

2023

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Recommended Citation

Erickson JR, Pahlkotter MK, Thielking PD, Porretta JM, Rosenthal R, Matsen CB, Brownson KE. Leveraging telehealth supportive oncology services to combat COVID-19 isolation in breast cancer patients: A cancer center's perspective. *Patient Experience Journal*. 2023; 10(2):133-137. doi: 10.35680/2372-0247.1645.

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Abstract

During the COVID-19 pandemic, breast cancer patient in-person visits were converted to telehealth visits. Given our concerns about increased isolation amongst breast cancer patients during the pandemic, and the deleterious effects of such isolation on patient outcomes, we investigated utilization rates of psycho-social services amongst newly diagnosed breast cancer patients at our institution. We explored visit platforms (telehealth versus in-person) and time points prior to and encompassing the early pandemic. Despite decreased new breast cancer visits, there was a greater than 2-fold increase in supportive oncology service encounters in breast cancer patients during COVID-19 suggesting increased need for psycho-oncology resources. While services had not been offered virtually prior to the pandemic, the majority of the supportive oncology visits were conducted via telehealth during the initial months (73%) and year (59%) of the pandemic. 89% of breast cancer patients accessing psycho-social services were in-state patients, and service utilization increased amongst rural and urban residents during the pandemic. Total numbers of rural patients receiving supportive oncology services remained low compared to numbers of urban patients, however, though virtual visits predominated. While the number of out-of-state patients accessing psycho-oncology services during the pandemic was low, there was a 5-fold increase in psycho-social service utilization in this group during the pandemic. The majority of these visits were in-person. Telehealth services can be used to extend psycho-social support to breast cancer patients and combat the experience of isolation exacerbated by the pandemic. Virtual visits can be further utilized to increase outreach to rural and out-of-state patients.

Keywords

Breast cancer, telehealth, COVID-19, psycho-social services, supportive oncology, psycho-oncology, isolation, virtual visits.

Background

During the coronavirus disease 2019 (COVID-19) pandemic, in order to limit the public health threat of COVID-19, breast cancer patient in-person visits declined. Healthcare providers postponed breast cancer mammographic screenings. Per the American Society of Breast Surgeons' published recommendations, patients with hormone receptor positive, early-stage tumors were placed on endocrine therapy and their surgeries were postponed.¹ Non-urgent and non-emergent breast concerns, which constitute the majority of breast surgery referrals, were converted to telehealth visits. Similarly, nationwide, ambulatory healthcare experienced a dramatic decrease in in-person patient visits and a surge in telehealth visits. One study of greater than 36 million

Americans noted telehealth utilization increased from 0.3% in 2019 to 23.6% in 2020.² This trend of leveraging telehealth visits enabled many breast health concerns to be addressed from the safety of the patient's home. However, this decrease in in-person visits could also contribute to the social isolation of breast cancer patients.

One of the many disease states that social isolation has been shown to negatively impact is breast cancer. Many studies have shown isolation to correlate with significantly decreased life spans and decreased quality of life in women diagnosed with breast cancer.³ The clinical picture is nuanced with the number of social contacts having less of a protective impact than the perceived emotional support of these contacts. Investigators postulate that isolation's deleterious impact on breast cancer may be due to the

increased psychosocial stress of isolation. Studies demonstrate increased circulating stress hormones decrease levels of circulating natural killer cells and diminish the body's ability to contain and eliminate tumor cells.⁴ Elevated levels of stress hormones have also been implicated in inactivation of replication modulators like p53 through elevation of glucocorticoid levels and resultant altered gene transcription patterns, and stimulation of beta-adrenergic receptors resulting in increased macrophage tumor infiltration and pro-metastatic changes.^{5,6} Unlike most other health outcome risk factors, the detrimental effects of social isolation seem to be based on the individual's interpretation of isolation.⁷ This means that the perception of loneliness and the stress that accompanies this, rather than the state of being physically separated from others, is linked with poor health outcomes. Not all people experience loneliness when isolated from others. Instead, persons more susceptible to loneliness tend to perceive day-to-day experiences as more stressful than their non-lonely counterparts, and they also tend to interpret fewer experiences as stress relieving.⁷ Thus, increased stress experienced by those who are socially isolated is thought to be heavily influenced by the individual's increased perception of stress and decreased experience of stress relief.

Study Objective

Given our concerns about isolation amongst breast cancer patients during the COVID-19 pandemic and the deleterious effects of such isolation on patient outcomes, in this study we aim to describe utilization rates of psychosocial service encounters, specifically comparing telehealth versus in-person visits, amongst newly diagnosed breast cancer patients at our institution during the COVID-19 pandemic.

Methods

This study was a single institution, descriptive, case study looking at utilization of Supportive Oncology and Survivorship (SOS) visits amongst breast cancer patients at an academically affiliated center that is both a member of the National Comprehensive Cancer Network (NCCN) and the only National Cancer Institute-Designated Comprehensive Cancer Center located in its region. Of importance, the institution serves a large catchment area of rural and low populous states. The SOS team is a group of social workers and physicians specializing in psycho-social services, in addition to palliative care and pain management, and was selected as a surrogate marker for psychosocial outreach to patients during the COVID-19 pandemic. Demographic information was queried using billing codes. Researchers did not identify individual patients for the purposes of this study. Per the guidance of the local IRB, this study was considered non-human subjects research and did not require submission for formal IRB approval. We looked at the number of "New

Patient Visits" with the SOS team who additionally had a documented diagnosis of breast cancer for this project. Our query targeted March 1 - June 30, 2020, because this timeframe represented our region's most aggressive months of COVID-19 social isolation. The time period of March 1, 2020 thru February 28, 2021 was also reviewed, as this corresponded to the period of the pandemic prior to a decrease in social isolation resulting from increased availability of the COVID-19 vaccine to members of the public. This timeframe also represents the first pandemic year. Other demographic data that was gathered includes patient visit delivery mechanism (in-person versus telehealth) and patient state of residence. In-state patients were further categorized as either rural or urban. Rural patients were defined as patients living greater than 40 minutes from the cancer center while urban patients were those living 40 minutes or less from the cancer center. Frequencies (percentages) were reported for the above categorical variables.

Results

From March 1 to June 30, 2020, our institution's breast cancer program experienced a 26% decrease in new breast cancer patient visits compared to this time period the year prior. This is most likely due to decreased breast cancer screening during the pandemic, a trend seen nationally as well as locally. This decrease in patients could have additionally resulted from patient reticence to seek medical care for physical concerns due to fear of contracting COVID-19. The decline in breast cancer visits persisted over the year with a 10% decrease in the total number of new patient visits for breast cancer care in the first pandemic year compared to the year prior. Despite this decline in new breast cancer patient visits at our institution during the pandemic, there was an increase in new patient psycho-social service visits amongst breast cancer patients at our institution. Specifically, the Supportive Oncology and Survivorship (SOS) team had 112 new breast cancer patient visits during the peak months of COVID-19 isolation, representing a 2.15-fold increase from that time frame the prior year. Additionally, the SOS team had 595 new breast cancer patient visits over the first pandemic year, representing a 2.95-fold increase in volume from the year prior. Table 1 also highlights that the vast majority of these visits were conducted virtually via telehealth platforms.

SOS resource utilization by breast cancer patients was further analyzed to discern patterns of patient care amongst in-state patients versus those from other states in the region. Additionally, SOS visits by in-state residents from rural versus urban locations during the COVID-19 pandemic were queried. During the initial months of the pandemic, SOS new patient visits amongst breast cancer patients more than doubled compared to the previous year for both in-state and out-of-state patients. Specifically,

Table 1. Distribution of SOS Visits

Visit Location/Platform	March 2019-June 2019	March 2020- June 2020	March 2019-Feb 2020	March 2020-Feb 2021
Total Visits	52	112	201	592
Total In-Person	52	30	201	243
Total Virtual	0	82	0	349
Rural Total	5	7	16	35
Rural In-Person	5	2	16	6
Rural Virtual	0	5	0	29
Urban Total	42	94	171	486
Urban In-Person	42	26	171	197
Urban Virtual	0	68	0	289
In-State Total	47	101	187	521
In-State In-Person	47	28	187	203
In-State Virtual	0	73	0	318
Out-of-State Total	5	11	14	71
Out-of-State In-Person	5	2	14	40
Out-of-State Virtual	0	9	0	31

This table demonstrates the number of Supportive Oncology and Survivorship (SOS) visits during the peak months of the COVID-19 pandemic isolation (March - June 2020) and the first pandemic year (March 2020 - February 2021) in comparison to the corresponding months over the previous year (March - June 2019 and March 2019 - February 2020).

there was a 2.15-fold increase in SOS visits amongst in-state patients and a 2.2-fold increase was seen amongst patients from outside of the state. This trend continued to increase over the first pandemic year for both patient cohorts. Eighty-nine percent, and thus the majority, of breast cancer patients accessing SOS visits were from within the state. However, the greatest increase in utilization of this resource was by out-of-state patients who demonstrated a greater than a 5-fold increase in SOS visits between March 2020 – February 2021 compared to the previous year. The greatest utilization of SOS services amongst in-state residents was by patients hailing from urban locations. Only 7% of all SOS patients came from a rural setting while urban in-state residents accounted for 93% of all SOS patient visits. During the peak months of isolation during the pandemic, as well as throughout the first pandemic year, there was an increase in SOS new patient visits amongst breast cancer patients in both rural and urban patient cohorts compared to the months and year prior. SOS service utilization increased most in patients from an urban setting and was more pronounced over the first pandemic year (2.84-fold increase) than during the peak pandemic months (2.24-fold increase). This trend was also demonstrated amongst rural in-state residents but to a lesser extent (Figure 1).

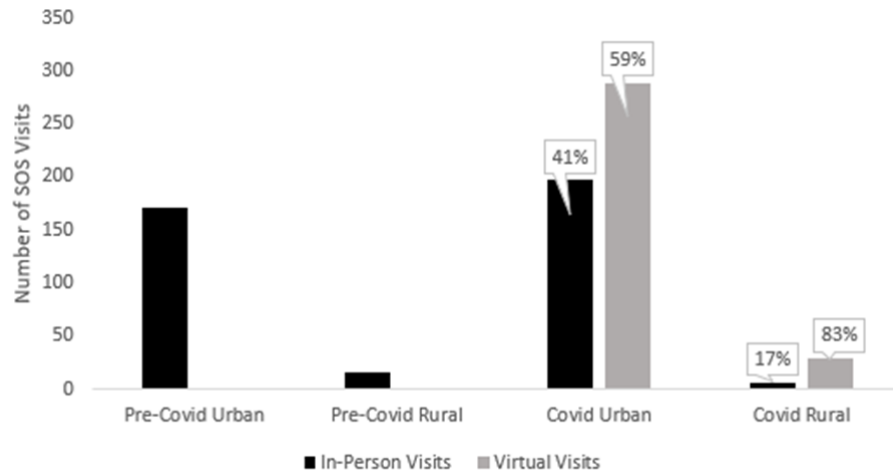
Most of the SOS visits during the COVID-19 pandemic were virtual visits using the university's telehealth program. Specifically, between March and June of 2020, 73% of

patient visits were virtual and 59% were conducted virtually over the first pandemic year. Prior to the COVID-19 pandemic, virtual visits had not been offered to patients. During the pandemic, in-person visits were intentionally restricted but not prohibited, and these restrictions were relaxed over subsequent months. When we examined trends of in-state and out-of-state patient utilization of virtual versus in-person visits, there was an expected predominance of virtual visit utilization for both in-state patients (72%) and out-of-state patients (82%) during the peak months when in-person visits were restricted. However, over the first pandemic year, in-state patients continued to utilize virtual visits for these SOS appointments while there was a decrease in utilization of virtual SOS visits amongst patients from out-of-state (Figure 2). Within the state, the majority of SOS visits were conducted virtually for both rural and urban patients during the peak pandemic months as well as throughout the first pandemic year.

Discussion

Because a diagnosis of breast cancer has psycho-social implications for patients, with stress being tied to worsened patient outcomes, the National Comprehensive Cancer Network (NCCN) has recommended distress screening in all newly diagnosed cancer patients since 1999.⁸ During the COVID-19 pandemic, breast cancer patients not only were confronted with the stress

Figure 1. Comparison of In-State Urban vs Rural Utilization of SOS Services

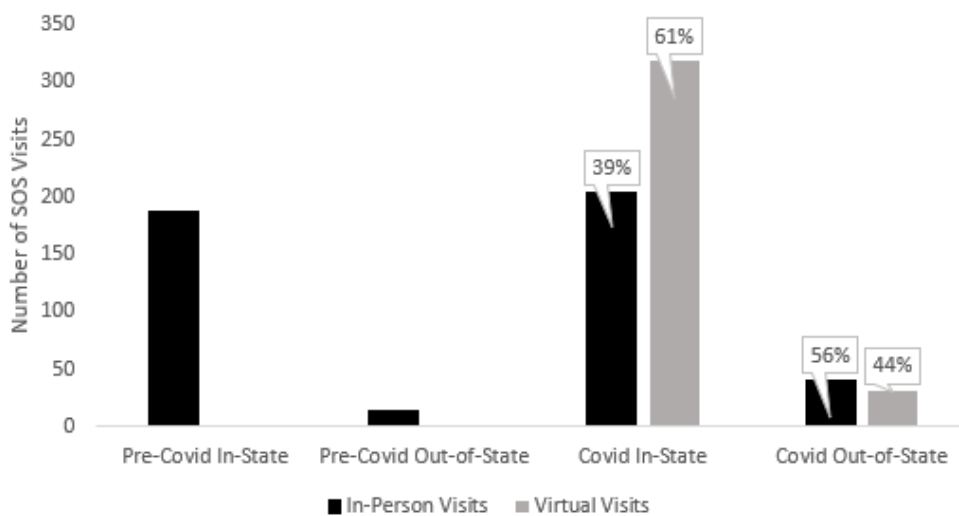


This figure compares the number of in-state virtual and in-person Supportive Oncology and Survivorship (SOS) visits in rural and urban settings from the pre-Covid-19 time period (March 2019 - February 2020) and the first pandemic year (March 2020 -February 2021). It also demonstrates the percentage of SOS visits that were conducted in-person versus virtually once virtual visits were offered.

associated with a new cancer diagnosis but additionally were burdened with the stress of a global health threat combined with decreased mechanisms for stress relief given social distancing. Breast cancer patients experienced unprecedented isolation, linked to decreased life span and quality of life, during COVID-19. The decrease in in-person patient visits posed an additional risk of further patient isolation during the pandemic. Fortunately, because the individual’s experience of isolation rather than isolation itself is responsible for poor health outcomes, we

can combat its deleterious effects as healthcare providers with psycho-social intervention. Ultimately, while the medical system could have compounded the isolation experienced by breast cancer patients due to the COVID-19 pandemic, the leveraging of telehealth services by the SOS team at our institution enabled patient connection and sought to diminish the experience of isolation. There is likely to be a continued heightened need for psycho-oncology resources for breast cancer patients as they emerge from the prolonged social isolation of the

Figure 2. Comparison of In-State vs Out-of-State Utilization of SOS Services



This figure compares the number of virtual and in-person Supportive Oncology and Survivorship (SOS) visits for in-state and out-of-state patients from the pre-Covid-19 time period (March 2019 - February 2020) and the first pandemic year (March 2020 - February 2021). It also demonstrates the percentage of SOS visits that were conducted in-person versus virtually once virtual visits were offered.

COVID-19 pandemic and continued interval isolation imposed by subsequent variants. While the healing power of the human touch is absent in telehealth appointments, psycho-oncology virtual visits are a tool for healthcare providers to employ to combat breast cancer patient isolation and ultimately safeguard patient health.

Limitations

The use of billing data rather than direct patient data is a limitation of this study. The increase in SOS visits amongst breast cancer patients during the pandemic despite an overall decreased number of new breast cancer patients seen at our institution, and specifically the increase in in-person SOS visits despite restrictions on in-person visits, suggests a growing need for psycho-oncology resources during this time. However, the strategy for the delivery of psycho-oncology services at our institution changed due to COVID-19 and telehealth technology was employed for the first time. Given that the increased isolation of the pandemic coincided with the initiation of a telehealth platform for SOS encounters at our institution, it is not possible to delineate which was the main driver of increased SOS resource utilization amongst breast cancer patients. Analysis of patient reported levels of isolation and stress would provide a more direct assessment.

Future Directions

While the number of rural and out-of-state breast cancer patient SOS visits increased from previous years during the pandemic, the total number of rural patients and out-of-state patients remained small compared to the number of urban in-state patients. Furthermore, the majority of out-of-state patient visits were still conducted in-person rather than virtually. Virtual visits remove the geographic barrier that traditionally limits delivery of care to rural and out-of-state patients. This makes telehealth visits a potential vehicle for improved psycho-oncology outreach for these populations, and future emphasis of virtual visits as a mechanism for extending psycho-social support to our rural and out-of-state breast cancer patients is warranted.

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