

## RESEARCH BRIEF

# Anxiety and PTSD Symptoms During the COVID-19 Pandemic in Women With Breast Cancer

Jian Zhao, RN, MS, Susan R. Mazanec, PhD, RN, AOCN®, FAAN,  
and Margaret Rosenzweig, PhD, FNP-BC, AOCNP®, FAAN

**OBJECTIVES:** To examine (a) the impact of the COVID-19 pandemic on anxiety and post-traumatic stress disorder (PTSD) symptoms and (b) the impact of socioeconomic factors on COVID-19-related anxiety and PTSD symptoms.

**SAMPLE & SETTING:** Women with early-stage invasive breast cancer who were receiving chemotherapy in western Pennsylvania and eastern Ohio.

**METHODS & VARIABLES:** Baseline study variables included economic hardship, interpersonal relationships, and perceived stress. PTSD and anxiety symptoms were collected in June 2020 (T1) and February 2021 (T2). Group comparisons were made using paired-sample t tests, analysis of variance, and Pearson correlations.

**RESULTS:** There were 88 women at T1 and 64 women at T2. At T1, PTSD symptom scores were significantly associated with less interpersonal support, greater economic hardship, and greater perceived stress. Anxiety scores were associated with perceived stress. At T2, anxiety scores were still associated with perceived stress. However, PTSD symptom scores were no longer associated with interpersonal support, economic hardship, or perceived stress.

**IMPLICATIONS FOR NURSING:** Anxiety and PTSD symptom measurement during a global pandemic is needed to identify vulnerable patients with breast cancer who need targeted support and emergency guidance in nursing practice.

**KEYWORDS** COVID-19; breast cancer; anxiety; PTSD symptoms

**ONF, 49(3), 201-205.**

**DOI** 10.1188/22.ONF.201-205

The SARS-CoV-2 virus caused the outbreak of the COVID-19 pandemic with far-reaching economic and social effects. About one-third of infected patients reported severe complications, including acute respiratory distress syndrome, acute renal failure, acute respiratory injury, septic shock, and severe pneumonia (Acter et al., 2020).

As clinical experience with the pandemic grew, it became clear that certain populations were at increased risk for inferior COVID-19 outcomes. An analysis from a cancer center in London found that 24% of patients with cancer died of COVID-19 (Russell et al., 2021). A recent review about mortality in patients with cancer found a 59.4% death rate among patients with cancer and severe COVID-19 (Nadkarni et al., 2021). Patients with breast cancer, who may be immunocompromised by the effects of their malignancy and cancer treatment (e.g., chemotherapy), are identified as a high-risk population for contracting COVID-19 (Tsamakis et al., 2020). COVID-19 has also been particularly impactful on low-income and underrepresented communities. Emerging evidence suggests that Black Americans comprise a disproportionately greater number of reported COVID-19 cases and deaths compared to other Americans (Kirksey et al., 2021). This is particularly true for Black Americans with a cancer comorbidity. An analysis of racial disparity among U.S. patients with cancer and COVID-19 found that Black patients with a diagnosis of cancer were at significantly increased risk for COVID-19 and its adverse outcomes (Wang et al., 2021).

However, little is known about the emotional impact of COVID-19 on patients with breast cancer. The aims of this study are as follows: (a) to examine stress, anxiety, and post-traumatic stress disorder (PTSD) surrounding the COVID-19 pandemic among women with breast cancer at two time points (June 2020, prior to a vaccine, and February 2021, after vaccines became available) and (b) to describe the

relationship of baseline variables in the parent study (McCall et al., 2020), including financial difficulty, interpersonal support, and stress, on COVID-19-related anxiety and PTSD.

## Methods

### Design

This assessment was completed as a supplementary, descriptive, comparative study to better understand the impact of COVID-19 among patients with early-stage breast cancer at two time points during the pandemic. The assessments of anxiety and PTSD specific to the COVID-19 pandemic were integrated into an established ongoing Ro1 study comparing racial differences in symptom experience and

management during chemotherapy for early-stage breast cancer (McCall et al., 2020). Institutional review board approval was obtained. Participants in the parent study were contacted via telephone by the research assistants and invited to participate. Verbal consent was attained, and participants were asked to complete the surveys at two time points (June 2020 and February 2021). Surveys were completed during a telephone interview or online via Qualtrics.

### Sample and Setting

Inclusion criteria of the parent study were as follows: female, Black or White, and a diagnosis of stage I-III breast cancer for which chemotherapy is recommended. Only participants in the parent study were eligible for the supplementary study. The parent study data were collected from 10 sites in western Pennsylvania and northeast Ohio.

### Instruments

Baseline data included demographic factors, economic hardship (Economic Hardship Questionnaire) (Barrera et al., 2001), interpersonal support (Interpersonal Support Evaluation List [ISEL]) (Cohen et al., 1985), and perceived stress (Perceived Stress Scale) (Cohen et al., 1983).

**Impact of Event Scale-Revised (IES-R):** IES-R evaluates the distress that is caused by traumatic events and is closely connected with symptoms of PTSD (Motlagh, 2010). A total of 22 items are rated on a five-point scale ranging from 0 (not at all) to 4 (extremely). The IES-R yields a total score (ranging from 0 to 88), and subscale scores can also be calculated for the intrusion (intrusive thoughts, nightmares, intrusive feelings and imagery, dissociative-like re-experiencing), avoidance (numbing of responsiveness, avoidance of feelings, situations, and ideas), and hyperarousal (anger, irritability, hypervigilance, difficulty concentrating, heightened startle) subscales. A score ranging from 24 to 32 is regarded as a clinical PTSD concern. Scores ranging from 33 to 38 represent the best cutoff for a probable diagnosis of PTSD, and 39 or greater is high enough to suppress the immune system's functioning (even 10 years after an impact event) (Motlagh, 2010).

**General Anxiety Disorder-7 (GAD-7):** The GAD-7 measures worry and anxiety symptoms (Spitzer et al., 2006). The score range is 0 to 21, and a score of more than 10 indicates moderate to severe anxiety. GAD-7 items consist of statements about worry (e.g., not being able to stop or control worrying) and general somatic tension (e.g., trouble relaxing), which are rated on a four-point Likert-type scale indicating

**TABLE 1. Sample Characteristics by Assessment Time**

| Characteristic                  | T1 (N = 88) | T2 (N = 64) |
|---------------------------------|-------------|-------------|
|                                 | n           | n           |
| <b>Race</b>                     |             |             |
| Black                           | 34          | 24          |
| White                           | 54          | 40          |
| <b>Marital status</b>           |             |             |
| Married                         | 49          | 40          |
| Divorced or separated           | 16          | 9           |
| Single                          | 23          | 15          |
| <b>Household income (\$)</b>    |             |             |
| Low (69,999 or less)            | 26          | 18          |
| Median to high (70,000 or more) | 48          | 38          |
| No response                     | 14          | 8           |
| <b>IES-R score</b>              |             |             |
| 0-23                            | 58          | 42          |
| 24-32                           | 17          | 15          |
| 33-38                           | 4           | 2           |
| 39 or greater                   | 9           | 5           |
| <b>GAD-7 score</b>              |             |             |
| 0-9                             | 77          | 57          |
| 10 or greater                   | 11          | 7           |

GAD-7—General Anxiety Disorder-7; IES-R—Impact of Event Scale-Revised; PTSD—post-traumatic stress disorder; T1—June 2020; T2—February 2021

**Note.** Total scores on the IES-R range from 0 to 88. A score of more than 32 is regarded as a clinical PTSD concern. Scores ranging from 33 to 38 represent the best cutoff for a probable diagnosis of PTSD, and 39 or greater is high enough to suppress the immune system's functioning. The GAD-7 score range is 0 to 21, and a score of more than 10 indicates moderate to severe anxiety. Greater scores indicate higher levels of generalized anxiety disorder symptoms.

symptom frequency, ranging from 0 (not at all) to 3 (nearly every day). Greater scores indicate higher levels of generalized anxiety disorder symptoms (Spitzer et al., 2006). The GAD-7 demonstrated good internal consistency and indicated high reliability and validity (Spitzer et al., 2006).

### Analysis

Statistical tests were conducted with significance set at  $p < 0.05$  (two-sided). All analyses were performed using IBM SPSS Statistics, version 26.0. For aim 1,  $p$  values were calculated using paired-sample  $t$  tests to compare the anxiety and PTSD differences during the two times. Pearson correlations were used to evaluate relationships between economic hardship, interpersonal support, and perceived stress at baseline and COVID-19-related PTSD and anxiety during the two time points.

### Results

There were 88 women (34 Black and 54 White) who responded to the T1 assessment (June 2020), and 64 women (24 Black and 40 White) responded to the T2 assessment (February 2021). See the sample characteristics in Table 1.

### IES-R and Anxiety

The mean IES-R score was 19.15 ( $SD = 13.11$ ) at T1 and 19.89 ( $SD = 11.2$ ) at T2. The mean GAD-7 score at T1 was 5.1 ( $SD = 4.08$ ) and 5.28 ( $SD = 4.13$ ) at T2. The paired-sample  $t$  tests revealed that IES-R (including subscales) is not significantly different between T1 and T2, and anxiety also does not have significant differences between T1 and T2 ( $p > 0.05$ ). Avoidance increased from 7.2 to 8.29, and hyperarousal decreased from 4.72 to 4.37 (see Table 2).

Clinically significant scores for IES-R (24 or more) were present for 30 women, and 11 women had moderate to severe anxiety on the GAD-7 (10 or greater) at T1; at T2, 22 women had high IES-R scores and 7 had moderate to severe anxiety.

### Associations Between Baseline Variables and IES-R/Anxiety

At T1, IES-R post-traumatic stress was significantly associated with the ISEL tangible subscale ( $r = -0.23$ ,  $p < 0.05$ ), ISEL appraisal subscale ( $r = -0.23$ ,  $p < 0.05$ ), economic hardship ( $r = 0.385$ ,  $p < 0.05$ ), and perceived stress ( $r = 0.267$ ,  $p < 0.05$ ). GAD-7 was correlated with perceived stress ( $r = 0.297$ ,  $p < 0.05$ ). However, the impact of the ISEL tangible subscale and ISEL appraisal subscale was no longer significant at T2 for

### KNOWLEDGE TRANSLATION

- A higher prevalence of post-traumatic stress disorder (PTSD) and anxiety symptoms was noted among this cohort of women with early-stage breast cancer receiving chemotherapy during the COVID-19 pandemic than was historically reported prepandemic.
- Economic hardship and interpersonal support may help to illuminate patients who are most at risk for higher levels of anxiety and PTSD symptoms during the early phases of a public health crisis; perceived stress may be a stable predictor of PTSD and anxiety symptoms throughout a crisis.
- Some COVID-19-related difficulties may be hidden through avoidance strategies.

GAD-7 or IES-R. Perceived stress ( $r = 0.27$ ,  $p < 0.05$ ) was still significantly correlated with the T2 GAD-7 score.

### Discussion

PTSD and anxiety are common problems among breast cancer survivors. Overall, a high prevalence of PTSD symptoms (34% at T1 and T2) and anxiety (13% at T1 and 11% at T2) were noted at both time points. The scores in this study were significantly higher than patients with breast cancer in studies conducted prepandemic, which showed that only about 5.3% of patients reported moderate to severe anxiety and 23% of patients reported clinical concerns about PTSD (Shelby et al., 2008). Because of the unsettling nature of the COVID-19 pandemic, emotional distress symptomatology—particularly among those receiving chemotherapy—may be exacerbated. Disrupted oncology services may have an impact on COVID-19-related emotional vulnerability, anxiety, and depression among patients with breast cancer (Swainston et al., 2020). The current findings are consistent with findings in qualitative and quantitative studies by Savard et al. (2021) and Massicotte et al. (2021), which revealed increased psychological distress during the COVID-19 pandemic among patients with breast cancer.

An important contribution of this study is the identification of factors associated with PTSD and anxiety in patients with breast cancer during the COVID-19 pandemic. These results found that lower interpersonal support, higher economic hardship, and higher perceived stress were associated with higher PTSD scores at T1. At T2, these factors were no longer significantly associated with PTSD, except for perceived

stress. Identification of economic hardship and interpersonal support may help to illuminate patients who are most at risk for higher levels of anxiety and symptoms associated with PTSD during the early times of crisis (T1). Perceived stress at baseline may be a stable predictor of PTSD symptoms throughout the crisis (T1 and T2).

Although the study did not see significant changes in IES-R total scores, there was an increase in the

avoidance subscale and a slight decrease in the hyperarousal subscale during the two-time assessment. An increasing avoidance coping style showed that patients with breast cancer may take actions to avoid thinking about COVID-19-related difficulties, which indicated that some of their difficulties may be hidden and not fully explored. Decreased hyperarousal showed a trend of adjustment to the pandemic, maybe because of the availability of the vaccine.

**TABLE 2. Sample Anxiety and PTSD Symptom Scores by Assessment Time**

| Measure                             | T1 (N = 88) |           |       | T2 (N = 64) |           |        |
|-------------------------------------|-------------|-----------|-------|-------------|-----------|--------|
|                                     | $\bar{X}$   | SD        | Range | $\bar{X}$   | SD        | Range  |
| National Area Deprivation Index     | 60          | 29.88     | 7-100 | 59.02       | 29.84     | 11-100 |
| <b>Measure</b>                      |             | $\bar{X}$ | SD    |             | $\bar{X}$ | SD     |
| GAD-7                               |             | 5.1       | 4.08  |             | 5.28      | 4.13   |
| IES-R                               |             | 19.15     | 13.11 |             | 19.89     | 11.2   |
| Perceived stress                    |             | 31.47     | 3.94  |             | 31.61     | 4.26   |
| <b>Economic hardship</b>            |             | 0.02      | 1.77  |             | 0.11      | 1.69   |
| Economic adjustment                 |             | 16.95     | 1.91  |             | 17.21     | 1.51   |
| Financial strain                    |             | 8.26      | 2     |             | 8.47      | 1.81   |
| Inability to make ends meet         |             | 6.78      | 0.78  |             | 6.75      | 0.78   |
| Not enough money for necessities    |             | 14.2      | 6.78  |             | 13.52     | 6.32   |
| <b>IES-R subscales</b>              |             |           |       |             |           |        |
| Avoidance <sup>a</sup>              |             | 7.2       | 0.55  |             | 8.29      | 0.64   |
| Hyperarousal <sup>b</sup>           |             | 4.72      | 0.44  |             | 4.37      | 0.46   |
| Intrusion <sup>a</sup>              |             | 7.22      | 0.58  |             | 7.22      | 0.61   |
| <b>Interpersonal support (ISEL)</b> |             |           |       |             |           |        |
| ISEL appraisal                      |             | 26.41     | 4.74  |             | 27        | 4.13   |
| ISEL belonging                      |             | 25.69     | 4.28  |             | 26.62     | 3.45   |
| ISEL self-esteem                    |             | 22.8      | 3.71  |             | 23.41     | 3.52   |
| ISEL tangible                       |             | 25.34     | 4.81  |             | 25.73     | 4.4    |

<sup>a</sup> Range = 0-32

<sup>b</sup> Range = 0-24

GAD-7—General Anxiety Disorder-7; IES-R—Impact of Event Scale—Revised; ISEL—Interpersonal Support Evaluation List; PTSD—post-traumatic stress disorder; T1—June 2020; T2—February 2021

**Note.** On the IES-R, 22 items are rated on a 5-point scale ranging from 0 (not at all) to 4 (extremely). The IES-R yields a total score (ranging from 0 to 88), and subscale scores can also be calculated for the intrusion, avoidance, and hyperarousal subscales. A score of more than 32 is regarded as a clinical PTSD concern. Scores ranging from 33 to 38 represent the best cutoff for a probable diagnosis of PTSD, and 39 or greater is high enough to suppress the immune system's functioning. The GAD-7 score range is 0 to 21, and a score of more than 10 indicates moderate to severe anxiety. GAD-7 items consist of statements about worry and general somatic tension, which are rated on a 4-point Likert-type scale indicating symptom frequency, ranging from 0 (not at all) to 3 (nearly every day). Greater scores indicate higher levels of generalized anxiety disorder symptoms. The Perceived Stress Scale contains 10 items with scores ranging from 0 to 40. A score more than 40 is considered as moderate to high stress. The economic hardship scale consists of 20 items and the following 4 subscales: economic adjustment, financial strain, inability to make ends meet, and not enough money for necessities. The composite economic hardship score is z-score transformed, with higher scores indicating worse financial status. ISEL contains 40 items that fall into four 10-item subscales as follows: appraisal support, belonging support, self-esteem support, and tangible support, with each subscale ranging from 0 to 30. Higher scores indicate more interpersonal support.

## Conclusion

This study indicates that the psychological status of patients with breast cancer, and all cancers, requires attention during the COVID-19 pandemic. Patients with higher levels of perceived stress are at risk for having greater distress and anxiety during the COVID-19 pandemic than those with lower scores. These findings can help nurses to identify vulnerable patients during the ongoing COVID-19 pandemic and with other public safety crises. Although all patients may have some level of anxiety, those with higher levels of emotional distress during routine clinical screening may benefit from additional targeted support and emergency guidance in clinical practice.

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**Jian Zhao, RN, MS**, is a PhD student in the School of Nursing at the University of Pittsburgh in Pennsylvania; **Susan R. Mazanec, PhD, RN, AOCNP®, FAAN**, is an assistant professor in the Frances Payne Bolton School of Nursing at Case Western Reserve University and a nurse scientist at University Hospitals Seidman Cancer Center, both in Cleveland, OH; and **Margaret Rosenzweig, PhD, FNP-BC, AOCNP®, FAAN**, is a distinguished service professor in the School of Nursing at the University of Pittsburgh in Pennsylvania. Zhao can be reached at [jjz192@pitt.edu](mailto:jjz192@pitt.edu), with copy to [ONFEditor@ons.org](mailto:ONFEditor@ons.org). (Submitted July 2021. Accepted October 22, 2021.)

This research was funded by the National Institute on Minority Health and Health Disparities (1R01MD012245-01, the Symptom Experience, Management, and Outcomes According to Race and Social Determinants of Health [SEMOARS] During Breast Cancer Chemotherapy study).

Zhao and Rosenzweig contributed to the conceptualization and design and provided the analysis. All authors completed the data collection and contributed to the manuscript preparation. Zhao provided statistical support.

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