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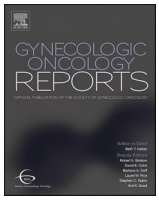

Patient perspective on virtual prechemotherapy visits in gynecologic oncology

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ABSTRACT

Objective: To assess gynecologic oncology patients' experiences with virtual prechemotherapy evaluation and determine preference for incorporating virtual visits into a chemotherapy schedule.
Methods: From June-August 2023, a survey was distributed to patients with gynecologic malignancies who had both an in-person and virtual prechemotherapy visit at a tertiary comprehensive cancer center. Patient satisfaction and preference for incorporating virtual visits was elicited. Patients who preferred $\geq$ 50 % of prechemotherapy visits to be virtual were classified as "virtual-leaning" and those who preferred $<$ 50 % virtual as "in-person-leaning."
Results: Of 110 eligible patients, 93 agreed to participate and 73 completed the survey, yielding an overall 66.4% response rate and 78.5% (73/93) survey completion rate. Overall satisfaction with in-person and virtual visits were rated positively at similar rates (in-person 87.7%, virtual 87.2%). Sixty-four (88.4%) patients preferred some proportion of their visits to be virtual, 5 (7.0%) preferred no virtual care, and 4 (5.0%) had no preference. In a 6-cycle schedule of chemotherapy, the median number of preferred virtual visits was 3 (IQR 1.8–4.2). Forty-six (63.0%) patients were "virtual-leaning" and 23 (32.0%) were "in-person-leaning." When comparing groups, there was no difference in age, race, category of residence, commute, experience with technical difficulty, primary disease site, disease stage, number of prior chemotherapy cycles, or number of prior virtual visits.
Conclusions: Most patients are highly satisfied with virtual visits and prefer virtual care to be included when undergoing chemotherapy. A hybrid model should be offered to gynecological cancer patients undergoing chemotherapy, with patient preference dictating the cadence of virtual visits.

1. Introduction

Telemedicine has gained attention as a method for delivering cancer care since its rapid adoption during the COVID-19 pandemic. In 2021, the American Society of Clinical Oncology (ASCO) recommended implementing telehealth in many circumstances including consultation, follow-up, surveillance, medication management, prechemotherapy evaluation, advance care planning, and where care access issues exist (Zon et al., 2021). Telemedicine not only offers the ability to dismantle barriers and enhance access to care, but also provides an unmatched level of convenience that a broad range of patients can appreciate (Dholakia et al., 2021; Shalowitz et al., 2018). Additionally, studies have purported that telemedicine has the potential to improve clinic capacity issues by reducing physical infrastructure requirements and enhance clinical trial enrollment by supporting remote operations (Andriani et al., 2023; Neeman et al., 2021).

To maximize telemedicine to its fullest potential in gynecologic oncology, understanding the patient's perspective is paramount. Previous studies have reported benefits of telemedicine including avoidance of infectious disease, reduced travel time, cost savings, and high patient and provider satisfaction (Neeman et al., 2021; Kraus et al., 2022; Wong et al., 2022; Mojdehbakhsh et al., 2022; Zimmerman et al., 2020). Conversely, some studies have uncovered skepticism toward telemedicine due to limiting factors such as discomfort with technology and inability to perform physical exams (Quam et al., 2022; Nestlerode et al., 2022). There is limited literature assessing the gynecologic cancer

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patient experience with telemedicine for prechemotherapy evaluation. In this study, we compare patients' experiences with in-person and virtual prechemotherapy visits and determine patient preference for the number of virtual visits incorporated into a typical chemotherapy treatment plan.

2. Methods

This survey study was conducted from June 1-August 31, 2023 at the University of Michigan's comprehensive cancer center. A query using codes for visit encounter type was performed to identify patients who had a virtual prechemotherapy evaluation at the gynecologic oncology clinic. We conduct prechemotherapy evaluations virtually through the patient portal in the electronic health record system. During the COVID-19 pandemic, the aim was to minimize in-person contact by scheduling blood work on the same day as an infusion, preceded by a virtual visit either the same day or the day prior. Post-pandemic, we integrated virtual prechemotherapy evaluations into our clinic schedule, offering dedicated time blocks twice a week for efficiency and patient convenience. Virtual visits precede infusions and occur either the same day or the day prior, with blood work completed accordingly.

Patients were eligible to be contacted for the survey if they had a gynecologic malignancy, were $\geq$ 18 years old, and had both an in-person and virtual prechemotherapy visit between January 1, 2020 and August 31, 2023. Exclusion criteria included necessity of a language interpreter and death. Eligible patients were contacted by phone and asked to participate in a voluntary survey to assess patient experience with virtual visits. Patients who agreed to participate were sent a unique survey link via email that was accessible after completion of an online consent form. Up to three contact attempts were made for recruitment and up to three reminder emails were sent for survey completion. Participants who completed the survey received a $20 prepaid Visa gift card.

The questionnaire collected self-reported socio-demographic data, including insurance type, education level, household income, commute time, and distance from the patient's residence to the oncology clinic. A modified 10-item scale was used to measure satisfaction for in-person and virtual visit types, incorporating previously validated scales including the Visit-Specific Satisfaction Instrument (VSQ-9) and the Telehealth Satisfaction Survey (TeSS) (RAND Corporation, 2023; Morgan et al., 2014). Elements unique to each visit type were also assessed. Barriers to attending an in-person visit and perceived value of physical exam, pelvic exam, and non-verbal communication were elicited for in-person visits. For virtual visits, patient experience using technology was elicited including comfortability, difficulties encountered, and barriers to use. All subjective questions used a 5-point Likert Scale. Finally, the questionnaire asked patients to indicate their preferred number of virtual visits incorporated into a typical 6-cycle chemotherapy treatment plan (i.e., a schedule of 6 visits). The full survey is available in Supplementary File S1.

A chart review was performed for all patients who completed the survey. Data including age, race, ethnicity, residential zip code, BMI, Eastern Cooperative Oncology Group (ECOG) performance status, primary disease site, cancer stage, treatment status, number of prior chemotherapy cycles, and number of prior virtual visits was collected. Category of residence was determined by residential zip code using the widely used Rural-Urban Commuting Area (RUCA) code classification. The RUCA coding system includes 10 primary classifications that delineate U.S. census tracts using measures of population density, urbanization, and daily commuting. We used a previously established 3-level residential aggregation scheme of RUCA codes, describing locales as either: (1) urban, (2) large rural city/town, or (3) small and isolated small rural town (U.S. Department of Agriculture Economic Research Service, 2024). All data was stored in a secure Research Electronic Data Capture (REDCap) database.

The primary analysis aimed to compare patient satisfaction with in-person and virtual prechemotherapy visits. The secondary analysis assessed patterns between patient visit type preference and clinical, demographic, and experiential characteristics. Visit type preference was defined by preference for majority of prechemotherapy visits: patients who preferred $\geq$ 50 % of visits to be virtual were classified as "virtual-leaning" and those who preferred $<$ 50 % of visits to be virtual were classified as "in-person-leaning." Pearson's Chi-squared, Fisher's exact, and Wilcoxon rank sum tests were performed to compare variables between the virtual-leaning and in-person-leaning groups. Statistical analyses were based on 2-sided hypotheses and $P < 0.05$ was defined as significant. All statistical analyses were performed using R (version 4.3.0).

This study was approved by the University of Michigan IRB (HUM00221845).

3. Results

Of 110 eligible patients who had both an in-person and virtual prechemotherapy visit during the study period, 93 agreed to participate in the survey. Seventy-three patients completed the survey, with their responses representing 66.4 % of the overall eligible patient pool and 78.5 % of the confirmed participants (Fig. 1). These 73 patients had a total of 473 virtual prechemotherapy visits—448 (94.7 %) via video and 25 (5.3 %) via phone.

The median age of respondents was 65 (IQR 57–71). Most patients identified as white (n = 68, 93.2 %). Ovary was the primary disease site in 46 (63.0 %) patients, endometrium in 20 (27.4 %), cervix in six (8.2 %), and vulva/vagina in two (1.4 %). The majority had advanced-stage disease (n = 49, 68.1 %) and were undergoing chemotherapy at the time of survey completion (n = 56, 76.7 %). The median number of chemotherapy cycles a patient had received was 16 (IQR 9–28). Patients primarily lived in urban commuting areas (n = 56, 76.7 %). Most patients commuted between 30 min and 2 h to the clinic (n = 49, 67.1 %) (Table 1).

Patients rated their overall satisfaction with in-person and virtual prechemotherapy visit experiences as "good," "very good," or "excellent" at similar rates (in-person 87.7 %, virtual 87.2 %). The following aspects of visit encounters were also rated as "good," "very good," or "excellent": courtesy and sensitivity (in-person 93.2 %, virtual 91.5 %); expressed concern for questions or worries (in-person 90.3 %, virtual 91.2 %); treatment explanation (in-person 91.8 %, virtual 92.8 %); shared decision practices (in-person 89.0 %, virtual 87.2 %); and length of visit (in-person 87.3 %, virtual 87.1 %). Patients were least satisfied

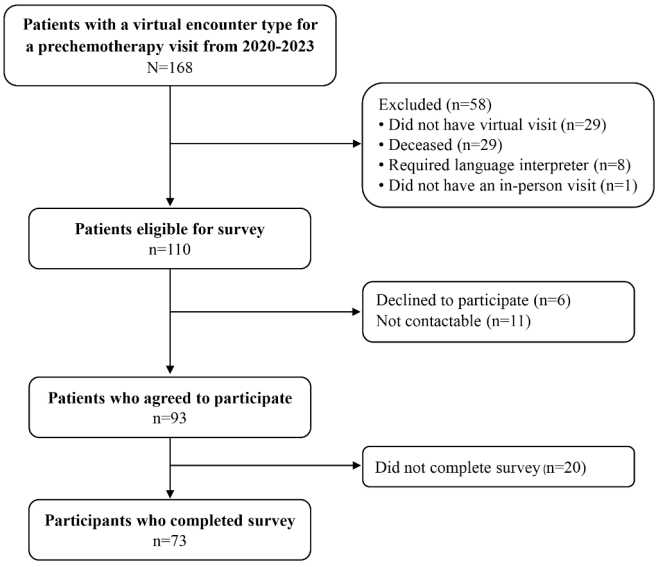

Fig. 1. Study schema.

Table 1
Demographic and clinical characteristics of survey respondents (n = 73).

Characteristic	n (%) or median (IQR)
Age, years	65 (57–71)
Race	
White	68 (93.2)
Black	1 (1.4)
Asian	2 (2.7)
Other	2 (2.7)
Insurance	
Medicaid	4 (5.5)
Medicare	42 (57.5)
Private	49 (67.1)
Uninsured	2 (2.7)
Employment	
Full- or part-time job	21 (28.8)
Full-time parent or caregiver	2 (2.7)
Not employed	14 (19.2)
Retired	36 (49.3)
Education	
High school	10 (13.7)
Some college	16 (21.9)
Associate's degree	14 (19.2)
Bachelor's degree	15 (20.5)
Master's degree or higher	18 (24.7)
Household Annual Income	
<$25,000	5 (6.9)
$25,00 −$50,000	13 (18.1)
$50,000-$100,000	22 (30.6)
$100,000-$200,000	12 (16.7)
>$200,000	5 (6.9)
Prefer not to say	15 (20.8)
Category of Residence	
Urban	56 (76.7)
Large rural city/town	9 (12.3)
Small and isolated small rural town	8 (11.0)
Commute Distance	
<20 miles	10 (13.7)
20–50 miles	30 (41.1)
50–100 miles	22 (30.1)
>100 miles	9 (12.3)
Unsure	2 (2.7)
Commute Time	
<30 min	13 (17.8)
30 min-1 h	27 (37.0)
1–2 h	22 (30.1)
2–4 h	9 (12.3)
>4 h	2 (2.7)
Primary Disease Site	
Endometrium/Uterus	20 (27.4)
Ovary/Fallopian Tube/Peritoneal	46 (63.0)
Cervix	6 (8.2)
Vulva/Vagina	1 (1.4)
Stage	
I	13 (18.1)
II	7 (9.7)
III	36 (50.0)
IV	13 (18.1)
Unstaged	3 (4.2)
Treatment Status	
Undergoing chemotherapy	56 (76.7)
Not undergoing treatment	17 (23.3)
Body mass index, kg/m^2	27.4 (24.5–32.9)
ECOG performance status	0 (0–1)
Number of prior cycles of chemotherapy	16 (9–28)
Number of prior virtual visits	5 (2–8)

ECOG = Eastern Cooperative Oncology Group.

with waiting time prior to the visit start regardless of encounter type (in-person 71.2 %, virtual 73.3 %) (Supplementary Figure S1).

Regarding the in-person visit experience, 23 (32.0 %) patients indicated that commute time was a burden and 14 (19.5 %) found travel expenses burdensome. Eleven (15.2 %) patients felt concerned about exposure to illness. Fifty-two (72.3 %) patients reported that having a physical exam performed is important. Most patients indicated that non-verbal communication (i.e., eye contact, shaking hands, body language) with their doctor is important (n = 57, 79.1 %).

Regarding the virtual visit experience, 49 (68.0 %) patients were comfortable using technology to participate in virtual visits, 18 (25.0 %) were uncomfortable, and five (6.9 %) were neutral. Twenty-eight (38.9 %) patients experienced technical difficulty, with internet connectivity being the most cited issue (n = 13, 18.1 %). Most patients reported no barriers that limited or prevented their use of virtual care (n = 62, 84.9 %). Patients who reported barriers cited a poor internet connection where they live (n = 7, 9.6 %) or that the technology was too difficult to use (n = 4, 5.5 %).

When considering a schedule of chemotherapy appointments, 64 (88.4 %) patients preferred at least some proportion of their visits to be virtual, five (6.8 %) preferred no virtual care, and four (5.5 %) did not indicate a preference. In a typical 6-cycle chemotherapy schedule, the median number of virtual visits preferred was 3 (IQR 1.8–4.2) (Fig. 2). Forty-six (63.0 %) patients were "virtual-leaning" and 23 (32.0 %) were "in-person-leaning." There were no significant differences between the virtual-leaning an in-person-leaning groups in demographic and clinical factors such as age, race, primary disease site, stage, number of prior chemotherapy cycles, number of prior virtual visits, category of residence, or commute time; in factors related to the relationship with technology including comfortability using technology and experience with technical difficulty or barriers; or in factors related to the perceived risk of acquiring infectious disease, value of physical exam, or non-verbal communication (Table 2).

4. Discussion

This study found that most patients with gynecologic malignancy are highly satisfied with the virtual prechemotherapy visit experience and prefer a hybrid model in which telemedicine is a part of their care. These findings support previous studies demonstrating high levels of patient satisfaction with telemedicine encounters (Wong et al., 2022; Mojdehbakhsh et al., 2022; Zimmerman et al., 2020). Given that our study was conducted after the COVID-19 pandemic, these results highlight that patient affinity for virtual care is sustained even post-pandemic. Furthermore, these findings affirm that gynecologic oncology patients are not only open to the use of telemedicine, but they actively desire future visits to include a virtual component (Dholakia et al., 2021; Kraus et al., 2022; Wong et al., 2022).

In this study, most patients favored some virtual prechemotherapy visits, though preferences for the number of virtual visits varied significantly. This variation presents a promising opportunity for gynecologic oncologists to collaborate with patients on incorporating virtual visits into their care. Undergoing chemotherapy for the treatment of cancer can be a disarming experience for patients, which may include an associated loss of autonomy (Luoma and Hakamies-Blomqvist, 2004).

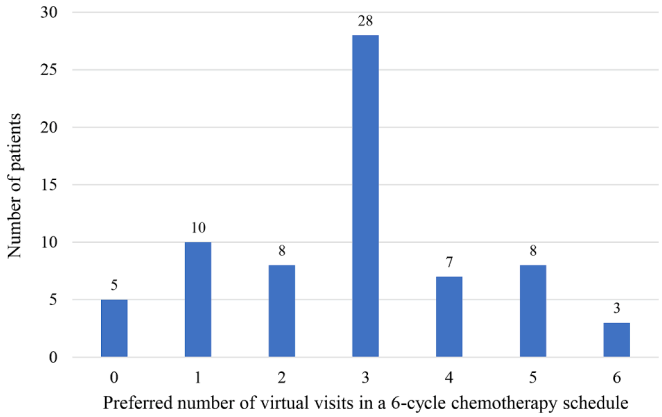

Fig. 2. Preference for the number of virtual visits in a 6-cycle chemotherapy schedule.

Table 2
Association of demographic, clinical, and experiential factors with visit type preference.

Characteristic	Visit Type Preference		p-value[c]
	In-person-leaning[a] N = 23	Virtual-leaning[b] N = 46	
Age, years	65 (56–71)	64 (57–71)	>0.9
Race			0.57
White	20 (80.7)	45 (97.8)	
Black	1 (4.3)	0 (0.0)	
Asian	0 (0.0)	1 (2.2)	
Other	2 (8.7)	0 (0.0)	
Primary Disease Site			0.5
Endometrium/Uterus	7 (30.4)	12 (26.1)	
Ovary/Fallopian Tube/Peritoneal	14 (60.9)	29 (63.0)	
Cervix	1 (4.3)	5 (10.9)	
Vulva/Vagina	1 (4.3)	0 (0.0)	
Stage			0.4
I	3 (13.0)	9 (20.0)	
II	4 (17.4)	3 (6.7)	
III	9 (39.1)	24 (53.3)	
IV	5 (21.7)	8 (17.8)	
Unstaged	2 (8.7)	2 (8.7)	
Number of prior cycles of chemotherapy	16 (12–28)	16 (8–26)	0.7
Number of prior virtual visits	3.0 (2.0–6.5)	6.0 (3.0–8.0)	0.2
Category of Residence			>0.9
Urban	18 (78.3 %)	35 (76.1 %)	
Large rural city/town	3 (13.0 %)	5 (10.9 %)	
Small and isolated small rural town	2 (8.7 %)	6 (13.0 %)	
Commute Distance			0.068
<20 miles	3 (13.0)	7 (15.9)	
20–100 miles	20 (87.0)	29 (65.9)	
>100 miles	0 (0.0)	8 (18.2)	
Commute Time			0.6
<30 min	4 (17.4)	9 (19.6)	
30 min-2 h	17 (73.9)	29 (63.0)	
>2 h	2 (8.7)	8 (17.4)	
Commute time to clinic is burdensome			0.2
Agree or strongly agree	4 (17.4)	18 (39.1)	
Neutral	6 (26.1)	9 (19.6)	
Disagree or strongly disagree	13 (56.5)	19 (41.3)	
Commute expenses are burdensome			0.8
Agree or strongly agree	4 (17.4)	18 (39.1)	
Neutral	3 (13.0)	9 (19.6)	
Disagree or strongly disagree	16 (69.6)	27 (58.7)	
Physical exam is important at in-person visits			0.15
Agree or strongly agree	18 (78.3)	32 (69.6)	
Neutral	5 (21.7)	7 (15.2)	
Disagree or strongly disagree	0 (0.0)	7 (15.2)	
Non-verbal communication with doctor is important			0.9
Agree or strongly agree	19 (82.6)	35 (76.1)	
Neutral	3 (13.0)	8 (17.4)	
Disagree or strongly disagree	1 (4.3)	3 (6.5)	
Concerned about exposure to infectious disease in-person			0.080
Agree or strongly agree	3 (13.0)	8 (17.4)	
Neutral	10 (43.5)	8 (17.4)	
Disagree or strongly disagree	10 (43.5)	30 (65.2)	
Comfort level using technology in virtual visits			0.6
Comfortable or very comfortable	14 (60.9)	32 (71.1)	
Neutral	2 (8.7)	3 (6.7)	
Uncomfortable or very uncomfortable	7 (30.4)	10 (22.2)	
Technology barriers that limit/prevent use of virtual visits			0.73
Yes	6 (26.1)	4 (8.7)	
No	17 (73.9)	42 (91.3)	
Technical difficulties experienced during virtual visit			0.056
Yes	12 (54.5)	14 (30.4)	
No	10 (45.5)	32 (69.6)	

Data presented as Median (IQR) or n (%).

[a] Prefer ≥ 50 % of visits to be virtual.
[b] Prefer < 50 % of visits to be virtual.
[c] Pearson's Chi-squared test, Fisher's exact test, or Wilcoxon rank sum test.

Allowing patients to choose when and how virtual visits are incorporated can empower them by restoring a sense of control in the treatment process. This could involve tailoring the number and set-up of virtual visits to fit individual needs, including offering options like local or home-based blood work or chemotherapy when possible (Zon et al., 2021; Evans et al., 2016).

Although our study found an overall positive response to virtual care, 25.0 % of patients expressed discomfort with technology and 38.9 % encountered technical difficulties. These results underline the necessity to understand and overcome barriers to enhance telehealth access. Possible barriers that may limit telemedicine's wider acceptance include inherent limitations to the virtual interface and socioeconomic factors that contribute to unequal access to digital technology. These factors create a gap between those who can effectively engage with technology and those who cannot—a phenomenon referred to as the "digital divide" (Zhou et al., 2023). In gynecologic oncology, some studies report telemedicine is utilized by patients of all ages and across the social vulnerability spectrum, whereas others have found that older patients or those who worry about the inability to undergo a physical exam are less likely to accept a virtual visit (Quam et al., 2022; Nestlerode et al., 2022; McAlarnen et al., 2021). In this study, visit type preference was not associated with factors such as age, previous exposure to telemedicine, familiarity with technology, or perceived value of a physical exam. Notably, even those age 65 and older participated in and expressed interest in virtual care, which may be representative of rising digital engagement among seniors (Zhou et al., 2023). Although our study revealed no correlation between telemedicine barriers and visit preferences, barriers are undeniably present. Proposed strategies to address such barriers include pre-visit system checks, enlisting caregiver assistance, switching to phone calls if needed, using closed captioning, sourcing public internet, and utilizing medical apps and wearable technology for virtual physical exams (Lam et al., 2020; Ansary et al., 2021).

This study is unique in its focus on gynecological cancer patients' perceptions of and preference for virtual prechemotherapy evaluations. Collecting this data for our institution was instrumental in designing and implementing a virtual schedule structure that works for our patient population; we encourage other institutions to use this survey template to determine what works for their organization. This study is limited by its descriptive approach and small sample size, reducing the potential for advanced statistical analysis. Possible bias arises from excluding patients without prior virtual visit experience. Additionally, our single-institution data may not be generalizable to the broader population. Further work is needed to elucidate the patient experience with telemedicine in diverse and minority populations to identify barriers related to the digital divide. Future research to further inform the use of telemedicine in gynecologic oncology should explore outcomes such as time to chemotherapy initiation, administration delays, quality of life, and impact on a patient's employment or caregiver time burden.

In conclusion, our data demonstrate that most patients are highly satisfied with the virtual visit experience and prefer virtual care to be an option when undergoing chemotherapy. However, preferences on the extent of virtual visits vary significantly. These findings support offering a hybrid model including both in-person and virtual visits to gynecological cancer patients undergoing chemotherapy, with patient preference dictating the cadence of virtual visits interspersed with in-person visits.

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CRediT authorship contribution statement

Monica J. Janke: Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Bryan Aaron:** Writing – review & editing, Visualization, Software, Project administration, Investigation, Funding acquisition, Data curation, Conceptualization. **Hannah D. McLaughlin:** Writing – review & editing, Visualization, Methodology. **Yang Liu:** Writing – review & editing, Methodology, Formal analysis. **Shitanshu Uppal:** Writing – review & editing, Supervision, Methodology, Funding acquisition, Conceptualization.

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 material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.gore.2024.101397.

References

Andriani, L., Oh, J., McMinn, E., et al., 2023. Telehealth utilization in gynecologic oncology clinical trials. Gynecol. Oncol. 177, 103–108. https://doi.org/10.1016/j.ygyno.2023.08.011.

Ansary, A.M., Martinez, J.N., Scott, J.D., 2021. The virtual physical exam in the 21st century. J. Telemed Telecare 27, 382–392. https://doi.org/10.1177/1357633X19878330.

RAND Corporation. Visit-Specific Satisfaction Instrument (VSQ-9). Accessed March 22, 2023. www.rand.org/health-care/surveys_tools/vsq9.html.

Dholakia, J., Kim, J., Liang, M.I., et al., 2021. Gynecologic oncology patients are ready for telemedicine in routine care: Results from a pre-COVID survey. Gynecol. Oncol. Rep. 38, 100871 https://doi.org/10.1016/j.gore.2021.100871.

Evans, J.M., Qiu, M., MacKinnon, M., Green, E., Peterson, K., Kaizer, L., 2016. A multi-method review of home-based chemotherapy. Eur J Cancer Care (engl) 25, 883–902. https://doi.org/10.1111/ecc.12408.

Kraus, E.J., Nicosia, B., Shalowitz, D.I., 2022. A qualitative study of patients' attitudes towards telemedicine for gynecologic cancer care. Gynecol Oncol 165, 155–159. https://doi.org/10.1016/j.ygyno.2022.01.035.

Lam, K., Lu, A.D., Shi, Y., Covinsky, K.E., 2020. Assessing Telemedicine Unreadiness Among Older Adults in the United States During the COVID-19 Pandemic. JAMA Intern Med 180, 1389–1391. https://doi.org/10.1001/jamainternmed.2020.2671.

Luoma, M.L., Hakamies-Blomqvist, L., 2004. The meaning of quality of life in patients being treated for advanced breast cancer: a qualitative study. Psychooncology 13, 729–739. https://doi.org/10.1002/pon.788.

McAlarnen, L.A., Tsaih, S.W., Aliani, R., Simske, N.M., Hopp, E.E., 2021. Virtual visits among gynecologic oncology patients during the COVID-19 pandemic are accessible across the social vulnerability spectrum. Gynecol Oncol 162, 4–11. https://doi.org/10.1016/j.ygyno.2021.04.037.

Mojdehbakhsh, R.P., Mora Hurtado, A.C., Uppal, S., Milakovich, H., Spencer, R.J., 2022. 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. Gynecol Oncol Rep 42, 101037. https://doi.org/10.1016/j.gore.2022.101037.

Morgan, D.G., Kosteniuk, J., Stewart, N., O'Connell, M.E., Karunanayake, C., Beever, R., 2014. The telehealth satisfaction scale: reliability, validity, and satisfaction with telehealth in a rural memory clinic population. Telemed J E Health 20, 997–1003. https://doi.org/10.1089/tmj.2014.0002.

Neeman, E., Kumar, D., Lyon, L., et al., 2021. Attitudes and Perceptions of Multidisciplinary Cancer Care Clinicians Toward Telehealth and Secure Messages. JAMA Netw Open 4, e2133877.

Nestlerode, C., Pavelka, J., Basil, J., et al., 2022. Patient perspectives of telemedicine in gynecologic oncology during COVID. Gynecol. Oncol. Rep. 43, 101071 https://doi.org/10.1016/j.gore.2022.101071.

Quam, N., Stenzel, A.E., Brown, K., et al., 2022. Perception of Telehealth During the COVID-19 Pandemic Among Survivors of Gynecologic Cancer. Oncologist 27, 512–515. https://doi.org/10.1093/oncolo/oyac041.

Shalowitz, D.I., Nivasch, E., Burger, R.A., Schapira, M.M., 2018. Are patients willing to travel for better ovarian cancer care? Gynecol. Oncol. 148, 42–48. https://doi.org/10.1016/j.ygyno.2017.10.018.

U.S. Department of Agriculture Economic Research Service. Rural-Urban Commuting Area Codes. Accessed April 2, 2024. https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/.

Wong, J., Gonzalez, R., Albright, B., et al., 2022. Telemedicine and gynecologic oncology: caring for patients remotely during a global pandemic. AJOG Glob Rep 2, 100124. https://doi.org/10.1016/j.xagr.2022.100124.

Zhou, W., Cho, Y., Shang, S., Jiang, Y., 2023. Use of digital health technology among older adults with cancer in the United States: Findings From a National Longitudinal Cohort Study (2015–2021). J. Med. Internet Res. 25, e46721.

Zimmerman, B.S., Seidman, D., Berger, N., et al., 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, 542–552. https://doi.org/10.4048/jbc.2020.23.e56.

Zon, R.T., Kennedy, E.B., Adelson, K., et al., 2021. Telehealth in Oncology: ASCO standards and practice recommendations. JCO Oncol. Pract. 17, 546–564. https://doi.org/10.1200/op.21.00438.