mean of 7.7 (SD: 18.7).

Eighty-four percent of respondents perceived its main benefit as an infection control measure. The other perceived benefits of telemedicine include convenience (78%), accessibility to cancer care (72%), cost-effectiveness (68%), and time efficiency (44%). A quarter of the respondents believed that telemedicine has the potential to improve cancer outcomes. Ninety-two percent of the respondents expressed that they will use telemedicine occasionally in their practice.

Conclusion. Telemedicine was perceived by Filipino physicians in a tertiary hospital as an acceptable solution for the provision of cancer care during and after the COVID-19 pandemic. Tele-oncology should be further investigated to maximize patient and physician satisfaction and improve cancer outcomes. Data from this study can be used to improve oncology practice and service delivery to suitable patients during and after the COVID-19 pandemic.

Key Words: cancer, COVID-19 pandemic, telemedicine, tele-oncology

INTRODUCTION

Since the World Health Organization (WHO) declared the Coronavirus disease 2019 (COVID-19) a pandemic, an increasing role for telemedicine was seen in the outpatient cancer services of our institution. Based on studies done in China and Italy, patients with cancer are more at risk for COVID-19¹ and have higher case fatality rates²⁻⁴ compared to the general population. Travel restrictions brought about by quarantine, limited availability of outpatient clinics, re-assignment of oncology staff to the COVID-19 workforce, and deferral of all non-essential visits to the hospital resulted in many cancer outpatient visits being replaced by teleconsultation.

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Various cancer guidelines⁵ and international cancer organizations such as the American Society of Clinical Oncology,⁶ American Society for Radiation Oncology (ASTRO),⁷ and European Society of Medical Oncology⁸ all promote the use of telemedicine. The Department of Health (DOH) and National Privacy Commission (NPC) Guideline on the use of telemedicine in COVID-19 response aims to decongest hospitals and support implementation of community quarantine.⁹

The WHO, American Telemedicine Association and Philippine Department of Health define telemedicine as the use of telecommunication technologies to advance healthcare. Tele-oncology is the application of telemedicine in oncology for diagnostics, treatment or supportive management.^{10,11} This includes any form of technology to facilitate cancer care. From its first application in the National Aeronautics and Space Administration (NASA), telemedicine found its niche in oncology with applications in medical,¹² gynecologic,¹³ pediatric,¹⁴⁻¹⁷ surgical,¹⁸⁻²⁰ and radiation oncology.²¹

Majority of patients in our institution have limited resources and finances, unlike more developed countries where the practice of telemedicine, particularly tele-oncology, is already established. Most of our patients are technologically disadvantaged, or do not have access to the internet or other telemedicine platforms.

Despite this, the Division of Radiation Oncology's experience with radiotherapy teleconsultation has increased since the start of the pandemic. Prior to the pandemic, we had no telemedicine clinic. At present, our average telemedicine consults per month is over one hundred. The choice of telemedicine platform was patient-led, mostly through emails, audio calls, Facebook and Viber. Services provided included secure phone calls, messaging, chat and image and file uploads for patient screening, consults, history-taking and targeted physical examination, as well as issuance of electronic work-up requests, medical certificates, referral letters, and prescriptions as needed.

Despite the promising utility of tele-oncology in our division during the COVID-19 pandemic, evidence on use of tele-oncology in the Philippines is scarce, hence this study. Specifically, this study aimed to determine perceptions of the physicians in our institution on the role, perceived benefits and barriers of telemedicine in cancer care during and after the pandemic.

MATERIALS AND METHODS

The University of the Philippines-Manila Research Ethics Board (UPM REB Code 2020-375-01) approved this study.

This study was an observational, cross-sectional study using an online, self-administered questionnaire using Qualtrics[®]. The survey was anonymous, and consisted of 21 questions focusing on physicians' experience on telemedicine use, the types of telemedicine services, devices and

communication applications used during the pandemic, their perceived level of patient and user satisfaction, as well as perceived benefits of and barriers to the use of telemedicine in oncology. The study also elicited their perceptions on the potential role of telemedicine post-COVID-19 pandemic.

The online survey questionnaire was validated through a pilot run in the Division of Radiation Oncology of UP-PGH. All amendments to the online survey questionnaire as a result of validation and pilot testing were incorporated into the final version of the questionnaire.

The online survey questionnaire was emailed to the consultants and trainees of the sections of Radiation Oncology, Medical Oncology, Surgical Oncology, Colorectal Surgery, Gynecologic Oncology, Adult Hematology, Pediatric Oncology, Pediatric Neurology, Urology as well as to the Departments of Neurosurgery, Orthopedics, Otorhinolaryngology, Dermatology, Palliative Medicine, and Pain Service. All physicians involved in managing cancer patients were invited to participate in the study. The online survey was also disseminated to existing UP-PGH Multidisciplinary Cancer Groups.

Completion of the online survey took approximately 10-15 minutes. Duplication of survey respondents was prevented by cross-checking the total number of surveys invitations disseminated with the total number of responses per specialty. Moreover, respondents were able to update the principal investigator once they finished accomplishing the survey.

A minimum sample size of 75 respondents was computed based on a power of 80%, a two-tailed level of confidence set at 95%, and an additional 10% oversampling to account for incomplete data. Convenience sampling was used and the responses of consultants and trainee physicians who participated in the validation and pilot testing of the study were also recorded and included in the findings of this study.

All collected responses were anonymized and given control numbers. After completion, the electronic data were filed and processed for data encoding. All data were secured in the investigators' office to protect data privacy of respondents. The data were recorded and analyzed for patterns and trends. Descriptive statistics (mean, standard deviation, frequency) were used to summarize data using Microsoft Excel for MAC version 16.39. Figures were created using Microsoft Excel for Mac version 16.39 and Qualtrics[®].

RESULTS

A total of 84 responses were gathered, yielding a response rate of 56%. Nearly a quarter of the respondents came from the Division of Radiation Oncology. Eighty one percent of the participants were below 40 years of age. Majority of respondents were trainees.

Of the respondents (Table 1), 59% (n=49) had prior experience with telemedicine before the COVID-19 pan-

demic. With the onset of the pandemic, use of telemedicine increased to 96% (n=80).

The types of telemedicine services offered in their practice during the pandemic (Figure 1), 89% (n=75) were virtual follow-up consults, while 73% (n=61) were virtual first consults. Seventy-five percent of respondents (n=63) used telemedicine for case discussions in multidisciplinary meetings. The mean monthly census of patient consults through telemedicine increased from 7.7 (SD 18.7) (pre-pandemic) to 29.5 (SD 24.8) during the pandemic.

The most common devices used by respondents for telemedicine during the pandemic were cellphones (98%),

Table 1. Demographic characteristics of respondents

	Number (%) of Respondents	
	n	%
Specialization		
Adult Hematology	11	13
Adult Neurology	2	2
Anesthesiology / Pain Service	1	1
Colorectal Surgery	1	1
Dermatology	1	1
Gynecologic Oncology	4	5
Medical Oncology	10	12
Neurosurgery	1	1
Orthopedics	13	15
Otorhinolaryngology	10	12
Pediatric Neurology	1	1
Pediatric Oncology	2	2
Radiation Oncology	20	24
Surgical Oncology	5	6
Urology	2	2
Total	84	100
Designation		
Consultants	18	21
Residents/Fellows	66	79
Age (years)		
<30	30	36
31-40	38	46
41-50	8	10
51-60	6	7
61-70	2	2

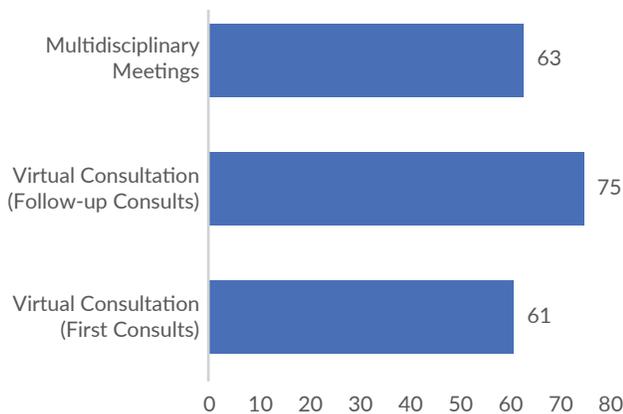


Figure 1. Types of telemedicine services offered by respondents during the COVID-19 pandemic.

laptops (83%), tablets (46%), and mobile telemedicine units (22%). The communication applications utilized by respondents were mostly short messaging service (SMS) (92%, n=76), telephone/cellphone audio calls (83%, n=70), Facebook® Messenger chat (70%, n=58). Less commonly used were Zoom (45%, n=37), Facebook® Messenger videochat (25%, n=21), and Viber (16%, n=14). Around 10% of respondents used dedicated telemedicine websites such as Doxy.me, Medifi and Cisco Webex.

Over half (56%) of respondents' clinic consults were conducted using telemedicine. Also around half (52%) of respondents were aware that the telemedicine platform they use abided by the Data Privacy Act of 2012. Only 44% (n=36) of the respondents underwent a training course on telemedicine.

The main motivation for using telemedicine was its role as an infection control measure during the pandemic in 84% (n=70) of respondents. Only 40% (n=33) of respondents used telemedicine for convenience, while only 30% used telemedicine due to patient and physician preference (Figure 2).

The manner of obtaining informed consent for virtual consults varied. Around 32% (n=26) of the respondents embedded the informed consent in the telemedicine platform while 24% (n=20) assumed that the informed consent process was implied. Verbal informed consent that was not video/audio-recorded was used by 26% (n=21) while a written and signed informed consent saved as a softcopy was used by 9% (n=7), and 2% (n=2) kept a recording of the patient's verbal informed consent.

For documentation of virtual consults, 59% (n=48) kept electronic medical records, while 14% (n=12) kept physical patient charts. The remainder used recordings of the virtual consults.

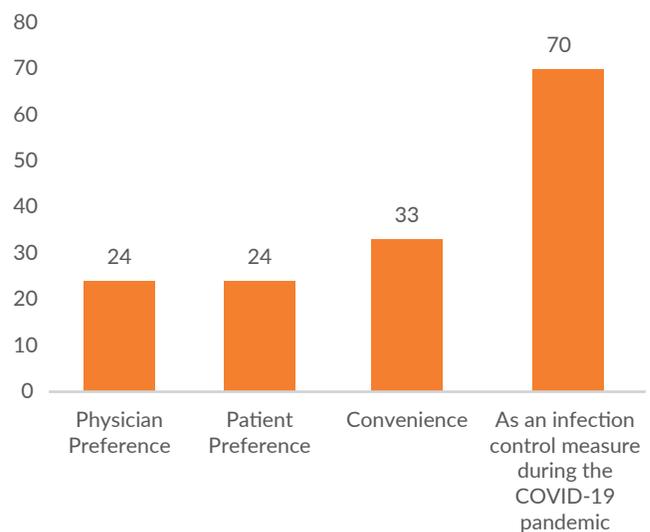


Figure 2. Main motivation for using telemedicine during the COVID-19 pandemic.

Benefits of Telemedicine

The main benefits of telemedicine was its role in infection control during the pandemic (84%), convenience (78%) and accessibility to cancer care for patients (72%) (Figure 3). Other reported perceived benefits of telemedicine include cost-effectiveness (68%) or decreased patient expenses and time efficiency (44%) allowing more patients to be managed and served at the same time. Only 26% thought that it had the potential to improve cancer outcomes.

Barriers to use of telemedicine

Inability to do complete physical examination (83%) and technological illiteracy (61%) were the main barriers to the use of telemedicine (Figure 4). Lack of technology or infrastructure (56%), issues with privacy and confidentiality (53%), lack of guidelines (48%), concern with medico-legal

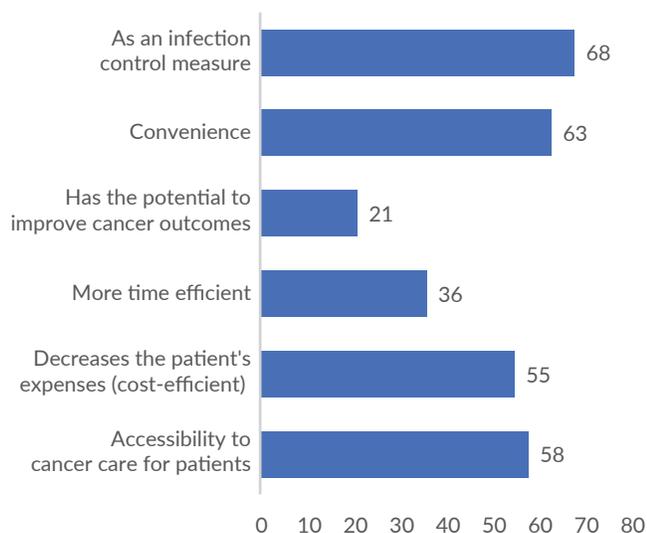


Figure 3. Perceived benefits of the use of telemedicine.

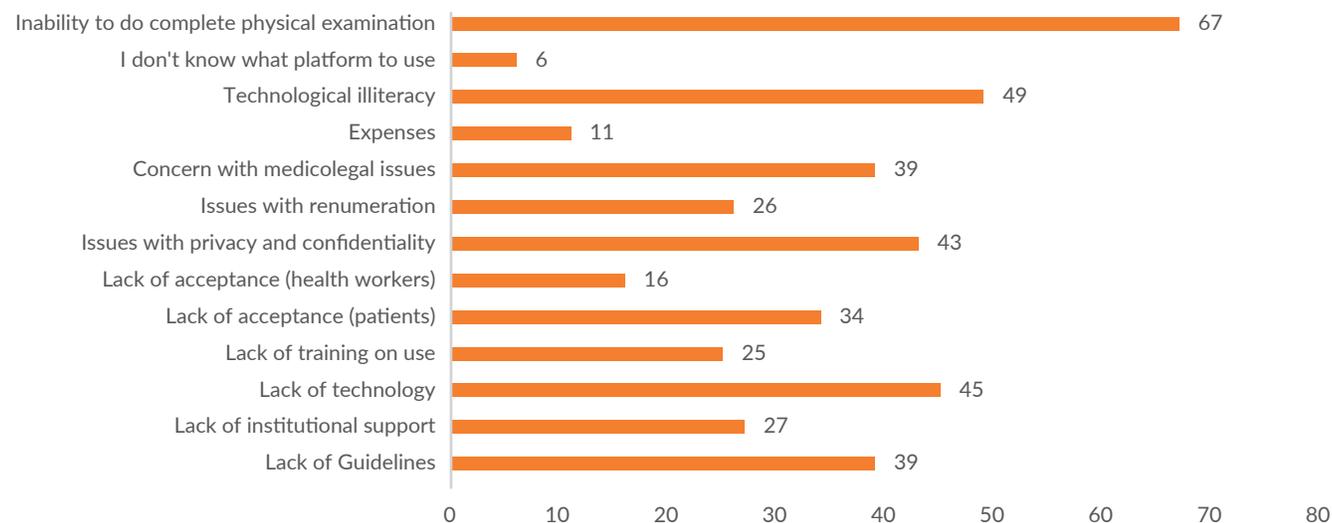


Figure 4. Perceived barriers to the use of telemedicine.

issues (48%) and lack of acceptance by patients (42%) were among other identified barriers to the use of telemedicine. Some respondents were concerned that telemedicine may lead to inability to expedite referrals or laboratory examinations due to long turnaround time of online portals and poor access to stable internet connection. One respondent added that telemedicine could lead to a “placebo effect” from virtually consulting a doctor due to inability to assess described pain or discomfort without physical examination.

Level of Satisfaction

The mean level of patient satisfaction is 71.1 (SD: 18.6, range: 15-100), while the mean level of physician satisfaction is lower at 56.9(SD: 23.2, range: 0-100). Overall, 52% of respondents agreed that it was easy to implement telemedicine in their practice (Table 2). Only 42% did not find telemedicine stressful to implement. More than half (59%) believed that telemedicine had more benefits than challenges. Moreover, only 48% expressed that telemedicine sufficiently provides the patients’ needs. Lastly, 72% believed that telemedicine would play an important role in oncology post-pandemic.

After the COVID-19 pandemic, 93% of the respondents said they will use telemedicine occasionally in their practice, and 6% preferred not to use telemedicine. None of the

Table 2. Perspectives of respondents towards telemedicine

Statement	% of Respondents
1. I think it is easy to implement telemedicine in my practice	51.83
2. I do not find telemedicine stressful	42.04
3. I think there are more benefits to using telemedicine than there are challenges	58.73
4. I think telemedicine sufficiently provides the patients' needs	48.28
5. Telemedicine will play an important role in oncology post-COVID-19 pandemic	72.43

respondents said they will be shifting to a purely telemedicine platform for their clinical practice.

DISCUSSION

This study determined the oncologists' perception on the role of telemedicine during the COVID-19 pandemic. It also reported the physicians' experiences and perceived barriers in the practice of tele-oncology. Our data showed that telemedicine is an acceptable practice in our institution during the COVID-19 pandemic. Whereas telemedicine was historically used to connect patients in far-flung areas with specialists and referral hospitals,^{10,22,23} it has proven indispensable during the time of COVID-19 in our institution and across the world.^{5,24}

Survey results showed that telemedicine was convenient, but this benefit was not a main motivator for telemedicine use. The main stimulus for telemedicine use was its role in controlling the spread of infection, and not because it was preferred by the physician or patient. Although telemedicine was used by 96% of respondents in this study during the pandemic, only 29% of this was due to physician and patient preference. Moreover, 48% of respondents found the implementation of telemedicine difficult and 58% of respondents believed that telemedicine was stressful. Stress brought about by implementation of telemedicine in their practice could be one of the factors why physician preference for telemedicine was low in this study.

The benefits of telemedicine noted in this study such as improved access to care and increased patient convenience are similar with the literature.²² With regards to the cost-effectiveness of Telemedicine for which other studies show mixed results,^{23,25,26} majority of the study respondents agree that Telemedicine leads to decreased expenses for patients. This could potentially be explored in a dedicated cost-effectiveness study.

It is interesting to note that majority of study respondents use telemedicine for follow-up consults, and less of them prefer to use if for first consults. This implies that some respondents preferred conducting initial consults face-to-face. This is similar to the study by Gutkin²⁷ where majority of telemedicine users expressed that telemedicine is best suited for follow-up visits. First consults are usually lengthier than follow-up consults, and it may be prudent to consider telemedicine for first consults to conduct history-taking and screen patients and reserve face-to-face consults for follow-up visits where a shorter, more targeted examination of the patient can be done.

Similar to the studies by Sabesan et al.¹² and Wootton et al.,²⁴ our study also identified inability to do complete physical examination such as palpation and auscultation as a major barrier to telemedicine use. One possible reason for this is that the practice of oncology is dependent on physical examination and various other tests to detect the presence of tumors and signs of malignancy. There are other ways

to augment this, such as digital auscultation and electronic monitoring.²⁸ These alternative methods of clinical data gathering to facilitate remote consultations should be included in the curricula of medical schools and training programs for residents/fellows.

Technological illiteracy and lack of resources are likewise perceived by the physician respondents as important barriers. In this study, only 44% of the respondents underwent training on telemedicine. This further highlights the need for physician education and training in telemedicine use. Moreover, telemedicine needs to be integrated into the national health system framework as a viable routine service delivery platform to organize networks, policies, guidelines and infrastructure to make telemedicine more sustainable.²⁹ Cost was not an issue in this study and may be due to the fact that the study participants chose to use telemedicine platforms that were accessible and freely available to patients. In the future, when telemedicine is fully integrated into the mainstream health system, funding should be provided to support and manage telemedicine services, including access to secure telemedicine platforms that ensure data privacy and confidentiality.

Only half of the study respondents were aware that the telemedicine platform they used abides by the Data Privacy Act of 2012. This is similar to the study by Biruk et al.³⁰ where 66% of respondents felt that telemedicine threatens patient confidentiality and data privacy. In this study, nearly 70% of respondents secured informed consent from patients prior to telemedicine, but with variations in the manner of obtaining informed consent (i.e., written, verbal, electronic). A possible solution is to standardize the informed consent process to ease any insecurities about data privacy and confidentiality surrounding telemedicine use.

This study showed that the perceived level of patient satisfaction with services rendered through telemedicine is higher than the physicians' rating of their own satisfaction level. This implies that telemedicine provides convenience and satisfaction to the patient, but not necessarily to physicians, who are more accustomed to face-to-face consults and direct patient care. A possible factor contributing to poor physician satisfaction is the limited telemedicine training provided in the medical school curriculum and in clinical practice.²⁹ Physician satisfaction in telemedicine can be improved by integrating telemedicine as a sustainable model of care during medical education and training. This will increase physician confidence, willingness and readiness to adopt telemedicine as a tool to provide cancer consultation and care. Further studies on physician and patient satisfaction towards telemedicine are also needed.

Despite the present study showing low physician and patient preference for telemedicine, and equivocal results in terms of ease of use and level of stress, optimism towards using telemedicine post-pandemic remains. The finding that majority of the respondents are willing to use telemedicine occasionally post-pandemic can be explained by the view of

more than half of the respondents that telemedicine has more benefits than challenges. Moreover, over 70% of respondents believe it has an important role post-pandemic. This positive outlook towards telemedicine probably surmounts any difficulties in its use. Nevertheless, the fact that none of the respondents will be shifting to a purely telemedicine practice in the future means that a lot remains to be done to improve the present system. If measures are not taken to improve physician satisfaction in telemedicine practice, it is likely that when circumstances return to normal and infection is no longer a risk in the future, physicians will prefer not to use telemedicine and opt for face-to-face consults.

The main limitation of the study is its cross-sectional study design, limiting further analysis of the factors affecting use of telemedicine. Secondly, only a limited number of physicians were interested in taking part of the study as respondents. The restricted participation could be because of lack of personal enthusiasm on the subject of investigation, lack of time, and lack of familiarity with technology needed for telemedicine. Majority of the respondents were young (<40 years old). Lack of response from older physicians could reflect possible technological limitations which can be a barrier to practice of telemedicine. Lastly, because the study was implemented in a single center, there is limited applicability of the study to the general population of oncologists.

CONCLUSION

Telemedicine is an acceptable option for provision of cancer care during the COVID-19 pandemic. Future areas for research include quality improvement to integrate telemedicine in the medical curriculum, readiness of the present health workforce towards telemedicine practice and telemedicine training for the health workforce. Moreover, from a systems perspective, policies and guidelines are needed to ensure the issues of technological illiteracy and data confidentiality are addressed. Finally, we have to investigate how telemedicine can become a cost-effective and sustainable solution to maximize both physician and patient satisfaction in the care of patients with cancer.

Statement of Authorship

All authors participated in the data collection and analysis and approved the final version submitted.

Author Declaration

All authors declared no conflicts of interest.

Funding Source

This paper was funded by the investigators.

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