



Impact of the COVID-19 Pandemic on Cancer Care and Quality of Life for Patients With Breast and Gynecologic Malignancies: A Single-Center Survey-Based Study

Journal of Patient Experience
Volume 9: 1-5
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DOI: 10.1177/23743735221077543
journals.sagepub.com/home/jpx


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Abstract

This study evaluated the mental health and cancer treatment-related impact of the first wave of the COVID-19 pandemic on patients with breast and gynecologic cancers. An 18-question survey was administered in June 2020 at a New York City-based cancer center to assess the quality of life (QOL) and overall health (OH) during both the pandemic time period from March 1, 2020, through June 30, 2020, and the pre-pandemic period (prior to March 1, 2020). Survey questions were answered on a 5-point Likert scale and a 7-point EORTC QLQ-C30 QOL scale. Differences in mean QOL and OH scores were evaluated using a paired *t*-test. QOL and OH were significantly worsened by the pandemic, with significant increases in anxiety, depression, and mood swings.

Keywords

breast cancer, COVID-19, quality of life, Telehealth

Introduction

The COVID-19 pandemic has disrupted medical and social services provided to many patients, including those undergoing cancer treatment. Studies from around the world have shown decreased utilization of oncologic services during the COVID-19 pandemic (1–5). Initial research has also revealed higher levels of anxiety and depressed mood among patients with cancer due to the pandemic (1,6). A survey-based Dutch study found 30% of patients with cancer experienced a delay or discontinuation in their oncologic treatment or follow-up and the majority of patients expressed being “very” concerned about the consequences of the pandemic on their cancer care (7). In a study of breast cancer patients during the initial COVID-19 outbreak in Hubei Province, 46.2% of patients had to discontinue or modify their necessary anti-cancer treatments (1). Of note, patients expressed greater concern regarding compromised anti-cancer therapy than for infection with COVID-19 itself (1). These studies highlight the attention and further research that must be dedicated to the mental health and wellbeing of

patients with cancer as the COVID-19 pandemic continues with subsequent waves.

Our study aimed to explore the impact of the COVID-19 pandemic on cancer treatment disruption and quality of life (QOL) among patients with breast and gynecologic cancer treated at our large outpatient cancer center in New York City. During the initial wave of the COVID-19 pandemic, many medical oncology visits at our center were conducted remotely using video telehealth services. Some patients also had their treatments delayed or canceled to accommodate

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shifting resources. This study aims to determine the impact of the COVID-19 pandemic on the perceived cancer-related care of patients with breast and gynecologic cancers, as measured by survey results, and the impact on QOL and perception of overall health (OH). This research is important to readers as it can be utilized by health care centers to reduce the burden on chronically ill patients during future public health crises including recurrent surges of SARS-CoV-2.

Methods

An 18-question survey was administered to patients who were seen in our outpatient breast and gynecologic cancer treatment center or had delayed or canceled visits during the pandemic time period from March 1, 2020, through June 30, 2020. Each patient completed one survey and rated their QOL and OH both pre-pandemic and at the time of survey completion (see Appendix A for original survey questionnaire). The survey was administered both by email through REDCap as well as in the clinic and returned anonymously to a drop-box in order to accommodate patients without access to email. The survey was sent to one email address via REDCap and was completed once per email address. Patients were asked if they had completed the survey online prior to being offered the survey in person, and excluded if they had already completed the online version. The survey was administered in English only. All responses were de-identified and personal data was not available to the researchers. This study received approval from the XXX IRB. The study was exempt from requiring patient completion of a consent form. Consent was obtained by completion of the survey itself and patient review of the exemption form which was attached to the survey.

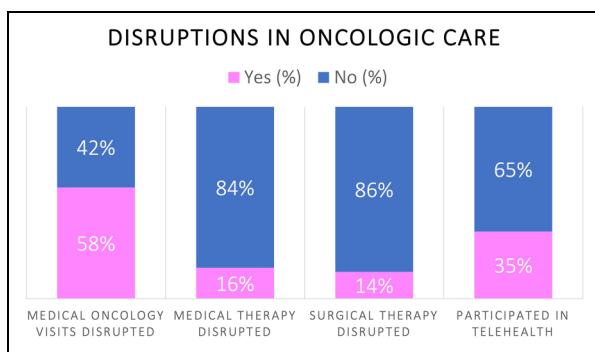


Figure 1. Disruptions in oncologic care due to the COVID-19 pandemic.

Of the 215 patients surveyed, 58% reported having a medical oncology visit canceled, delayed, or changed from in-person to telehealth. 161 patients had a medical oncology treatment scheduled and 16% of these patients reported a cancellation or delay of their medical oncology treatment. 115 patients had surgery scheduled and 14% of these patients reported a disruption in their surgical therapy. 35% of all surveyed patients participated in a telehealth visit during the pandemic period.

Survey questions were answered on a 5-point Likert scale and 7-point EORTC *QLQ-C30* QOL scale (see Appendix B). The EORTC *QLQ-C30* scale is a questionnaire developed to assess the QOL of cancer patients and has been validated worldwide (8). It has been used to study the impact of COVID-19 on cancer patients' QOL at radiation oncology and medical oncology centers (9–13). We selected the last 2 questions of the EORTC survey which relate to patient-assessed QOL and OH as a surrogate for the full 30-question survey to limit the time burden to participants. Increases in anxiety, depression, or mood swings were considered present if patients responded with “to a small extent,” “to some extent,” “to a great extent,” or “to a very great extent.” There was no existing COVID-specific questionnaire at the time of our study, therefore we designed several original questions relating to the COVID-19 pandemic. Patient responses to survey questions were summarized using descriptive statistics with means and standard deviations for QOL and OH outcomes and frequencies and percentages for categorical variables. Differences in mean QOL and OH outcome scores prior to the pandemic and at the end of the response period were evaluated using a paired *t*-test. All hypothesis testing was 2-sided and conducted at the 5% level of significance. Statistical analyses were performed with the SAS, version 9.4 (SAS Institute Inc, Cary, NC) software package.

Results

Cancer Treatment Outcomes

Of the 622 patients who received the survey, 215 (35%) were completed. This response rate is comparable to other single-center survey-based studies (14,15). Of the 188 patients who reported their diagnostic history, 55 (29%) had a history of DCIS (ductal carcinoma in situ), ADH (atypical ductal hyperplasia), or LCIS (lobular carcinoma in situ), 96 (51%) had a history of invasive breast cancer, 7 (4%) had a gynecologic malignancy and 30 (16%) responded “other.”

As a result of the pandemic, 123 patients (58%) reported that they had a medical oncology visit canceled, delayed, or changed from in-person to video telehealth. Of the 160 respondents that had endocrine therapy or chemotherapy scheduled, 26 (16%) reported a cancellation or delay of their treatment (Figure 1).

Mental Health Outcomes

One-hundred and ninety patients (91%) reported new or increased levels of anxiety, with 68 (33%) reporting increases to a “great” or “very great” extent. Eighty-nine patients (42%) felt that the COVID-19 pandemic caused their anxiety related to their diagnosis to increase. One-hundred fourteen patients (58%) reported new or increased levels of depression, with 12 (6%) reporting their depression increased to a “great” or “very great” extent. One-hundred and

Table 1. Original COVID-19 Questionnaire (Modified 5-Point Likert Scale).

Original COVID-19 questions:	Not at all	To a small extent	To some extent	To a great extent	To a very great extent	Total N applicable	Not applicable	Total N
The COVID-19 pandemic has caused or increased my anxiety	18 (9%)	47 (23%)	75 (36%)	49 (23%)	19 (9%)	208	5 (2%)	213
The COVID-19 pandemic has caused or increased my depression	82 (42%)	52 (26%)	50 (25%)	7 (4%)	5 (3%)	196	16 (8%)	212
The COVID-19 pandemic has caused or increased my mood swings	79 (39%)	72 (36%)	36 (18%)	10 (5%)	4 (2%)	201	12 (6%)	213
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree	Total N applicable	Not applicable	Total N
I feel that the COVID-19 pandemic has impacted my cancer care in a negative way	98 (47%)	29 (14%)	45 (21%)	30 (14%)	9 (4%)	211	0 (0%)	211
I feel that the COVID-19 pandemic has impacted my cancer care in a positive way	53 (25%)	18 (8%)	110 (52%)	23 (11%)	8 (4%)	212	0 (0%)	212
The COVID-19 pandemic has caused my personal anxiety regarding my diagnosis to increase	47 (23%)	15 (7%)	60 (28%)	66 (31%)	23 (11%)	211	0 (0%)	211
Being told I needed COVID testing prior to each chemotherapy cycle made me feel anxious	11 (13%)	4 (5%)	23 (28%)	23 (28%)	22 (26%)	83	130 (61%)	213
Being told I needed COVID testing prior to each chemotherapy cycle made me feel relieved	14 (19%)	11 (15%)	16 (22%)	23 (31%)	10 (13%)	74	137 (65%)	211
I feel that the changes in delivering cancer care during the COVID-19 outbreak are in my best interest	8 (4%)	3 (1%)	46 (22%)	37 (17%)	118 (56%)	212	0 (0%)	212

twenty-two patients (61%) reported new or increased mood swings, with 14 (7%) reporting mood swings increasing to a “great” or “very great” extent.

A minority of patients (39, 18%) felt that the COVID-19 pandemic negatively impacted their cancer care, and a majority (155, 73%) felt that the changes in delivering cancer care during the pandemic were in their best interest (somewhat/strongly agree). Patients did not feel strongly in a positive or negative direction regarding the requirement in our clinic for COVID-19 nasal swab testing prior to treatment with chemotherapy. Seventy-four patients (35%) participated in a telehealth visit and 92% of those patients expressed satisfaction with the experience. See Table 1 for full survey results.

QOL was reported with a mean (SD) of 5.6 (1.3) out of 7 (1 = very poor, 7 = excellent) prior to the pandemic, and 5.2 (1.4) out of 7 during the pandemic period; $P < .0001$. Fifty-five patients (27%) reported having excellent (7) QOL prior to pandemic which decreased to 33 (16%) after the response period; $P < .0001$. OH was reported with a mean (SD) of 5.3 (1.3) out of 7 prior to the pandemic, and 5.1 (1.3) out of 7 by the end of the response period; $P = .0269$. Both QOL and OH were significantly worsened by the COVID-19 pandemic. See Figure 2 for QOL and OH outcomes.

Discussion

This survey-based study allowed us to receive rapid, real-time feedback regarding the changes to cancer care during the COVID-19 pandemic and its mental health impact on patients perceived QOL and OH. It provided a relatively large sample size of over 200 individual patients with breast and gynecologic cancers, which we believe to be representative of our entire clinic population. The results of this study add to the growing body of literature that suggests serious mental health consequences due to the pandemic among patients receiving cancer care such as increased

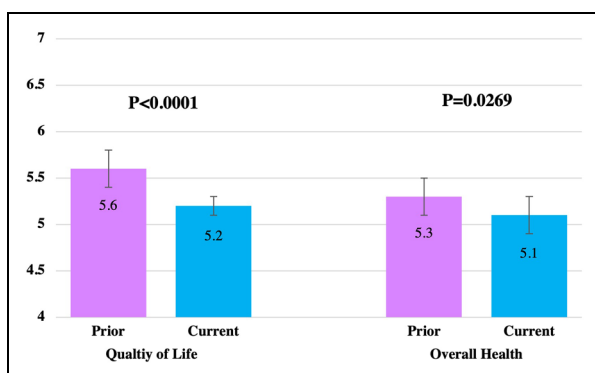


Figure 2. Quality of life (QOL) and overall health prior to and during the COVID-19 pandemic.

Mean QOL and overall health outcomes prior to (prior) and at end (current) of study pandemic period. Mean QOL and overall health were significantly greater prior to the study period than at the end of the study period, $P < .0001$ and $.0269$, respectively (paired t-test). Error bars indicate 95% confidence intervals for means.

anxiety, depression, and insomnia (1,6). It also supports existing literature showing high levels of satisfaction with telehealth to supplement or replace in-person clinic visits (16).

In conclusion, although patients remained satisfied with their care at our cancer center and the changes made to their cancer care and treatment during the COVID-19 pandemic, the mental health, QOL, and perceived OH toll were significant. Our findings suggest that cancer centers should provide additional mental health resources to patients with cancer during public health care crises, such as support groups and referrals for professional mental health care providers. All cancer centers will need to address these challenges as the COVID-19 pandemic remains ongoing.

Limitations

Our study was limited by the large percentage of patients included who were undergoing routine follow-up for high-risk pre-cancerous breast disorders such as DCIS/ADH/LCIS in contrast to invasive breast or gynecologic cancers. We did not identify the exact percentage of patients who were receiving active chemotherapy or systemic therapy for metastatic disease. We also did not assess the racial or ethnic characteristics of our patients. We were unable to assess long-term outcomes in this study population.

We acknowledge that our COVID-19 specific questions have not been externally validated due to the unprecedented nature of this event. Several recently published studies have used similar COVID-19 specific questions designed to assess patient health issues directly related to the pandemic, which supports the use of unique questions to address patient issues related to the pandemic (10,17). Pre- and post-pandemic data was collected simultaneously with one survey and therefore there is a risk of recall bias. Pre-pandemic data was not available prior to the pandemic as the scope of the crisis could not be anticipated. Additionally, although the difference in QOL and OH were statistically significant pre and post-pandemic, the absolute value was < 1 point on the 7 point scale, which may be of limited clinical significance.

Despite these limitations, we feel that the significant burden of the pandemic on patients with cancer was adequately captured by this survey and supports the findings of other recently published survey-based studies (9–13).

Acknowledgments

The authors wish to acknowledge the support of the Biostatistics Shared Resource Facility funded by the National Cancer Institute Cancer Center Support Grant P30CA196521-01 for analysis and interpretation of data and preparation of the manuscript.

Declaration of Conflicting Interests

Below are financial relationships with industry reported by Dr. Amy Tiersten during 2020-2021: Consulting: Immunomedics, AstraZeneca, Novartis, Elsal Inc, Cowen, Athenex. Research funding: Pfizer. Authors Berger, Zimmerman, Seidman, Cascetta, Moshier, Nezoslosky, Trlica, Ryncarz, and Keeton have no known competing financial interests

or personal relationships that could have appeared to influence the work reported in this paper.

Ethical Approval

Ethical approval to report this study was obtained from the IRB (#XXX).

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the National Cancer Institute (grant number P30CA196521-01).

Statement of Human and Animal Rights

All procedures in this study were conducted in accordance with the IRB (#XXX) approved protocols.

Statement of Informed Consent

The study was exempt from requiring patient completion of a consent form. Consent was obtained by completion of the survey itself and patient review of the exemption form which was attached to the survey.

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Supplemental Material

Supplemental material for this article is available online.

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