The long game: Telemedicine patient satisfaction metrics and methods of recurrence detection for gynecologic cancer patients throughout the initial year of the COVID-19 pandemic

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Objective: The primary aim of this study was to evaluate gynecologic cancer patients’ satisfaction with telemedicine visits over a one-year period during the COVID-19 pandemic. The secondary aim was to characterize how gynecologic cancer recurrence was detected with high telemedicine utilization.

Methods: A survey study and a retrospective cohort study of patients participating in telemedicine visits between April 20, 2020 and March 30, 2021 in a gynecologic oncology clinic were undertaken. To assess patient satisfaction with telemedicine visits, the Telemedicine Satisfaction Survey (TeSS) was administered to patients by phone. Retrospective chart review was conducted to gather clinical data regarding diagnosis, treatment, and recurrence.

Results: Three hundred and sixteen patients completed the TeSS for a response rate of 80.2%. Patients rated the following aspects of the telemedicine encounter as good or excellent: quality of technology (97.8%), personal comfort (90.8%), length-of-visit (95.2%), treatment explanation (93.7%), overall experience (92.7%). Moreover, 87.0% of patients would use telemedicine again. Retrospective data was collected for 394 patients, 312 of which had invasive cancer (79.2%). Twenty-nine (7.4%) patients experienced a recurrence during the study period. The most common method of detection was patient-reported symptoms (n = 17, 58.6%). The remaining recurrences were diagnosed by scheduled biomarkers (n = 7, 24.1%), scheduled imaging (n = 4, 13.8%) and asymptomatic exam (n = 1, 3.4%).

Conclusions: After one year of the COVID-19 pandemic and the implementation of routine telehealth visits, gynecologic cancer patients were overwhelmingly satisfied with the use of telemedicine. During this period, recurrences were most often diagnosed by patient-reported symptoms.

1. Introduction

By early 2022, in the United States, the total number of SARS-CoV-2 (COVID-19) cases reached over 79 million with associated deaths reported at over 955,0000 according to the CDC (CDC COVID Data Tracker, 2022). As the COVID-19 pandemic has persisted over the last two years, there has been a significant shift in the way health care services are delivered. Telemedicine has been increasingly utilized to care for patients during this pandemic with the goal of decreasing in-person contact when possible. Mitigating the spread of infection is even more important in the field of oncology, where patients are often immunocompromised and have been shown to suffer more severe sequelae of SARS-CoV-2 infection and poorer outcomes (Yu et al., 2020; Onder et al., 2020; Wang and Zhang, 2020; Liang et al., 2020). Long-term, the COVID-19 pandemic may turn out to be the inciting event that accelerates the integration of telemedicine into routine care sooner than it would have otherwise.

With respect to the gynecologic oncology patient response to telemedicine, there are increasing data reporting positive patient satisfaction using patient interviews and standardized questionnaires (Wehrle...
et al., 2021; Mojdehbakhsh et al., 2021; Zimmerman et al., 2020; Kraus et al., 2022). There remains very little data on how this change in practice will affect patients’ long-term outcomes, survivorship, and how cancer surveillance will be conducted moving forward for gynecologic cancer patients.

As gynecologic cancer detection and treatments advance, there is an increasing population of survivors and therefore an increasing need for surveillance. Though the preferred method until the COVID-19 pandemic, there currently exists little evidence to support improved patient outcomes with the use of in-person follow-up in the field of gynecologic oncology (Mancebo et al., 2021; Sartori et al., 2007). Due to circumstances of the COVID-19 pandemic, one institution proposed a telehealth surveillance strategy for gynecologic cancer recurrence detection using risk stratification of disease based on pathology, stage, and other prognostic factors (Mancebo et al., 2021). In endometrial and cervical cancer, some data exist prior to the onset of the COVID-19 pandemic to support the use of remote follow-up options given the most important method of detection was patient reported symptoms (Jeppesen et al., 2019). In ovarian cancer, one study similarly demonstrated disease recurrence was not detected on physical exam, but on routine biomarkers, imaging, or patient reported symptoms (Feinberg et al., 2022). However, there remains little evidence in gynecologic oncology regarding how the use of telemedicine, promoted at a large scale by the COVID-19 pandemic, will affect detection and method of detection of gynecologic cancers.

After the initiation of telemedicine visits in our gynecologic oncology clinic at a tertiary care center in March 2020, we found overall positive patient satisfaction with this transition in care. During that study period, 54% of visits were for surveillance. In this follow-up study, the primary aim was to evaluate patients’ long-term satisfaction over one year after implementing routine telemedicine visits. The secondary aim was to characterize how disease recurrence was detected in order to generate exploratory data regarding the affect of the COVID-19 pandemic and high utilization of telemedicine for surveillance on patient outcomes and survivorship, as well as to help craft directions for future study of these important questions.

2. Materials and methods

This survey study and retrospective cohort study was conducted from April 20, 2020, through March 31, 2021 at the Carbone Cancer Center Gynecologic Oncology Clinic at University of Wisconsin School of Medicine and Public Health. This time period encompassed the initial year of the COVID-19 pandemic with the start date modified to exclude the study period from our initial project (Mojdehbakhsh et al., 2021). The project was deemed exempt by the Health Sciences Institutional Review Board under 45 CFR 46.

The Carbone Cancer Center Gynecologic Oncology Clinic schedule was queried for telemedicine visits during the study period. All patients who participated in a telemedicine visit during the study timeframe were contacted by phone and asked to participate in a brief survey to assess patient satisfaction with telemedicine visits. A modified 11-item Telehealth Satisfaction Survey (TeSS) was administered to each patient who agreed to participate (Nations et al., 2001). A maximum of three contact attempts were made for each patient.

Chart review was completed for all patients who were contacted for participation in the TeSS. Demographic and clinical data were collected in order to describe the experience of cancer recurrence in this population. The number of recurrences, method of detection, and location of recurrence were recorded. Additional clinical data included age, race, pathology, stage of cancer as well as if the patient received surgery, chemotherapy, and/or radiation therapy for their initial treatment were also collected. Exclusion criteria included necessity of a language interpreter and death. Descriptive statistics were calculated and results were depicted in tabular and graphical forms.

3. Results

There were a total of 1,506 telemedicine encounters from April 20, 2020 through March 30, 2021. Of these encounters, 959 were eligible for our study. A total of 394 individual patients were reached and asked to participate in the survey study. The proportion of telemedicine visits fluctuated over the course of the study period, but overall decreased. The percentage of telemedicine visits per month were as follows: April (66%), May (49%), June (2%), July (6%), August (10%), September (13%), October (14%), November (25%), December (23%), January (17%), February (14%), March (10%). The proportions of telemedicine visits during this study period correlate to the number of COVID-19 cases in both Dane County and the state of Wisconsin (Fig. 1). The types of telemedicine visits utilized by patients were categorized as follows: surveillance visit (72.6%), postoperative visit (26.1%), treatment visit (11.7%), problem visit (3.6%), preoperative visit (1.3%), and new patient visit (0.5%).

The mean age of patients at the time of diagnosis was 60.1 years. Ninety-three percent of patients self-identified as White, 3% as Black, 2.3% as Asian, Hispanic, or other, and 1% of patients declined to report race. Of the 394 patients included in retrospective chart review, 312 (79.2%) were diagnosed with a malignant pathology. Uterine cancer comprised 54.2% (n = 169) of cases, with the rates of ovarian cancer at 30.4% (n = 95), fallopian tube cancer at 6.1% (n = 19), cervical cancer at 5.1% (n = 16), vulvar/vaginal cancer at 2.6% (n = 8), peritoneal cancer at 0.6% (n = 2), gastrointestinal cancer at 0.6% (n = 2), and anal cancer at 0.3% (n = 1). Most diagnoses were early stage with 61.2% being diagnosed at stage I or II (Table 1).

Of the 394 patients contacted, 316 completed the TeSS yielding a survey response rate of 80.2%. Telemedicine visits consisted of either phone or video visits: 219 of the 316 patients who completed the survey participated in phone visits, while the remaining 97 were by video. Most patients rated the following aspects of the telemedicine encounter as good or excellent: quality of technology (97.8%), personal comfort (90.8%), length-of-visit (95.2%), treatment explanation (93.7%), overall experience (92.7%). Moreover, 87.0% of patients reported they would use telemedicine again and 82% would recommend telemedicine to another gynecologic oncology patient (Fig. 2). During each phone interview, patients also offered comments regarding their experiences. These comments illustrated some common positive themes including overall satisfaction with telemedicine and the care patients received, decreased need for travel, and appropriateness for uncomplicated follow-up. Some concerns patients raised included not being comfortable discussing care virtually and feeling less connected to their providers, not being able to have a physical exam, issues with the technology, and the sentiment that telemedicine is a good alternative during the pandemic, but should not replace in-person visits (Table 2).

Of the 394 patients seen in this study period, 29 (7.4%) were diagnosed with a recurrence. Of these, 17 (58.6%) were diagnosed based on patient reported symptoms, 7 (24.1%) on routine biomarkers, 4 (13.8%) on routine imaging, and 1 (3.4%) on asymptomatic exam. Patient reported symptoms lead to a diagnosis of recurrence across all primary cancers. Specifically, patient reported symptoms led to the diagnosis of 53.8% of ovarian cancer recurrences, 75% of uterine cancer recurrences, 33.3% of cervical cancer recurrences, 50% of fallopian tube recurrences, 50% of vulvar recurrences, and the one anal cancer recurrence (Supplementary Fig. 1). One vulvar cancer recurrence was diagnosed on asymptomatic exam.

Locations of recurrence included the peritoneum (n = 6, 20.7%), vagina (n = 6, 20.7%), pelvis (n = 5, 17.2%), retroperitoneal lymph nodes (n = 5, 17.2%), liver (n = 3, 10.3%), lung (n = 1, 3.4%), other site (n = 2, 6.9%), and brain (n = 1, 3.4%). The primary sites that recurred were as follows: ovary (n = 13, 44.8%), uterus (n = 8, 27.6%), cervix (n = 3, 10.3%), fallopian tube (n = 2, 6.9%), vulva (n = 2, 6.9%), and anal (n = 1, 3.4%). Of the thirteen ovarian cancer recurrences, three patients either recurred in the peritoneum, pelvis, or retroperitoneal lymph
nodes, two recurred in the sigmoid colon, and one recurred in either the vagina/vulva or liver. Of the eight uterine cancer recurrences, two patients recurred in either the peritoneum or vagina/vulva, and one recurred in the pelvis, retroperitoneal lymph nodes, or lung. For the three cervical cancer patients, each recurred in either the pelvis, retroperitoneal lymph nodes, or liver. Of the two fallopian tube cancer recurrences, one recurred in the peritoneum and one in the liver. Both vulvar cancer recurrences recurred in the vulva and the one anal cancer recurrence was in the lung (Supplementary Fig. 2).

4. Discussion

The COVID-19 pandemic has catapulted telemedicine into the forefront of patient care and the implications of shifting to this method require continued attention, particularly in the field of gynecologic oncology. In the year following the start of the COVID-19 pandemic, we found continued high patient satisfaction rates among our patients suggesting continued high telemedicine utilization would be welcomed by our patients. Additionally, we began the task of exploring how telemedicine will affect clinical outcomes in this patient population, namely how cancer recurrence detection may be affected. Our data suggest, that as most recurrence diagnoses are made based on patient reported symptoms, telemedicine should not present a barrier to diagnosis of recurrence.

A recent study reported on patient perceived advantages and disadvantages of telemedicine in gynecologic oncology care. Patients found convenience, cost-savings, reduced travel, avoidance of infectious disease, and availability of appointments to be benefits of telemedicine when compared to in-person care. Some disadvantages noted were technical difficulties, patient perceived need for exam or testing, and concern about the therapeutic relationship (Kraus et al., 2022). There is more data in the field of breast cancer examining the successful conversion and utilization of telemedicine in full spectrum oncology care noting the ability to refer patients to local centers for recommended testing and even prescribing treatment (Yildiz and Oksuzoglu, 2020).

Table 1

| Basic demographic and clinical data. |
|-------------------------------------|
| Mean age at diagnosis 60.1 years n = 394 |
| Race (n, %) n = 394 |
| White 369, 93.7% |
| Black or African American 12, 3.0% |
| Asian, Hispanic, or Other 9, 2.3% |
| Declined 4, 1.0% |
| Primary cancer (n, %) n = 312 |
| Uterus 169, 54.2% |
| Ovary 95, 30.4% |
| Fallopian Tube 19, 6.1% |
| Cervix 16, 5.1% |
| Vulva/Vagina 8, 2.6% |
| Peritoneum 2, 0.6% |
| Gastrointestinal 2, 0.6% |
| Anal 1, 0.3% |
| Stage at diagnosis (n, %) n = 312 |
| I 168, 53.8% |
| II 23, 7.4% |
| III 81, 26.0% |
| IV 35, 11.2% |
| Not staged 5, 1.6% |

Fig. 1. Percentage of telemedicine visits conducted correlate to number of COVID-19 cases both in the state of Wisconsin and Dane County.

Fig. 2. Graphical depiction of patient responses to telemedicine patient satisfaction survey.
Table 2

| Theme                                    | Sample comments                                                                                                                                 |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Satisfied with quality of care           | “It was my first experience using telemedicine, it was very good and provided all the information I needed and some I did not think to ask.”       |
|                                          | “It was nice to not have to go in to find out my test results and how I am doing. Dr. X is very good at explaining things and telling me everything I need to know. It was just as good as going in person except you are not seeing face to face.” |
|                                          | “I had the best of care, and I was very satisfied with it, I had no problems, I was very comfortable talking with him on the phone.”                |
| Appreciated decreased travel             | “It worked very well, saved me a trip to Madison. They explained everything down to my level. The nurse called ahead, so when the doctor called there was no interruption.” |
|                                          | “Afforded greater flexibility as I worked full time and did not have to worry about parking or taking time off work. I could have my visit and have get back to work. More flexible and convenient.” |
|                                          | “It is hard for me to travel, it is one and a half hours one way. If I just need to talk to the doctor, it saves me a lot of pain. It is awesome, I can be comfortable in my home and just wait for the doctor to call me. That’s really worked out for me.” |
|                                          | “If I had symptoms that would concern me, I would have not been satisfied with telemedicine. But since I did not, I felt confident that she asked the right questions, and I was confident that if she had found anything in my answers that she would have recommend that we meet in person.” |
|                                          | “I think it was excellent given my cancer diagnosis and follow up care. I think if I was in a different situation, like receiving chemotherapy, I would want something in person, but because it was follow up and everything has looked great, it think it was okay.” |
|                                          | “My visit was for like a check up type visit, it was not an early visit where it would have been more detailed. For a follow up type of visit, that was fine that was good.” |
| Hindered therapeutic alliance            | “I found it difficult to talk to someone about medical conditions over the phone. I know it is what we had to do but I would much rather see my provider.” |
|                                          | “You cannot do personal over telemedicine. Women going through cancer, we need encouragement, we need one on one eye contact with doctors, we need our hand held.” |
|                                          | “Nothing better than in person. I think when you are able to provide in person, it is much easier to communicate how you feel. I think with telemed visit things can be missed. In person is way to go.” |
| Hard with technical difficulties         | “It as a little complicated, you had to download a specific program and put in certain information, you know, it was do-able it was a little complicated.” |
|                                          | “The call quality portion could have been better, which could be due to the broadband that I have and not the system you guys use.” |
| Perceived need for physical exam         | “My experience with X as a provider was excellent, but I don’t think telemedicine is valuable. Having that physical exam is a valuable part of the experience and in catching recurrences early.” |
|                                          | “Had I not had a physical in Feb, I would have not been comfortable with the telemedicine visit just because of the possibility of recurrence.” |
|                                          | “The platform was fine. However, I think that the purpose for follow up checks is to have a physical check so they do a gynecologic exam and that is not possible with telehealth.” |
| Good option only during COVID-19 pandemic | “Telemedicine was fine during COVID, but under normal circumstances I would not choose that route.”                                           |
|                                          | “In lieu of the pandemic it was a great option, but face to face is always best.”                                                               |
by disease type and stage to more specifically identify patient populations that may benefit versus be harmed by telemedicine surveillance and evaluate this algorithm prospectively.

5. Conclusions

We demonstrated a persistence in high patient satisfaction rates with telemedicine over one year into the COVID-19 pandemic. Additionally, patients overwhelmingly welcomed ongoing use of telemedicine in practice. Our findings are in accordance with a growing body of literature that patient reported symptoms are the most used method of detection and therefore amenable to telemedicine surveillance.

CRediT authorship contribution statement

Rachel P. Mojdehbakhsh: Conceptualization, Methodology, Formal analysis, Writing – original draft. Arielle C. Mora Hurtado: Investigation, Formal analysis, Writing – review & editing. Shitanshu Uppal: Conceptualization, Methodology, Writing – review & editing. Hailey Milakovich: Investigation, Formal analysis, Writing – review & editing. Ryan J. Spencer: Conceptualization, Methodology, Writing – review & editing, Supervision, Project administration.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.gjore.2022.101037.

References

“CDC COVID Data Tracker.” https://covid.cdc.gov/covid-data-tracker/#/cases, casesper100klast7days (accessed Mar. 06, 2022).

Yu, J., Ouyang, W., Chua, M.L.K., Xie, C., 2020. SARS-CoV-2 Transmission in Patients with Cancer at a Tertiary Care Hospital in Wuhan, China. JAMA Oncol. 6 (7), 1108-1110. https://doi.org/10.1001/jamaoncol.2020.0980.

Onder, G., Rezza, G., Brusaferro, S., 2020. Case-Fatality Rate and Characteristics of Patients Dying in Relation to COVID-19 in Italy. JAMA - J. Am. Med. Assoc. 323 (18), 1775-1776. https://doi.org/10.1001/jama.2020.4683.

Wang, H., Zhang, L., 2020. Risk of COVID-19 for patients with cancer. Lancet Oncol. 21 (4), e181 https://doi.org/10.1016/S1470-2045(20)30149-2.

Li, S., He, J., 2020. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. Lancet Oncol. 21 (3), 335-337.

Wehrle, C.J., Lee, S.W., Devanzanakda, A.K., Arora, T.K., 2021. Patient and Physician Attitudes Toward Telemedicine in Cancer Clinics Following the COVID-19 Pandemic. JCO Clin. Cancer Informatics 5, 394-400. https://doi.org/10.1200/ jcoi.20.00183.

Mojdehbakhsh, R.P., Rose, S., Peterson, M., Rice, L., Spencer, R., 2021. A quality improvement pathway to rapidly increase telemedicine services in a gynecologic oncology clinic during the COVID-19 pandemic with patient satisfaction scores and environmental impact. Gynecol. Oncol. Reports 36, 100708.

Zimmerman, B.S., Seidman, D., Berger, N., Cascetta, K.P., Nezolsosky, M., Trlica, K., Rynacza, A., Kretton, C., Mosher, L., Tiersten, A., 2020. Patient perception of telehealth services for breast and gynecologic oncology care during the covid-19 pandemic: A single center survey-based study. J. Breast Cancer 23 (5), 542.

Kraus, E.J., Nicosa, B., Shalowitz, D.I., 2022. A qualitative study of patients’ attitudes towards telemedicine for gynecologic cancer care. Gynecologic Oncology 165 (1), 155-159.

Yildiz, F., Oksuzoglu, B., 2020. Teleoncology or telemedicine for oncology patients (COVID-19). Int. J. Gynecol. Oncol. 31 (6), 914-919.

Sartori, E., Pasinetti, B., Carrara, L., Gambino, A., Odicino, F., Pecorelli, S., 2007. Pattern of failure and value of follow-up procedures in endometrial and cervical cancer patients. Gynecologic Oncology 107 (1), 5241-5247.

Jeppesen, M.M., Mogensen, O., Hansen, D.G., Bergholdt, S.H., Jensen, P.T., 2019. How Do We Follow Up Patients With Endometrial Cancer? Curr Oncol Rep 21 (7).

Feinberg, J., Cartlhe, K., Webster, E., Chang, K., McNeil, N., Chi, D.S., Long Roche, K., Gardner, G., Zivanovic, O., Sonoda, Y., 2022. Ovarian cancer recurrence detection may not require in-person physical examination: an MSK team ovary study. Int. J. Gynecol. Cancer 32 (2), 159-164.

“Telehealth Satisfaction Questionnaire: National First Nations Telehealth Research Project.” C. F. Nations, I. H. Branch, and C. H. Canada, Community Services in the 21st Century: First Nations & Inuit Telehealth Services. Community Health Programs Directorate, First Nations and Inuit Health Branch, Health Canada, 2001.

Gardner, G., Zivanovic, O., Sonoda, Y., 2022. Ovarian cancer recurrence detection in the COVID-19 pandemic: The new normal for breast cancer survivors? Futur. Oncol. 16 (28), 2191-2195. https://doi.org/10.2217/fon-2020-0714.

Sonaghi, M., Cagnacci Neto, R., Leite, F.P.M., Makdisi, F.R.A., 2021. The use of telemedicine to maintain breast cancer follow-up and surveillance during the COVID-19 pandemic. J. Surg. Oncol. 123 (2), 371–374. https://doi.org/10.1002/ jo.26527.

Dholakia, J., Kim, J., Liang, M.I., Arend, R.C., Bevis, K.S., Straughn, J.M., Leath, C.A., Hurk, C., Chan, A., 2021. The efficacy, challenges, and facilitators of telemedicine in post-treatment cancer survivorship care: an overview of systematic reviews. Ann. Oncol. 32 (12), 1552-1570.