TRIPLE-NEGATIVE BREAST CANCER SURVIVORS: POST-TRAUMATIC STRESS DISORDER, POST-TRAUMATIC GROWTH, QUALITY OF LIFE, AND UNMET MENTAL HEALTH NEEDS

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ABSTRACT

The purpose of this mixed-method study was to investigate levels of PTSD, PTG, QOL, their relationships, and unmet mental health needs of triple-negative breast cancer survivors diagnosed between stages 2b-4 and 2-5 years post-treatment. Participants were recruited through two cancer organizations, breast health navigators, TNBC support groups, and online breast cancer support groups. Sixty-one participants completed the PTSD Checklist-Civilian Version (PCL-C), Post-Traumatic Growth Inventory, and the Functional Assessment of Cancer Therapy-Breast (FACT-B). Thirty participants completed the optional short answer questions about unmet mental health needs. Participants' mean score of 48 (SD=12.22) on the PCL-C was higher than 44, PTSD scores above 44 are considered indicative of PTSD ($t_{(60)}$ 2.38, p = 0.02), according to the Department of Veteran Affairs. Participants had moderate levels of PTG and moderate levels of QOL. Compared to the published sample of TNBC patients during treatment, this sample of TNBC survivors 2-5 years post-treatment had lower total QOL (M = 80.67,SD = 19.88) ($t_{(60)}$ =-3.70, p < .001), as well as lower QOL for all subscales. Lower PTSD (b = -1.15, p < .001) and higher PTG (b = -1.15, p < .001) both predicted higher total QOL. The qualitative short answer questions revealed important themes for mental health like the need for therapy and counseling, lack of information and support, and lack of understanding, care, and information on the transition into survivorship. Anxiety and fear of recurrence were the top reported mental health challenges. Mental health symptoms of depression, anxiety, and the need for support were identified as unmet mental health needs currently, which supports current research's future application of prevention, identification, and interventions or treatments.

Keywords: PTSD, breast cancer, hormone-fed breast cancer, triple-negative breast cancer, TNBC, depression, anxiety, chemotherapy, survivor.

Copyright Page

Dedication

The dissertation is dedicated to my family members who were taken too early due to cancer, my daddy, U.S. Army Master Sergeant Carl Kenneth Horton – lung and esophageal cancer, and my paternal grandmother, Dulcie Horton – “female” cancer; my paternal aunts, Ruby Jean, and Shirley Horton – breast cancer; and my maternal grandmother, Nurse Edith Mable Beasley – colon cancer, who instill a love of academics within me. Also, this study is dedicated to the friends I have lost from triple-negative breast cancer and all cancer patients and survivors who suffer(ed) silently from PTSD and anxiety.

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CHAPTER 1: INTRODUCTION TO THE STUDY

Introduction

Breast cancer (BC) is the most diagnosed cancer and the leading cause of death in women (Eriksson et al., 2018; Finlay et al., 2015). A female born today will have a 1 in 8 chance of developing BC in their lifetime. In 2020, 3,886,830 women lived in BC (National Cancer Institute, 2023). Breast cancer can be life-threatening and cause long-term diagnosis-related and treatment-related deficits that can lead to chronic mental health conditions impacting patients' QOL (Brown et al., 2020; Duma et al., 2018; Fortin et al., 2021). For those reasons and more, BC patients are at a high risk of developing post-traumatic stress disorder, post-traumatic stress symptoms, anxiety, and depression that can go undiagnosed well into survivorship (Leano et al., 2019).

Despite patients being in a hostile, life-threatening, and traumatic medical situation, research has found that such negative experiences can also lead to a positive experience or outlook in the face of trauma called post-traumatic growth (PTG) (Michalczyk et al., 2022). A patient or survivor can be experiencing PTSD symptomology while simultaneously experiencing PTG (Baník et al., 2022; MoshirPanahi et al., 2020). Because of the life-threatening attributes associated with a BC diagnosis, there are studies about the risks of depression, anxiety, post-traumatic stress disorder/post-traumatic stress symptoms, and post-traumatic growth in cancer and BC patients (Leano et al., 2019; Michalczyk et al., 2022; Ng et al., 2017; Niedzwiedz et al., 2019). However, this study focused on a particularly aggressive subtype of BC known as TNBC. The current research does not address PTSD symptoms or PTG, unmet mental health needs, and the impact of these factors on TNBC survivors’ QOL.

Triple-negative breast cancer is of particular interest because of its negative biological factors. TNBC is an aggressive subtype of BC that is not linked to hormone receptors found in other, more common types of BC. Women diagnosed with TNBC are typically younger (Bergin, 2022) TNBC accounts for 50-80% of BRCA 1 mutation carriers and has a family history of an unspecified subtype of BC (Domagala et al., 2017). TNBC patients have a 50% chance of passing on the genetic mutation (Isselhard et al., 2023). African American TNBC patients are disproportionately affected by BRCA 1 (Dietze et al., 2015; Watkins et al., 2017). In one study among TNBC women, a 30% predictive value for the presence of the BRCA 1 mutation was revealed, and 50% of the women were diagnosed at age 50 and below (Comen et al., 2011).

Despite the potential traumatic impacts of TNBC, there is limited research on TNBC survivors’ QOL, PTSD, and PTG, or the TNBC survivor’s unmet mental health needs. There is little research on 2-5 years post-treatment when chances of recurrence are exceptionally high. With TNBC renowned for being aggressive, with a high mortality rate, high recurrence rate, and onset in younger women, there is a critical need to understand the mental health needs of this population so that the oncology support team can develop a protocol to ensure the survivors do not go undiagnosed and untreated.

This research study adds helpful information to research about PTSD symptoms, PTG, QOL, and unmet mental health care needs among TNBC survivors after treatment is complete and they are well into survivorship. This study revealed survivors’ views of the emotional issues affecting their QOL and where they fall within post-traumatic growth and stress.

Background

Finding out you have cancer is life-changing in many ways. A cancer diagnosis automatically brings a stigma attached to emotions like fear and anxiety; thus, it can significantly affect a patient’s emotional health (Baník et al., 2022). Treatments and procedures like radiation, lumpectomies, mastectomies, chemotherapy, and genetic testing results may impose more surgeries and cause chronic medical dilemmas. Research shows that cancer patients have a high risk of developing PTSD and PTSD symptoms, so much so that criteria have been revised to include cancer-related PTSD in the Diagnostic Statistical Manual (Shand et al., 2015). The cancer-related PTSD was then adapted and included again in the fifth edition of the DSMV (Leano et al., 2019; Chan et al., 2018; Kangas et al., 2013). In the DSMV, PTSD is classified as a trauma-related, stressor-related disorder of a “catastrophic and sudden” type, including a fourth cluster of symptoms: adverse changes in cognition and mood linked to a traumatic event (Shand et al., 2015).

Research has shown that BC patients and survivors are at “great risk” for developing post-traumatic stress disorder and post-traumatic stress symptoms during different diagnosis and treatment phases (Carletto et al., 2019) Several studies corroborate that BC patients can have PTSD and other mental health symptoms, like anxiety, long after treatment and well into survivorship (Chan et al., 2018; Leano et al., 2019). With medical advancements, cancer patients are living longer and reaching the cancer-free status of survivorship at higher numbers.

Research has shown that survivors can continue to experience negative psychological impacts years after they are cancer-free (Parker et al., 2023). Field trials for the DSMIV found that 22% of cancer patients experience some level of lifetime PTSD (Leano et al., 2019).

Therefore, studies indicate that more research is needed. The patient's team must add assessment tools to help identify cancer-related emotional issues brought on by the patients' and the survivors' "new normal." Research reveals that PTSD, if caught early, can be addressed by implementing appropriate assessments and intervention strategies (Leano et al., 2019).

For most women, the BC diagnosis is sudden and catastrophic. This is especially true for younger women as opposed to menopausal women because of the distress related to issues like fertility, body image, and social support (Duma et al., 2018). Younger women between the ages of 35 and 50 reported higher levels of distress, depression, and worse mental health-related QOL who may still be in the child-bearing years, as treatment may reduce their ability to have children (Duma et al., 2018)Another layer of challenge is added when a patient carries a diagnosis of TNBC.

According to Howard and Olopade, based on a study from Atlanta TNBC was found to be more common in patients aged 20-39 (Howard et al., 2021). Therefore, patients are diagnosed younger in later stages and with additional warnings and stigmas like a low response to treatment, highly invasive nature, the highest recurrence rate of all the subtypes, heart-damaging treatments, negative impact on survivor's child-bearing abilities and sexual function, as well as knowledge of the "poorer prognosis" (Gonçalves et al., 2018)."

TNBC has been recognized as the most aggressive subtype for two decades with almost one-quarter of patients dying within five years (Howard et al., 2021) About 42% of TNBC patients have a rapid recurrence, topping at three years post-diagnosis. TNBC recurrence is extremely aggressive and typically happens within the first two to three years after treatment with a peak at three years (Stewart et al., 2019). TNBC disproportionately affects Black women and carriers of BRCA mutations, which contributes to the increasing cases of early-onset breast cancer and early death (Howard et al., 2021)The standard of care for this aggressive type is limited, and there are no targeted therapies like in the other BC types. Therefore, TNBC is of specific interest because research among survivors of this subtype and their mental health needs is minimal.

To understand TNBC, one must understand information about BC first. Therefore, in this chapter, a background of BC is provided, its diagnosis and categorization, treatment, TNBC, PTSD, PTG, and QOL. The stage of BC and other factors are vital for oncologists and surgeons to create the most effective treatment plan (National Cancer Institute, 2023) and for understanding this proposal.

Breast Cancer

Understanding BC is essential to understanding TNBC and the BC journey. A BC diagnosis carries many different attributes that a patient will learn about their specific disease and type, like what to expect going forward to treatment. For example, there are different types of BC and various treatments for the specified tumor and stage (National Cancer Institute, 2023).

Breast cancer is the most common non-skin cancer diagnosed in women (Schonberg et al., 2022). The disease is the leading cause of cancer-related deaths among women in the world (Lee et al., 2022). Breast cancer is responsible for one in four cancer cases in women, with one in six resulting in deaths. Ten to 20% of all BC patients have a family history of BC that spans multiple generations, according to Lee et al. (2022). The Mayo Clinic reports that doctors estimate that 5- 10% of BC can be linked to a gene mutation passed from one family generation to another (Mayo Clinic Staff, 2023).

According to Siegal et al. (2023), based on the American Cancer Society's estimates collected by the National Center for Health Statistics, a projected 1,958,310 new cases with 609,820 cancer deaths are expected to occur in the United States this year (Siegal et al., 2023). In 2023, 300,500 cases of BC are expected to occur: 2,800 male cases and 297,790 female cases. It is estimated that 43,700 people will die of BC: 530 deaths in males and 43,170 deaths in females (Siegal et al., 2023). According to the National Cancer Institute, less than one percent of BC occurs in men (National Cancer Institute, 2023).

What is BC? Breast cancer is cancer in the breast tissue that forms when mutated cells grow "out of control" (American Cancer Society, 2023). Unlike normal damaged cells that die off, cancer cells are abnormal, and they multiply and divide quickly, eventually forming a tumor. Breast cancer can start from different areas in the breast tissue. When BC spreads or metastasizes, it travels into the body's lymphatic system or the blood (American Cancer Society, 2023).

When a patient is diagnosed with BC, typically, the physician makes a referral to a medical oncologist and a surgeon. The patient then finds out the type of BC, the stage of BC, the grade, and the tumor size (Breast Cancer Now, 2023). These factors are all considered when the oncology team discusses prognosis and treatment options (Breast Cancer Now, 2023).

Classifying Breast Cancer

As mentioned above, BC diagnoses carry identifiers to help determine treatment options for the patient. The classifications are stage, grade, tumor size, and lymph node status. The specific hormone receptor status determines the cancer subtype. "TNM" is a classification that details the primary/main tumor more. "T" represents the tumor size. "N" gives more details about lymph node involvement, and "M" is the metastases status. The letters are followed by numbers: “T,” 0-4; “N” 0-3; and “M” is 0-1. With “T,” the higher the number, the more significant the tumor. With “N,” the numbers correspond to the number of lymph nodes involved. Lastly, an “M” of zero indicates the BC has not spread, and one it has spread (National Cancer Institute, 2023).

Following a tumor biopsy, the tissue is tested for its receptor status (Mayo Clinic Staff, 2023). Hormone receptors are identified to see if they test for specific proteins: estrogen, progesterone, and human epidermal growth factor. There are four subtypes to be determined: estrogen positive (ER+), progesterone positive (PR+), human epidermal growth factor type 2 receptor (HER2/neu or HER2), triple positive, and the focus of this study – TNBC (Merck & Co., 2023).

Triple-negative breast cancer tumors do not have hormone receptors; therefore, hormone replacement therapy is not an option. Also, there is no abnormal amount of HER2 in TNBC tumors; thus, HER2 drugs do not work for TNBC, leaving no targeted therapies for this subtype. TNBC occurs in younger, African American, and BRCA-positive women and grows more rapidly than other subtypes (Dietze et al., 2015). Chemotherapy remains the current standard treatment regimen (Merck & Co., 2023; Tan, 2018).

Also, according to the National Cancer Institute (2023), the tumor is given a stage to describe the size of the cancer and just how far it has spread: stage 1-4. The stage evaluates the size of the tumor, lymph node involvement, receptor status, and whether the cancer has spread (National Cancer Institute, 2023). Stage numbers have either an A, B, or C after them. These letters are based upon the TNM information, with A reflecting less tumor severity, increasing to C, which is the most severe. The process of staging is complex but ranges from Stage 1A, where the tumor is two centimeters or less and is contained in the breast, to Stage 4, where lymph nodes may or may not cancer cells, but the BC has metastasized, meaning it has spread to other parts of the body (Breast Cancer Now, 2023). Lymph node involvement, if positive, reveals there is a chance the cancer has traveled to other parts of the body from its original location lymph nodes sieve viruses, bacteria, and cancer cells out of the body (National Cancer Institute, 2023).

Breast cancer tumors can be either non-invasive or invasive. Invasive BC is when the cancer has spread into surrounding breast tissue. The types of invasive BC include invasive ductal carcinoma and invasive lobular carcinoma. Invasive ductal carcinoma is the most common type, making up 70-80% of BC. Invasive lobular carcinoma occurs in one in ten invasive BC (American Cancer Society, 2023).

TNBC is an invasive, aggressive BC. Many sources say it accounts for about 15% of all BC in women and is challenging to treat (American Cancer Society, 2023; National Cancer Institute, 2023). The second type of invasive BC is inflammatory BC, where cancer cells block the lymph vessels in the skin, causing the breast to appear “inflamed,” representing 1-5% of BC. Both TNBC and inflammatory BC are aggressive (American Cancer Society, 2023)

The tumor is also given a grade (grade 1-3), which tells how different the cancer cells are compared to normal breast cells and how quickly they grow (American Cancer Society, 2023; National Cancer Institute, 2023). BC grade 1 is most like normal breast cells and is typically slow-growing. Grade 2 BC is when the cells look less like normal breast cells and grow faster. Lastly, grade 3 cells look different from normal breast cells and usually grow fast (American Cancer Society, 2023; National Cancer Institute, 2023).

Other less common types of BC begin forming in other cells within the breast. These BCs are much less common and may need different treatment modalities. Though not the focus of attention here, they are as follows: Paget disease of the breast, angiosarcoma, and phyllodes tumor (American Cancer Society, 2023; National Cancer Institute, 2023).

Treating Breast Cancer

Cancer treatment depends on multiple medical factors, and BC is no different, but the ultimate purpose of all treatment is assisting patients to make it into survivorship. BC treatment considers all the factors covered in the previous section: tumor size, grade subtype, lymph node, and hormone-receptor status. The standard treatments for BC are radiography, chemotherapy, hormone therapy or biological therapy, and surgery to remove the tumor (Łukasiewicz et al., 2021). The treatment order and combination of options depend on the oncologist, an expert who will guide the patient in choosing the right treatment plan for them.

Triple-Negative Breast Cancer

TNBC is particularly aggressive and has a high risk for reoccurrence and/or metastasizing. TNBC accounts for most BC-related deaths, making it infamous in the BC domain for its “poor prognosis” (Sulaiman et al., 2022). The subtype TNBC is renowned for its ability to affect younger women, which carries other life-altering changes. TNBC is also often found when the cancer is in its later stages. Treatment is minimal, and there is no “targeted therapy” like in the other subtypes of hormone-fed BCs. TNBC, whether it is discovered and diagnosed in early or late stages, is still difficult to treat. There continues to be a lack of specific treatment options for this subtype (Sulaiman et al., 2022). A TNBC diagnosis is often linked to poor outcomes due to the development of metastases in secondary areas like the brain, lungs, and bone, which is “incurable,” and only treatable (Almansour, 2022).

TNBC treatments include surgery, lumpectomy or mastectomy, radiation, systemic chemotherapy with anthracyclines, and/or taxanes. Chemotherapy is still the standard of care and therapy of choice for TNBC (Sulaiman et al., 2022). The standard-of-care chemotherapy for the treatment of TNBC falls under the class Anthracyclines – Doxorubicin - sometimes referred to as the "Red Devil." When given in cumulative doses, Anthracyclines increase the patient's risk for heart failure and, in turn, increase mortality from congestive heart failure (Schreiber et al., 2022). Despite its role as a leading cause of mortality in cancer survivors, the issues of cardiotoxicity and cardiomyopathy are often overlooked in the case of TNBC because there are such limited treatment options. Therefore, a persistent and critical issue for these patients is the rate of heart failure and cardiomyopathy, which is the leading cause of mortality and morbidity in survivors of cancer (Sulaiman et al., 2022).

Psychological Impact of Cancer

Finding out you have cancer brings impactful, life-changing, and life-threatening stress. According to the DSM V, the diagnosis of cancer -a life-threatening illness- must be "sudden and catastrophic" to meet the criteria for PTSD (American Psychiatric Association., 2013; Leano et al., 2019)For women, the diagnosis of TNBC is, in many cases, sudden, catastrophic, and life-threatening. To take it a step further, being diagnosed with the subtype that is deemed the worst type to have, the one with the highest risk of recurrence and morbidity, and the one with the least amount of treatment options, TNBC may exacerbate the "life-threatening" aspect of BC.

Triple-negative BC has minimal research on the impact on survivor's mental health. Therefore, for this paper, most resources on background refer to BC in general, regardless of the subtype. There is a significant amount of research on the impact of a BC diagnosis on patients and the prevalence of PTSD, QoL, and other mental health topics; however, "far less is known about the survivorship" of TNBC (Shen et al., 2020)

Today, more medical advancements and new treatments are available to cancer patients; therefore, more people are moving into the survivorship stage. With survivorship among BC patients increasing, there is a need for more research on this stage of cancer (Nardin et al., 2020). Specifically, there is a necessity for more studies of BC survivors’ psychological needs so that treatment teams can begin to offer assessments, prevention, and intervention strategies instead of scaling back on intensive treatment and services.

Little is known about the transition into survivorship post-treatment for BC patients especially in TNBC’s survivorship phase (Parker et al., 2023). Few studies explore TNBC survivorship further than immediate post-treatment. Therefore, TNBC is of particular interest moving forward because of the gap in research and the cancer’s aggressive nature, lack of treatments, high recurrence rate, and high mortality rates (Finlay et al., 2015).

The BC patients’ journey is just beginning with a positive biopsy result, a disease-specific diagnosis, and a treatment plan. The BC diagnosis carries a well-known life-threatening stigma with good reason and spurs a lot of complex emotions in most patients. Many factors affect the patient’s treatment plan and prognosis: the stage of cancer, the grade of the tumor, the type of tumor, and more (National Cancer Institute, 2023). The early steps that follow “you have breast cancer” begin the emotional roller-coast that comes with a life-threatening disease diagnosis.

Post-Traumatic Stress Disorder/Post-Traumatic Stress Symptoms

Post-traumatic stress disorder (PTSD) is characterized by intrusion, avoidance, negative mood, hyperarousal symptoms, and possible dissociative symptoms due to traumatic life experiences (Brown, 2020). When a patient experiences a “life-threatening, catastrophic and sudden” event during the treatment or cancer diagnosis, it qualifies as a criterion in the DSM known as cancer-related PTSD (American Psychiatric Association, 2013). Various cancer-related events may be traumatic, such as fear of recurrence, waiting on significant scan results, physical symptoms, and harsh treatments (Brown et al., 2020; Leano et al., 2019).

Triggers can be follow-up scans, visits to the cancer center, physical symptoms, or the death of someone with cancer (Leano et al., 2019). For example, BC patients might be triggered when seeing a pink ribbon, which reminds them of the diagnosis, recurrence, and treatment side effects, and then they feel panic and anxiety (Leano et al., 2019). PTSD is more common among cancer patients than in the general population (Swartzman et al., 2017) Despite PTSD’s commonality among cancer patients, oncologists often lack the training to address mental health symptoms.

PTSD/PTSS may negatively influence the quality of life (QOL), which, according to the APA (2013), is an individual's perception of their position in life in the context of the culture and value system in which they live and concerning their goals, expectations, and standards and concerns (APA, 2013). For example, symptoms can lead to physical inactivity, medication nonadherence, increased risk of suicide, depression, and anxiety (Brown et al., 2020). A patient’s QOL may be affected by the diagnosis itself, resulting in anxiety, depression, and inability to work due to treatment side effects like pain, fatigue, nausea, and multiple oncology appointments and/or scans (Watkins et al., 2017). Brown (2020) found that in the United States, less than two-thirds of people with PTSD achieve recovery (Brown et al., 2020).

Leano et al. (2019) also found evidence that patients with BC have a significant risk of developing PTSD and correlated disorders like anxiety, insomnia, and depression, reaffirming that a limited number of studies have evaluated the efficacy of psychological interventions to treat it. It is essential to detect mental health symptoms in patients with BC to provide appropriate clinical interventions and treatment (Leano et al., 2019).

Female patients with BC face an increased risk of these symptoms and effects on daily functionality, affecting QOL (Brown et al., 2020). With BC occurring at younger ages, women may be parenting young children and may even be in child-bearing years when diagnosed. Women may have to undergo mastectomies, resulting in a shift toward a negative body image (Dinapoli et al., 2021). Sexual dysfunction and inability to get pregnant in the future often occur due to treatment-induced early menopause (Vazquez et al., 2020)A large amount of BC patients experiences multiple simultaneous psychological symptoms during their cancer care trajectory, such as distress, anxiety, depression, fear of recurrence, cognitive impairment, and physical changes like hair loss due to harsh chemotherapy treatments, which together may result in PTSD (Dinapoli et al., 2021)

Dinapoli et al. (2021) found that patients report psychological symptoms that can lead to PTSD at different stages of the diagnosis and treatment process. A patient's anxiety and depression can be triggered by symptoms brought on by chemotherapy. For example, a patient goes in for a follow-up scan and is already in pain from chemotherapy. Instead of recognizing that the scan triggers anxiety and the pain is a side-effect of treatment, the patient may think, "I have bone pain because my breast cancer has metastasized into the bone." Therefore, waiting for scan results while experiencing treatment-induced bone pain may lead to the recurrence of anxiety and, depression, insomnia due to worry.

Psychological symptoms may be triggered by various chemo-induced physical symptoms, like changes in memory and thinking, referred to as "Chemo brain" (CB) or chemotherapy-induced cognitive impairment (CICI). CB or CICI presents as losses in the patient's memory, difficulty learning, lack of concentration, reasoning, difficulty in executive function, and visuospatial skills (Eide & Feng, 2020). “Chemo brain” can result in changes in memory, learning, concentration and reasoning, executive function. The symptoms can negatively impact the patient's new daily life; for example, driving, paying bills, and reading technical documents (Dinapoli et al., 2021). A patient might be triggered when they cannot complete before-treatment day-to-day functioning, whether due to treatment-induced symptoms and/or the myriads of oncological appointments.

In survivorship, there is a considerable reduction in the amount of contact with the patient’s treatment team and fewer scans; therefore, transitioning into this phase carries with it feelings of being abandoned, isolated, and left to face the illness alone (Parker et al., 2023). Being diagnosed with a life-threatening illness has been recognized as one of the significant stressors that cause PTSD (American Psychiatric Association, 2013). Therefore, with aggressive treatment, poor survival rate, and high rate of occurrence, TNBC patients and survivors are susceptible to a myriad of mental health issues and have reported higher levels of anxiety, intrusive thoughts, avoidant behavior, and depression compared to non-TNBC patients (Vadaparampil et al., 2017). These symptoms, coupled with the life-threatening cancer disease, may lead to PTSD, and can affect long-term QOL in survivors.

Post-Traumatic Growth

According to a study by Brown et al. (2020), there has been increasing interest in PTSD and Post-traumatic growth (PTG) among cancer patients/survivors. PTG is a term coined in 1996 by Tedeschi and Calhoun that means that amid trauma, a person can also experience growth by accepting a “new reality.” The conceptual model of PTG has been defined as an “innate biological mechanism” that protects a person against stress or traumatic experiences. Bernard et al. (2023) found that research suggests that during trauma, people experience psychological stress that can have negative and/or positive changes in response to the event. As time passes, the mental struggles post-trauma can invoke a transformative, positive change in the psyche –PTG (Bernard et al., 2022).

In patients and survivors of BC, Michalczyk et al. (2023) measured PTG in 100 women with BC and found that all participants showed some form of PTG. The research also revealed a co-occurrence of resilience and PTG, though they are separate components. In another study, Bernard et al. (2023) also found that PTG is linked to lower levels of depression in palliative care patients and that people can develop a “deeper meaning and greater appreciation” of their lives (Bernard et al., 2022).

According to Fekih-Romdhane et al. (2022), previous research suggested a PTG prevalence in 98% of women diagnosed with BC between 1 and 5 years after diagnosis. Capaldi et al.’s research (2021) revealed that PTG is a pathway to becoming more resilient, leading to improved psychological outcomes (Capaldi et al., 2023). Going forward, it is essential to use the current research to identify treatment strategies to foster PTG in oncological patients and survivors for better mental health and relief from PTSD symptomatology.

Although not a study specifically about PTG, Watkins et al. (2017) explored anxiety, depressive affect, and coping among African American women with TNBC vs. non-TNBC, all immediately post-treatment. Among both groups, the main finding found that increase coping capacity was significantly linked with less anxiety and depression and an increase in emotional and cognitive functioning. Watkins concluded both groups might benefit from receiving a comprehensive psychological care program (Watkins et al., 2017).

Quality of Life

QOL is subjective; therefore, the BC patient's perception of their own QOL and the effect of the BC on their life is what matters (Shen et al., 2020). Recent research showed a significant number of women's QOL will continue to have low decline and even continue to decline several years after treatment (Pat-Horenczyk et al., 2023). In this study, one focus will be investigating the domains of QOL among TNBC survivors. It is important to note that the patient and survivor's QOL is holistic: one thing affects another, which affects another. For BC patients and survivors, as previously mentioned, there are not only psychological impacts, but there are also physical changes due to surgeries, chemotherapy, and radiation, all of which can have lasting effects and, in turn, impact psychological as well. Yet according to Niedzwiedz et al. (2019) there is a lack of "high-quality" into the mental health of "long-term" cancer survivors, potential impact of long-term and "late" effects of treatments (Niedzwiedz et al., 2019)

There are two current research studies specifically devoted only to TNBC and QOL. Vadaparampil and colleagues (2017), and Shen and colleagues (2020) looked at two specific populations within TNBC. Vadaparampil et al. (2017) investigated the QOL of TNBC and non-TNBC African Americans, while Shen et al. (2020) looked at QOL in Chinese TNBC patients. Both studies revealed low QOL in TNBC patients and survivors. Specifically, Vadaparampil et al. (2017) found that Black TNBC patients had a significantly poorer QOL than Black non-TNBC patients (Benson et al., 2018). Further, the levels of QOL Shen et al. found among Asian TNBC patients were comparable to that of Vadaparampil et al.’s Black TNBC patients (FACT-B: Shen et al. $\bar{X}$=90.4 (SD=16.6); Vadaparampil et al. $\bar{X}$=90.1 (SD=28.0). The mean time since diagnosis for Vadaparampil et al. (2017) participants was 18.5 months (immediately following active treatment, whereas the participants in the Shen et al. (2020) study were actively receiving treatment. (Vadaparampil et al., 2017). There has been no research on QOL in survivors with TNBC at the 2-year post-treatment mark, where recurrence is most likely.

Current Research in TNBC

TNBC makes up 10-15% of all BC cases. This subtype of BC continues to be the most difficult to treat. TNBC is particularly aggressive, spreading quickly and often returning after treatment. Despite research efforts, chemotherapy continues to be the standard of care in treatment with limited benefits (Won & Spruck, 2020).

Despite the treacherous slope that is TNBC, there appear to be only a few current studies on TNBC QOL and psychological distress and no current research on TNBC survivors' PTSD or PTG. One study examined QOL and psychological distress in Black survivors with TNBC (Vadaparampil et al., 2017), one was on QOL and coping in TNBC survivors in China (Shen et al., 2020), and the third studied psychological distress and coping among Black TNBC survivors (Watkins et al., 2017). There is no study on TNBC survivors’ unmet mental health needs or the prevalence of PTSD or PTG. Therefore, there is a gap in research within this specific population of BC patients (Ambaboldi et al., 2017).

Ried et al. (2018) found that 13% of BC patients voiced a need for psychological support and 20% had “above-average” stress levels (Riedl et al., 2018). Chen et al. (2015) revealed that cancer patients with untreated mental health issues can lead to destructive consequences like less treatment compliance, decreased survival rate, increased medical costs, and lower QOL (Wang et al., 2020). Patients must be educated and empowered to recognize depression, PTSD, anxiety, and maladaptive coping, like catastrophizing and negative statements and thoughts (Watkins et al., 2017). Shen et al. (2020) determined that supportive programs, interventions to increase hope, self-efficacy, and community support should be included to help identify PTSD and improve QOL while working with this specific group (Shen et al., 2020).

The research suggests BC patients are facing a life-threatening illness and life-altering treatments and can simultaneously be experiencing PTG (Leano et al., 2019). The trauma ramifications can be fierce, but TNBC survivors may also find growth in the trauma. Regardless, BC patients are not getting the help they need for mental health issues like PTSD (Leano, 2019). There is a need to understand the presence of mental health-related issues more fully and PTG in TNBC survivors (Leano, 2019), especially at three years post-treatment when the recurrence threat is at its peak (Stewart et al., 2019). TNBC patients have proven to have the highest recurrence rate of the disease within the first five years after having been diagnosed (Reddy et al., 2018).

Problem Statement

The proposed study aims to investigate PTSD symptoms, PTG, QOL, and unmet mental health needs among TNBC survivors 2-5 years post-treatment. TNBC is life-threatening and potentially psychologically damaging, leaving patients at a high risk of developing mental health symptoms like PTSD. With limited and heart-damaging neoadjuvant chemotherapy, drastic surgical procedures, high recurrence rate, and high mortality rate, TNBC is undoubtedly a qualified candidate for the causation of PTSD symptoms, yet there are few studies on this specific subtype of BC.

Research suggests that BC patients face a life-threatening illness and life-altering treatments, putting them at high risk for post-traumatic stress disorder and post-traumatic stress symptoms, including anxiety and depression, suicide, neurocognitive and sexual dysfunction (Carreira et al., 2018)There is also evidence of BC patients suffering from anxiety, depression, fear of re-occurrence, and PTSD that often go undiagnosed, with the symptoms lasting for years (Leano et al., 2019). Importantly, BC patients are not getting the help they need for mental health issues like PTSD (Leano, 2019).

Although the psychosocial impact of non-TNBC is well understood, that of TNBC is not. Preliminary research suggested that those with TNBC vs. non-TNBC have poorer adjustment. TNBC patients and survivors experience higher depression and anxiety and lower QOL than non-TNBC (Vadaparampil et al., 2017). The recurrence rate alone is life-threatening, and it is not surprising that TNBC vs. non-TNBC patients experience more anxiety, intrusive thoughts, over treatment side-effects, and more cancer worry (Vadaparampil et al., 2017)Despite the psychological distress and poor QOL among individuals with TNBC, given that those with non-TNBC have experienced PTG, there is a possibility of PTG for those with TNBC (Banick et al., 2022).

To date, there have only been three studies on QOL and psychological distress in TNBC patients and survivors: two on Black TNBC patients (Vadaparampil et al., 2017; Watkins et al., 2017) and one on Chinese TNBC patients (Shen et al., 2020) – all during or immediately after treatment. There is no current research on TNBC survivors' PTSD, PTG, or mental health needs. Further, About 40% of TNBC patients diagnosed in stages 1-3 have a recurrence following standard treatment (Stewart et al., 2019)TNBC typically returns in 42% of patients rapidly with a peak at three years after diagnosis (Stewart et al., 2019) with 75% of recurrence within 3 years (van Roozendaal et al., 2016). The problem is there is no research exploring mental health outcomes of TNBC patients 2-5 years post-treatment, which is clearly supported by current literature.

Purpose of the Study

The purpose of this research was to investigate the mental health of women who have survived triple-negative breast cancer (TNBC) and must be at least 18 years old, and 2 to 5 years post-treatment. The study focused on symptoms related to post-traumatic stress disorder (PTSD), post-traumatic growth (PTG), quality of life (QOL), and unmet mental health needs. The findings of this study can be used to gain a better understanding of the mental health challenges that TNBC survivors face after treatment, especially when recurrence is most likely to occur. The goal is to use this understanding as a steppingstone towards better mental healthcare for TNBC survivors in the future.

This mixed-method study investigated PTSD symptoms, PTG, QOL, and unmet mental health care needs among TNBC survivors at least 18 years old - and 2-5 years post-treatment who were diagnosed between stages 2B-4. The quantitative portion included three questionnaires that focused on PTSD, PTG, and QOL, while the qualitative portion included short answer questions that followed the questionnaires. The questionnaires and short answer questions may offer new information about this specific group of survivors and their unmet mental health needs.

Research Questions & Hypothesis

Research Questions

RQ1: What are the levels of PTSD among TNBC survivors who are 2-5 years post-treatment?

RQ 2: What are the levels of PTG among TNBC survivors who are 2-5 years post-treatment?

RQ 3: What are the levels of overall QOL, as well as physical, social/family, emotional, functional, and BC-specific well-being among TNBC survivors who are 2-5 years post-treatment?

RQ4: Do levels of PTSD, and/or PTG predict overall QOL levels among TNBC survivors 2-5 years post-treatment?

RQ 5: What are the unmet mental health needs of survivors post-treatment?

Hypotheses

Hypothesis 1(RQ1): TNBC survivors 2-5 years post-treatment will have moderate PTSD symptoms.

Hypothesis 2 (RQ2): TNBC survivors 2-5 years post-treatment will have moderate levels of PTG.

Hypothesis 3 (RQ3): TNBC survivors 2-5 years post-treatment will have low scores on overall QOL, as well as physical, social/family, emotional, functional, and BC-specific well-being.

Hypothesis 4: PTSD and PTG levels will predict overall QOL among TNBC survivors 2-5 years post-treatment.

Assumptions and Limitations of the Study

There were limitations to this research proposal. First, a survivor’s cancer can vary among stages, depending on tumor size and metastasis state. The factors of individual diagnosis could affect mental health symptoms or lack thereof. The survivor's coping skills and resilience can also affect mental health and the possible errors of self-reports. Outside differences in mental health treatment, like group therapy, can impact symptom management. Survivors will vary in their diagnoses and treatment strategies depending on the time after treatment. The study assumes that post-treatment includes surgery and chemotherapy. During the post-treatment survivorship phase, TNBC survivors will continue to experience the impact of the cancer journey on their mental health: post-traumatic stress disorder or post-traumatic stress symptoms.

Theoretical Foundations of the Study

Several theories and models are linked to this research proposal: The Stress and Coping theory, PTG theory, a cognitive model of PTSD, and a two-pathway model of resilience in cancer patients. The theories and models within the proposal focus on stress assessment and coping through resilience (Seiler & Jenewein, 2019)The concepts share the idea that a turning point occurs when the individual assesses whether they can cope with the event. Fostering interventions that promote PTG may be useful to survivors.

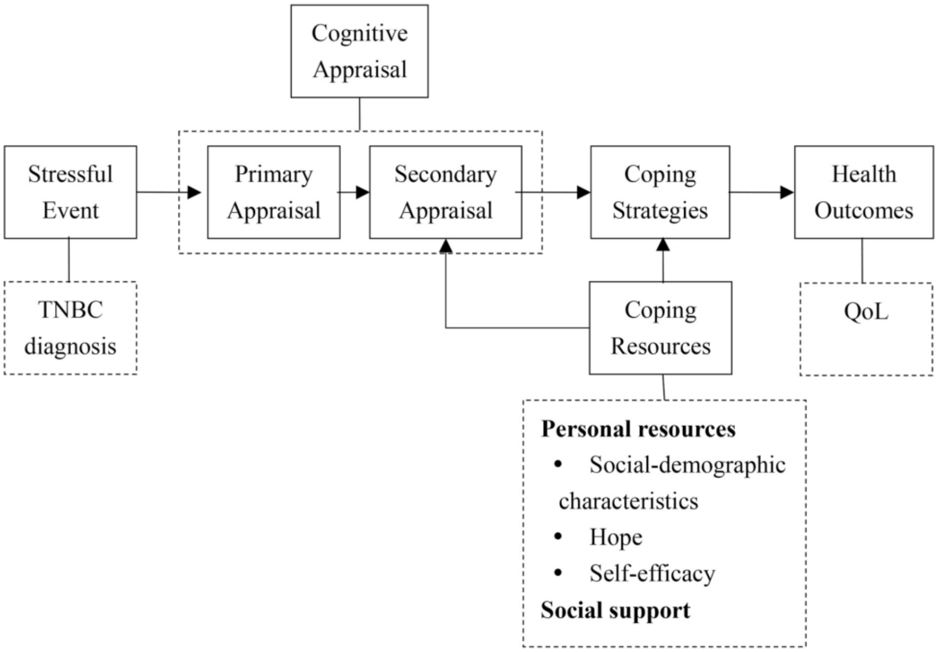
The Stress and Coping Model

The Stress and Coping model, developed by Lazarus and Folkman (1985), has been used extensively in helping understand adjustment to various diseases, including TNBC (Shen et al., 2020). The Theory of Stress and Coping looks at stress as an interaction between environmental events and the individual's appraisal of them (Folkman & Lazarus, 1985). Stress within this theory is defined as a situation that the individual appraises as being relevant to their well-being and for which their resources are taxed or exceeded (Folkman & Lazarus, 1985). When a person faces a life-threatening event, they cognitively begin processing the event to determine their resources for dealing with it. The primary appraisal involves an individual judging if a situation is irrelevant, benign-positive, or stressful (Folkman & Lazarus, 1985). An irrelevant encounter has no significance for an individual’s well-being (Folkman & Lazarus, 1985). A benign-positive encounter means that the individual anticipates a good outcome. A stressful appraisal means that there is potential for either a threat (the potential for harm or loss) or challenge (the potential for growth or mastery), or harm or loss has already occurred (Folkman & Lazarus, 1985). Secondary appraisal involves the individual evaluating the resources for coping and figuring out what they can do to resolve the situation (Folkman & Lazarus, 1985). In this theory, coping is cognitive and behavioral efforts used to manage a person-environment relationship (Folkman & Lazarus, 1985). Coping resources are the characteristics or skills – personally owned or available from others– that can address the stressor (Folkman & Lazarus, 1985). After coping behaviors are engaged or new information is gathered about the situation, a person reappraises the stressor and may adjust their appraisal as more favorable or severe (Folkman & Lazarus, 1985).

Shen and colleagues (2020) applied Folkman and Lazarus’ Stress and Coping theory to their conceptual framework of QOL in individuals with TNBC (Figure 1). This conceptual framework is based on the idea that QOL is determined by three variables: cognitive appraisal, coping resources, and strategies of coping (Shen et al., 2020). Shen and colleagues (2017) argue that the internal coping resources of hope and self-efficacy and external coping resources like social support yield positive expectations and confidence in confronting cancer. These result in a more positive appraisal of and active engagement in coping strategies to combat TNBC, which results in more favorable health outcomes and better QOL.

Figure 1

Conceptual Framework.

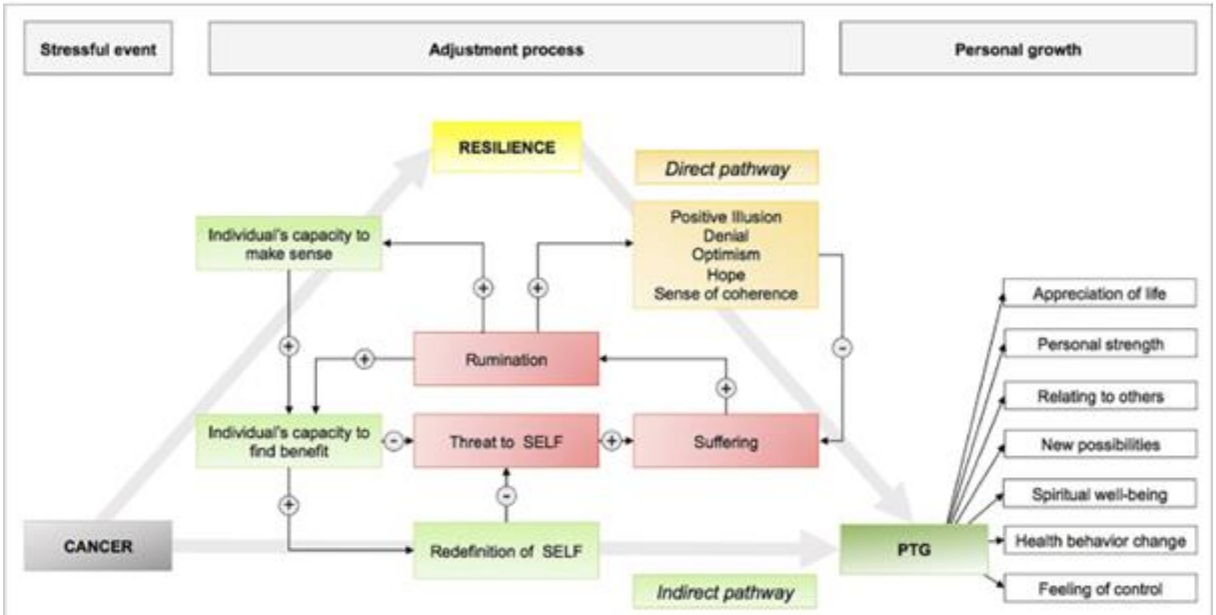


Post-Traumatic Growth

Post-traumatic growth theory is based on personal growth and positive changes that result from a traumatic experience. PTG theorists suggest that a person can develop personal strength, improve social relationships, gain a new outlook on life, an appreciation of life, and a sense of spirituality during a life-threatening event (Seiler & Jenewein, 2019). The PTG and stress-and-coping models focus on coping with a traumatic event like cancer. A cancer diagnosis can motivate a person to re-evaluate his or her place in the world or challenge personal worldviews. Seiler and Jenewein (2019), said cancer survivors cognitively process their illness journey and discover that they have learned new things about themselves and/or others, which is referred to as meaning-making (see Figure 2). As such, because of this newly developed meaning, they reappraise and view their cancer experience as more positive (Seiler & Jenewein, 2019).

Figure 2

Conceptual Framework of Resilience, Meaning Making and PTG.



Note: Seiler &Jenewein's conceptual framework of resilience, meaning-making, and PTG post-cancer diagnosis can be achieved via two pathways of resilience: a direct pathway happens by personality traits and coping skills that buffer "distress and suffering;" an indirect pathway occurs when the individual changes and redefines themselves to achieve a decrease in suffering. (+)=increase; (-)=decrease.

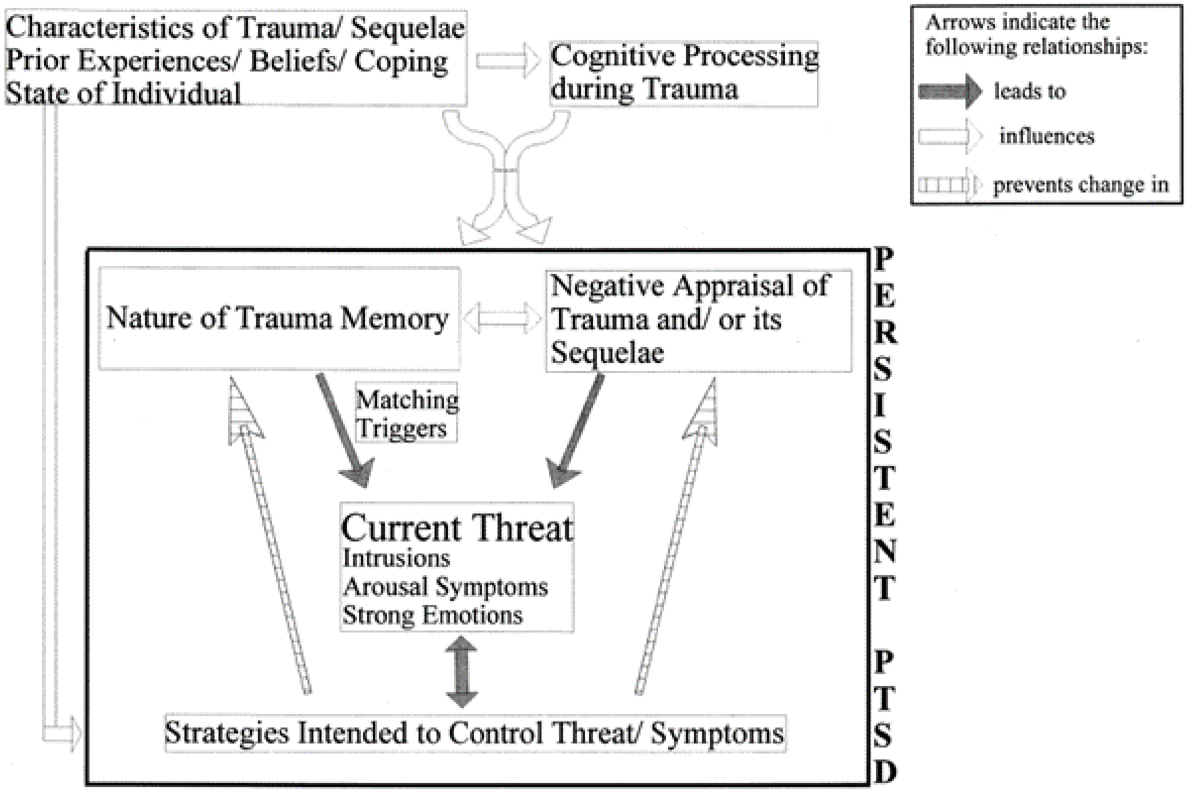
Post-traumatic growth is essential to successfully adjust to having cancer and appears to be mediated by resilience, components of meaning-making, and hope (Seiler & Jenewein, 2019). Coping is the process by which an individual utilizes the skills they have identified that will assist in dealing with the situation (Seiler & Jenewein, 2019). Resilience is essential to the theoretical framework, which measures a person's stress and coping ability. Ideally, the individual will reflect and develop new meaning, PTG, from the traumatic situation. The authors suggested that promoting resilience through PTG in cancer patients and survivors is "critical" in dealing with the adjustment to disease. The authors found benefit-finding among breast cancer patients has predicted better adjustment with less distress and depression (Seiler & Jenewein, 2019).

An important topic in this study is PTSD among TNBC survivors. PTSD, a reaction to a traumatic event or “catastrophic, sudden” life-threatening (medical) event, can become a “persistent” and long-term disorder (Ehlers & Clark, 2000). In the Cognitive Model of PTSD, which can be persistent and lasts for years, occurs when the person processes the trauma as a current, serious life threat. Cancer is a series of life-threatening events that serve as a trigger for trauma onset. The threat of results from several factors: excessive “negative appraisals” of the trauma, disruption in autographical memory by poor elaboration, poor contextualization, and strong perceptual memory and priming. In short, the individual’s appraisal of the traumatic event and memory storage of the event is disturbed by problematic cognitive and behavioral approaches (Ehlers & Clark, 2000)

The Cognitive-Model of PTSD has two key points that may lead to the sense of current threat: the differences in the appraisal of the traumatic event, and differences in the “nature of the memory” and its connection to autobiographical memories. The person’s negative appraisal and the inability to view the threat as temporary sets up the event being viewed as currently a severe threat long after it is over (Ehlers & Clark, 2000). Ehlers & Clark (2000) suggested the inability to view the threat as time-limited causes reexperiencing trauma, intrusive thoughts, hyperarousal, anxiety, and other emotional responses. The key variables of this model are reflected in the author's diagram shown below (Ehlers & Clark, 2000).

Figure 3

A Cognitive Model of PTSD



Biblical Foundation

The Holy Bible offers many verses about Jesus helping the those in need. In Mark, Jesus heals many people, like the leper and the paralytic. The Bible teaches that He is the great physician. As followers of Jesus, Christians are to help those in need and care for people suffering (King James Bible, 1769/2008). Through my own PTG and prayer, the new reality I have as a cancer survivor and clinical counselor is to give back by helping patients and survivors in their cancer journey, focusing on mental health needs and the impact on their QOL.

Vadaparampil et al. (2019) found that hope is integral to psychological health. Christians can offer hope to those who are sick by praying with them, putting that person on their prayer list, and finding new ways to help specific populations through our research. Hope can evolve into resilience, which can foster PTG. Research reveals that women who face BC experience a direct link to PTG from the support of others, and Christians can be there for support.

It is best said in James chapter 5, verses 14-15, If anyone among you is sick, call the church's elders and ask for prayer over him and let them pray over you, anointing you in oil in the name of the Lord. Moreover, the prayer of faith will save the sick person, and the Lord God will raise and forgive him of his sins (King James Bible, 1769/2008). Biblically speaking, Christians have a job to help those in need and take lessons in the valleys of life to fulfill God’s plan.

As doctoral candidates, we are on a learning journey by conviction and prayer to do God’s will. By studying psychology, we use the gift of learning, the blessing of helping, and obedience to God’s plan. In Mark 10:21, Jesus says, I tell you that whatever you did not do for the least, you did not do for me (King James Bible, 1769/2008). In this doctoral program at Liberty University, we remain steady in learning new ways to give back using the gift and passion God has instilled within us.

Ephesians 1:17 tells us Jesus Christ, our savior, gives you the Spirit of wisdom and the revelation in the knowledge of him. In Proverbs 3:13, the Bible tells us that the one who finds wisdom and gains understanding will be blessed. This proposal combines all these things: helping others through conviction, learning Christ-like ways to help people in the face of trauma, and PTG in the reflection of a cancer journey filled with mental health challenges (King James Bible, 1769/2008).

Definition of Terms

The following is a list of definitions of terms used in this study as defined by the National Cancer Institute.

Anxiety - Emotion characterized by apprehension and somatic symptoms of tension when an individual anticipates impending danger, catastrophe, or misfortune (VandenBos & American Psychological Association, 2007).

“BReast CAncer” genes (BRCA) - BRCA 1 & 2 are gene mutations that produce proteins that repair damaged DNA. Everyone has two copies of each gene, one inherited from each parent. The BRCA genes are called “tumor suppressor genes,” and cancer can develop when changed or mutated (Chen, Haixia et al., 2018).

Coping- The use of cognitive and behavioral tactics to manage the demands of a situation when these are appraised as taxing or exceeding one’s resources or to reduce the negative emotions and conflict caused by stress (VandenBos & American Psychological Association, 2007).

Cancer-Cancer is a disease that occurs when cells within the body are abnormal, become old or damaged, and should die. However, instead, they grow uncontrollably and multiply when they should not. Tumors can and are formed in the body—the breast cancer tumor forms within the breast tissue (National Cancer Institute, 2023).

Cancer-related PTSD – CR-PTSD is a type of post-traumatic stress disorder (PTSD). CR-PTSD, an anxiety disorder, can be caused by a traumatic event, catastrophic and sudden event, such as a life-threatening illness, (VandenBos & American Psychological Association, 2007)

Chemotherapy- The use of chemical agents to treat diseases, particularly cancer (VandenBos & American Psychological Association, 2007).

Depression- When a person is in a negative affective state, ranging from unhappiness and discontent to an extreme feeling of sadness, pessimism, and despondency, interfering with daily life (VandenBos & American Psychological Association, 2007).

Mastectomy- The surgery to remove part or all the breast (National Cancer Institute, 2023).

Lymph Node-Small, bean-shaped structures that filter and help fight infection and disease (National Cancer Institute, 2023).

Metastatic-The spread of cancer from the primary site, the place where it started, to other places in the body (National Cancer Institute, 2023).

PTSD – PTSD or post-traumatic stress disorder is an anxiety disorder resulting from physical injury or mental or emotional distress from a life-threatening event (VandenBos & American Psychological Association, 2007).

PTG – PTG or post-traumatic growth is a positive change that results from dealing with a traumatic or extremely stressful life event in which a new reality is accepted, life is appreciated, and personal strength is gained (VandenBos & American Psychological Association, 2007).

QOL – QOL or quality of life refers to a person’s subjective opinion of wellness, including psychological, social, spiritual, and physical aspects (Shen et al., 2020).

Radiation Therapy- The use of radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors (VandenBos & American Psychological Association, 2007).

Triple-negative breast cancer (TNBC) – TNBC is a rare, aggressive form of BC that is hormone-receptor and HER2-negative, like the other subtypes of BC (National Cancer Institute, 2023).

Significance of the Study

Prior research has identified BC patients at an increased risk of developing PTSD from their life-threatening disease (Leano et al, 2019). Given much-needed creditability, the DSM has defined cancer as a life-threatening illness (APA, 2013). However, studies have also shown a deficiency of clinical focus on mental health issues in BC patients (Chan et al., 2018; Leano et al., 2019). Leano (2019) found that BC patients can and do suffer long-term from undiagnosed PTSD and other symptoms, like depression, anxiety, chemo-brain, and inability to return to their prior life quality (Leano, 2019).

With current research on BC patients and PTSD, unmet mental health needs, and poorer QoL, we must also recognize the growth that can occur. Current PTG research has shown that having BC can have negative and positive consequences (Duma et al., 2018; Shen et al., 2020). Studies by Hamama-Raz et al. (2019), Li (2022), and Michalczyk (2022) found that BC patients had some measure of PTG after treatment, and PTG was helpful in the patients developing more positive coping skills. However, though TNBC is “the worst” subtype in BC, there are no studies about this population’s PTSD, PTG, and unmet mental health. Even though there is one study on QoL in Black TNBC patients and one in Chinese patients, there is not one complete study on all these factors within the general population of TNBC survivors.

Summary

Research has revealed cancer can cause a risk of PTSD, PTSS, and other mental health issues affecting QOL. Current research has been focused on cancer and BC, with only a couple specifically focused on TNBC. With a high risk of recurrence in the period of the five years following treatment completion, the research revealed this subtype of BC, TNBC, carries with it a harsh journey with its poorer prognosis and lack of treatment alone; therefore, more research is needed on the mental health issues lingering well into survivorship (De Padova et al., 2021; Leano et al., 2019; Vadaparampil et al., 2017)

CHAPTER 2: LITERATURE REVIEW

Overview

The literature reviewed for this study investigated PTSD symptoms, PTG, QOL and unmet mental health care needs among TNBC survivors 2-5 years post-treatment. There are many types of BC, stages, and categorizations, but TNBC carries a stigma of having the poorest prognosis and highest recurrence rate among other BC subtypes (Bergin et al., 2019). TNBC grows fast, spreads faster, has the fewest treatment options, the highest rate of reoccurrence and metastases, and occurs in younger women (Chen et al., 2018); therefore, giving TNBC the worst prognosis of all the BC subtypes (Bergin, 2022; Chen, Hong-Ming et al., 2019).

Upon receiving the TNBC diagnosis, patients learn quickly that TNBC is known to spread fast and is aggressive (Yeh et al., 2021). Patients discover TNBC has a poor prognosis, with a 43% chance of a rapid recurrence. Patients find out that TNBC’s low survival rate can be related to the lack of targeted treatments, low response to those treatments, and the chemotherapy's harsh, life-altering side effects (Almansour, 2022). With the worst outcomes out of the three subtypes of BC and the gap in research on TNBC survivors, the study provides much-needed information on the long-term effects of the disease on mental health-related issues affecting QOL and examined PTG. In this chapter, I will review the primary variables: PTSD symptoms, PTG, QOL, and unmet mental health care needs among TNBC survivors. Because of the limited research on TNBC, the primary variables of research that has been completed with BC survivors are covered. I will also discuss the biblical approach with which I view this topic. I will close with a summary of the research I found on my topic and integrate my biblical viewpoint.

Search Strategy

The search strategy of the current literature was conducted using the Jerry Falwell Library database (e.g., ProQuest Central, EBSCOhost, Psycho-oncology) and Google Scholar. I used different combinations of the following keywords: breast cancer, triple-negative breast cancer, post-traumatic stress disorder, PTSD, post-traumatic-stress symptoms, PTSS, post-traumatic growth, PTG, “Red Devil,” chemotherapy, quality of life, cancer, depression, anxiety, DSMIV and DSMV, mental health, survivorship. The biblical research was conducted by studying the scriptures found in the King James Bible, hard copy and online, that relate to trauma and illness, as well as discussions with my pastor and past bible studies.

Review of Literature

Despite being the BC subtype that is the most damaging and life-threatening, there are only three studies on some mental health outcomes for TNBC survivors. Further, there is not one research article currently about TNBC survivors’ PTSD, PTG, and unmet mental health needs, and no studies exploring mental health outcomes 2-5 years post-treatment, when chances of recurrence are the highest. I will review what is known about BC’s impact on PTSD, PTG, QOL, and mental health needs, beginning with an overview of survivorship.

Survivorship

According to Fu et al. (2022), BC rates increase year after year, but the prevention and treatment modalities improve, increasing survival rates. In the past, researchers have placed attention on the physical aspects of cancer, “ignoring” the psychological issues (Fu et al., 2022). Fu et al. (2022) said the psychological response patients have is of value in helping patients (and survivors) to deal with the disease, enter back into society, define a healthy lifestyle, and hopefully improve their QOL (Fu et al., 2022) With the harsh treatment for TNBC, the TNBC survivors are often left with chronic medical conditions, financial problems, fear of recurrence and psychological distress, even the loss of a job or a decrease in hours. TNBC survivors live under the cloud of negative statistics and treatment-induced chronic medical problems, and to top it off, they have been released from the large treatment team. There is little research and a lack of information on BC patients entering the next five years of survivorship (Parker et al., 2023) and even less information on TNBC**.**

Parker et al. (2023) conducted a recent study of women BC patients between the ages of 18-45 transitioning into survivorship within five years after treatment. Three themes were identified in this qualitative study. The first theme was feeling different physically with weight, sexual changes, and cognitively and emotionally. Secondly, participants identified feelings of emotional trauma from treatment and the survivorship stage. Third, the women pointed out the need for services and informational content. Primarily, the research revealed that survivors felt like “a different woman” and continued to have lingering emotional trauma. The women recommended that more communication about survivorship be provided in the future with a focus on cognitive issues, weight and sexual changes, plus emotional trauma, and loss of identity (Parker et al., 2023).

Both Parker et al. (2023) and Duma et al. (2016) focused on BC in younger women and the challenges they face. Duma et al. (2018) found that issues affecting young TNBC patients included effects on fertility during child-bearing years, changes in body image, and lack of social support, and were associated with higher levels of distress in these women, as opposed to post-menopausal women. Psychosocially speaking, Duma et al. (2016) pointed out fears of recurrence, mood changes, body image problems, and adjustment difficulties that affect BC patients (Duma et al., 2018). Duma et al. (2016) focused on young TNBC patients, revealing survivorship challenges specific to this population may include premature menopause and sexual dysfunction, reduced fertility, social stress related to having young children, and continuing active employment. Unfortunately, Duma et al. (2016) found some young women turn down mental health resources for a variety of reasons, which can in the end increase the risk of “local and distant recurrence” (Duma et al., 2018). Physical and mental challenges untreated or treated can persist well into survivorship and may result in PTSD symptoms, depression, anxiety, adjustment disorders, and hopefully PTG.

Breast Cancer and the Psychology

Current research on BC patients and survivors suggests mental health issues are present and often go undiagnosed or untreated, which can impact QOL for prolonged periods (Duma et al., 2018; Turkman et al., 2016)The incidence of “psychological distress” in cancer patients is reported to be above 30% (Ng et al., 2017). In an Australian study, breast cancer survivors reported unmet psychosocial needs they are experiencing, but that are not being met as the following: fear of recurrence, uncertainty about the future, stress on their family, sexual changes, and a need to reduce and manage stress (Lisy et al., 2019). The psychological impacts of a BC diagnosis can be stressful and long-term. Women diagnosed with BC suffer from many psychological and physical changes. Anxiety, distress, depression, and posttraumatic stress disorder are the most frequently reported psychological disorders found in BC patients (Dinapoli et al., 2021). Cognitive disorders, sexual dysfunction, fatigue, insomnia, hair loss, body image impacts from surgeries, and nausea are substantial issues for BC patients that can affect mental health but also significantly impact one’s QOL (Dinapoli et al., 2021).

The BC treatment side-effects can mimic mental health symptoms, which is important when working with BC patients and survivors. For example, a person with symptoms of depression can suffer from fatigue, and a symptom of chemotherapy is fatigue (Dinapoli et al., 2021). Treatment plan decisions can include surgical procedures, radiation, double/single mastectomies and chemotherapy (Araújo Neto et al., 2017)The aforementioned BC treatments can affect the patient's QOL and sense of gender/sense of self, like when a patient loses a breast or both, and/or loses the ability to have children; therefore, the prognosis and treatment can be taxing, physically and mentally. Isselhard et al. (2023) found that women who have risk-reducing mastectomies experienced worry that did not decrease over time (Isselhard et al., 2023). Treatments can cause physical illness that often impacts the patient's ability to work and complete day-to-day. Medical side-effects of radiation and chemotherapy impact child-bearing abilities, body image, and general well-being. Research on BC patients' QOL had been inconsistent and leaned toward the thought that QOL would improve as the patient moved into survivorship. However, recent research revealed a significant portion of BC patients' QOL will remain low, and continue to decline, even several years later (Pat-Horenczyk et al., 2023)

Psychological and physical factors that impact BC patients are vast and co-occur (Carletto et al., 2019). A large amount of BC patients experiences multiple and concurrent psychological and physical issues during and after the cancer treatment journey (Dinapoli et al., 2021). However, post-treatment survivorship yields a different set of psychological and physical impacts but has been studied the least of all the phases of the BC journey (Parker et al., 2023).

Studies vary in the findings as to how long and persistent psychological symptoms last, (Khan et al., 2012). Some studies suggest that the time of diagnosis is predominately when psychological symptoms like anxiety and depression onset may begin, nonetheless, Khan et al. (2012) reported participants in their study, with a median post-diagnosis of 2.2 years, reported anxiety and depression. Khan et al. (2012) pointed out that some research, however, did indicate

BC survivors experienced a reduction in mental health symptoms, toward a normal range of functioning, five-year post-diagnoses. Another study found that anxiety and depression, or both were reported by BC survivors, were unchanged at the five-year follow-up visits (Khan et al., 2012). Clinical implications indicate that BC survivors need long-term support in managing their psychological well-being. Physical and psychological morbidity that is associated with BC can be underestimated. Long-term monitoring, education, and counseling are much needed among BC patients and their families (Khan et al., 2012).

Anxiety

Anxiety and depression are the two most often reported psychological issues affecting BC patients and survivors. Khan et al. (2012) found that 32% of BC patients reported the greatest impact on psychological well-being to include 22% depression and 19% anxiety and stress. Ng et al. (2017) found anxiety and depression to be common in BC patients but importantly, when left untreated, it impacted the treatment process, QOL, and increased risks of suicide. Recent research has suggested anxiety is more prevalent than depression in women with BC, which contrasts with past research (Dinapoli, 2021).

Ng et al (2017) refers to anxiety as a “multi-dimensional” construct involving physiological and psychological responses and is a state of intense “apprehension, uncertainty, and excessive fear” in response to outside stressor. Ng et al. (2017) found that anxiety is one of the most common mental health symptoms reported by BC patients. Ng et al. (2017) said the range for anxiety among BC patients is 10-30% of BC patients. BC patients’ and survivors’ anxiety can stem from various disease-specific factors: anticipation of negative outcomes, scan results, recurrence, and treatment concerns (Ng et l., 2017). The anxiety response can cause physical presentations to include fatigue, poor treatment results, lower QOL, and even affects the immune system. Research varies on whether depression or anxiety are the most prevalent in BC patients and survivors but corroborate both can be present in BC patients (Ng et al., 2017). In BC patients, anxiety may stem from fear of recurrence and long-term effects from treatment.

Depression

Depression, like anxiety, can negatively affect BC patients' and survivors’ treatment outcomes, QOL, self-care habits, and mortality rates. Depression is characterized by persistent sadness, hopelessness, and loss of interest in activities that used to be enjoyable, and it can cause physical symptoms like fatigue (APA, 2013). Research suggests that depression in cancer patients is the third highest among BC patients following only pancreatic and head and neck cancer. Depression in cancer patients is difficult to diagnose because depression symptoms and physical symptoms from treatment can overlap (Ng et al., 2017).

A cancer diagnosis and its treatment have a substantial impact on BC patients. Emotional distress can range from normal sadness to intense panic and fear that can even lead to a clinical psychiatric disorder (Ng et al., 2017). The difficulty is in identifying whether symptoms stem from anxiety or depression or both, which is important in treatment. There is far less information available on the long-term effects of depression and anxiety in BC patients and survivors. However, studies that have been conducted in long-term BC survivors indicate a patients’ have a positive association with both anxiety and depression, (Carreira et al., 2018). From a clinical standpoint, anxiety and depression can lead to PTSD, and Carletto et al. (2019) stated BC patients are at significant risk for developing PTSD (Carletto et al., 2019).

Post-Traumatic Stress Disorder

PTSD is a stress-related psychiatric disorder characterized by symptoms of intrusion, avoidance, negative mood, and hyperarousal, with possible dissociative symptoms, because of traumatic life experiences (Brown, 2020). In research, there has been a growing interest in the link between cancer and PTSD (Brown et al., 2020). Enough research has been conducted on cancer-related PTSD that the diagnosis "cancer-related PTSD (CR-PTSD)" is now included in the DSM. To meet the criteria for CR-PTSD in the DSMV, a diagnosis of cancer -a life-threatening illness- must be "sudden and catastrophic," (American Psychiatric Association, 2013). For women, the diagnosis of BC is in many cases sudden, catastrophic, and life-threatening.

Research suggests patients with BC have a significant risk of developing PTSD due to the life-threatening, traumatic nature of the disease (Carletto et al., 2019). Studies have also revealed that BC can serve as a stressor to create symptoms to reach a "formal" diagnosis of PTSD (Andrykowski et al., 1998). Patients with BC often suffer in silence from PTSD symptomology, and they often go undiagnosed leading to possible long-term, "substantial" impacts on an individual's QOL (Leano et al., 2019) .

The research findings on the occurrence and the duration of symptom side-effects among BC patients/survivors vary depending on the specific study criteria and inclusion. The variance in BC-related PTSD may be attributed to differences in factors like coping styles, economic status, and/or mental health history before receiving a BC diagnosis. Nevertheless, in a meta-analysis of 38 research articles, there were about 10% of women who developed PTSD after the BC diagnosis (Brown et al., 2020).

Chan et al. (2018) conducted a study that suggested that more than one-third of cancer survivors were clinically diagnosed with PTSD at six months after diagnosis. Chan's research also revealed that participants met the criteria for PTSD at the study's four-year follow-up (Chan et al., 2018). In one study, researchers found high levels of cancer-related PTSS were present several years after treatment in both survivors and caregivers (De Padova et al., 2020). Breast cancer patients and survivors with PTSS/PTSD can lead to “poor outcomes” like physical inactivity, medication nonadherence, lack of treatment response, and increased risk of suicide (Brown et al., 2020). Symptoms may affect recurrence rates and lessen life expectancy. Brown et al. (2020) added that in the United States, the average lifetime prevalence of PTSD is 7.8%, with less than two-thirds of people with PTSD recover (Brown et al., 2020).

Dinapoli et al. (2021) patients' reported changes in memory and thinking, referred to as "Chemo brain" (CB) or chemotherapy-induced cognitive impairment (CICI) during or after treatment strategies, which may attribute to the triggering of symptoms. Cognitive changes can significantly affect the patient’s mental health, including loss of memory, difficulty learning, concentrating, reasoning, and issues with executive function, attention, and visuospatial skills (Palesh et al., 2022). With PTSD, triggers will often incur symptoms that interfere with daily functioning. The symptoms can cause maladaptation in the patient's new daily life, for example, walking, driving, financial problems, and reading multifaceted material (Loredana et al., 2021).

Leano et al. (2019) reported that a limited number of studies have evaluated the efficacy of psychological interventions to treat PTSD. Studies also show that BC patients are not getting the help they need for mental health issues like PTSD, (Leano, 2019). However, with the risk for BC patients to develop PTSD and with oncologists often lacking the training needed to address mental health symptoms, oncology teams need to develop mental health assessments, interventions, and treatment plans to provide appropriate clinical interventions (Leano et al., 2019).

Post-Traumatic Growth

Breast cancer, like any cancer, carries a negative stigma along with its diagnosis and treatment. The disease often includes aggressive treatments and life-altering physical changes that can impact QOL (Kaur et al., 2018). Patients may experience breast amputations, harsh chemotherapy, and fear of recurrence, which can concern the TNBC population. Researchers agree that a cancer diagnosis also has negative, traumatic effects on a patient's mental health, putting the patient at a higher risk of developing PTSD symptoms, like depression and anxiety, and is even categorized in the Diagnostic Statistics Manual (Leano et al., 2019)APA, 2013). In some cases, however, patients also experience positive changes known as post-traumatic growth (PTG).

The first mention of PTG goes back to the 90s when Tedeschi and Calhoun coined the term when referring to a person who reframes a traumatic event into a positive, like a "new reality and then finds a new meaning of the event (Michalczyk et al., 2022). There are mixed, inconsistent results in current studies of the factors and causation behind the presence or absence of PTG: type of trauma, culture/ethnicity of a person, stress level, ruminative thinking, cognitive processing, personality traits, resilience factor, and coping styles of the individual (Michalczyk et al., 2022). For this research proposal, PTG will be measured for its prevalence among TNBC survivors, stages 2b-4, 2-5 years post-treatment. There are no current studies on PTG and TNBC, only BC -to include all subtypes- so BC will make up most of the background.

According to Chen et al. (2019), PTSD symptoms in BC patients often occur at diagnosis, whereas PTG occurs during the treatment phase after the individual has had more time to process cancer's impact on their lives. Fekih-Romdhane et al. (2022) found that previous research suggested there is a prevalence of PTG in 98% of women diagnosed with BC occurring between 1 and 5.5 years after diagnosis. Michalczyk et al. (2022) found that the trauma presented by patients with BC is “conducive to positive changes” in the patient’s life. Therefore, there is evidence of PTG in BC patients and survivors.

Michalczyk et al. (2023) measured PTG in 100 women with BC and found that all participants showed some form of PTG. The research also revealed there is a co-occurrence of resilience and PTG, though they are separate components. In another study, Bernard et al. (2023) also found that PTG is linked to lower levels of depression in palliative care patients and that people can develop a “deeper meaning and greater appreciation” of their lives (Bernard et al., 2022). PTG can result from the patient finding meaning or greater appreciation of life from their cancer journey (Bernard et al., 2022; Fekih-Romdhane et al., 2022; Michalczyk et al., 2022).

Different factors, such as culture and personality type, affect the individual’s development of PTG. Research among BC patients found resilience and positive coping styles were positively correlated with PTG. For example, Michalczyk et al.’s (2023) research in BC survivors shows PTG is closely related to coping through emotion-focused and problem-focused coping with the support of other people and the ability to adapt to new life situations. The study revealed that the biggest changes were the development of a new appreciation of life, while the least change came in relationships, self-perception, and spiritual changes (Michalczyk et al., 2022). In comparison, Capaldi et al. (2021) and Michalczyk et al. (2022) studies both suggest that PTG is also a pathway for BC patients to become more resilient and adapt to future life-changing events.

However, as several studies show, patients and survivors continue to have negative symptoms (PTSD symptoms, depression, anxiety) while simultaneously experiencing PTG (Capaldi et al., 2023; Fekih-Romdhane et al., 2022; Michalczyk et al., 2022). Three-quarters of the women in Michalczyk et al.'s (2022) study did present with mental health issues indicative of PTSD, and they continued to experience intrusive thoughts, arousal, and avoidance. However, this behavior has been shown to lead to trauma processing and increase the chance of PTG (Capaldi et al., 2023; Fekih-Romdhane et al., 2022; Michalczyk et al., 2022).

Finally, moving forward, Capaldi et al. (2021) and Michalczyk et al. (2022) point out that it is important to use current and future research to identify treatment strategies that will help foster PTG in cancer patients. Oncological patients and survivors need more mental health assessments, interventions, active support throughout treatment, and relief from PTSD symptomatology (Capaldi et al., 2023). Fostering the development of PTG in women with BC can be of help in improving the patient and survivor's QOL.

Quality of Life

QOL refers to a person's subjective opinion of wellness, including psychological, social, spiritual, and physical aspects (Shen et al., 2020). The survivor's perception of their own QOL and the effect of the BC journey on their life is what matters, according to a study by Shen et al. (2020). Importantly, low QOL can affect survivors after the diagnosis and treatment.

Vadaparampil et al.'s (2017) research is one of two existing articles exploring African-American TNBC patients' QOL. The study suggests that when comparing African American TNBC patients with non-TNBC patients, the TNBC patients presented with significantly poorer QOL (Vadaparampil et al., 2017). The patient's age, socio-economic status, marital status, social support system, hope, and self-efficacy were found to affect the patients' QOL, as well. Researchers identified support programs and intervention strategies that include hope, self-efficacy, and social support systems that may be helpful in improving the QOL for this group of patients (Vadaparampil et al., 2019).

Vadaparampil et al. (2017) and Shen et al. (2020) conducted the current two studies focusing on different aspects of QOL in TNBC survivors. Vadaparampil (2017) conducted quality-of-life research with African American TNBC survivors, while Shen et al.'s (2020) participant pool came from Chinese TNBC patients. The third study by Watkins et al. (2017) compared the differences in coping styles among TNBC and non-TNBC African American women. Vadaparampil et al.'s (2017) descriptive study included Black women diagnosed with TNBC and non-TNBC who were 50 years old and younger. The study participants were found via the Florida Cancer Data System. The study suggests that Black women with TNBC have significantly poorer health-related quality of life (HRQOL) compared to non-TNBC women (Vadaparampil et al., 2017).

Vadaparampil et al. (2017) said the TNBC group's lower HRQOL was associated with lower income, which has also been a factor related to HRQOL in other Black BC survivors. Also, the study identified lower income and cancer-induced financial burden in Black TNBC survivors as an indicator of lower HRQOL. Vadaparampil et al. (2017) found that the TNBC group's low HRQOL could also stem from their "collectivist" orientation and "fatalistic beliefs," which beliefs may come from the diagnosis of poorer prognosis and lack of treatment options. (Vadaparampil et al., 2017).

Vadaparampil et al. (2017) and Watkins et al. (2017) respective studies suggest TNBC patients have higher levels of depression, anxiety, recurrence worry, and lower coping abilities (Vadaparampil et al., 2017; Watkins et al., 2017). Shen et al.'s (2020) research indicated that mental health issues like depression, anxiety, and worry have a negative impact on TNBC patients and survivors of QOL (Shen et al., 2020; Vadaparampil et al., 2017; Watkins et al., 2017). All three studies suggest that more research needs to be done on mental health issues and the impacts on TNBC patients and survivors of QOL.

A handful of other research articles on BC make short references to TNBC, and there is medical research on TNBC, its biological components, treatment research, and other medical topics. However, as mentioned previously in this research, there are few studies on survivors' mental health status, PTSD, PTG, or the impact of these variables on survivors' QOL. More research is needed on TNBC survivors and their QOL should be improved (Shen et al., 2020).

The research compiled to date finds few studies on the psychological impacts of QOL in TNBC survivors (Shen et al., 2020). Moving forward in this proposal and due to the minimal research on TNBC, the background will focus on BC research, in general, to get an idea of the impacts of mental health needs, PTSD, PTG, and QOL. Vadaparampil and colleagues (2017) state that there is not much research about the QOL in TNBC survivors or the mental health-related effects of QOL in TNBC patients and/or survivors. In accordance, Shen et al. (2020) suggest that despite the statistics, there has been little research on the mental health-related effects of QOL in survivors with TNBC (Shen et al., 2020).

Watkins et al. (2018) said researchers suggest psychological distress, which may affect QOL, such as anxiety, depression, and emotional and cognitive functioning, and symptoms of pain, fatigue, nausea, and vomiting are the “most common’ reported by chemotherapy BC patients. The psychological distress and symptoms can result in long-term physiologic consequences (Watkins et al., 2017). Watkins et al.’s study (2018) looked at the differences in coping strategies, the effectiveness of those skills, and the patient's religious or spiritual well-being in African American women with (TNBC) and those without (Watkins et al., 2018). The study findings were that TNBC patients had lower coping capacity and that both, TNBC and non-TNBC, would benefit from receiving a “comprehensive psychological care program” to help them identify and use interventions linked to increased coping capacity (Watkins et al., 2017)

Psychological symptoms, like PTSD, can lead to physical inactivity, medication nonadherence, increased risk of suicide, depression, and anxiety (Brown et al., 2020). Brown et al. (2020) added that in the United States, the average lifetime prevalence of PTSD is 7.8%, with less than two-thirds of people with PTSD recover. Therefore, female patients with BC face an increased risk of these traumatic symptoms and effects on daily functionality, affecting QOL (Brown et al., 2020).

Clinical Guidelines

The Society for Integrative Oncology (SIO) published evidence-based guidelines about the pre- and post-treatment use of integrative therapies, which are evidence-based complementary therapies to include an array of mind and body practices, natural products, and lifestyle changes. The American Society of Clinical Psychology (ASCO) critically reviewed the SIO guidelines for the use of integrative therapies among BC patients and found them to apply to BC patients pre- and post-treatment (Lyman et al., 2018). The ASCO endorsed and recommended the assessment of psychological symptoms. ASCO determined that psychological status and appropriate counseling are important parts of comprehensive cancer care to improve outcomes; however, it determined they are not consistently discussed in the oncology setting. Research reveals a pressing need for diagnostic screening and assessments for the emotional and psychological needs of BC patients so steps can be taken to implement plans for assessment and interventions.

Biblical Foundations of the Study

There are many verses throughout the Holy Bible about suffering on this Earth. When we talk about trials and tribulations in Christianity, many Christians think of Job, a man who lost everything, but remained faithful to God. The book of Job offers us important lessons as Christians. An important lesson is we will all experience suffering while on this earth. Yet even while suffering, Christians, like Job, must not lose hope in God as he is always with us. Suffering teaches us the value of patience, perseverance, and faithfulness to God. For blessed is the man who keeps steadfast under trials, and having stood the test, he will receive the crown of life that the Lord God has promised to those who love him, James 1:12 (Norton, 2010).

God can use all things even the bad things for good. We must remember in the bad times that in all things, God works for the good of those who love him and who have been according to His purpose. In James 1:2-4, the scriptures tell us that God uses trials to “produce sweet fruit in our lives.” In James 14:3, the Bible also tells us God will not forsake us. In short, bad times can be used to mold and shape us for God’s purpose. Paul talks about how we will suffer in life, but we are to have hope for the future. The Bible says in Romans 8, our current sufferings are not worth even comparing them to the glory that will be revealed in us (Norton, 2010).

Romans 8:28 reads “all things work for the good of those who love the Lord.” This verse offers comfort by telling us everything will be okay even in times of suffering and yes, even in the throes of BC. The Bible reads in Ecclesiastics 3:1, to everything there is season and a time to every purpose under heaven though we may not comprehend it. In Hebrews 13:5, God tells us that he will never forsake us (Norton, 2010).

To summarize, we will all suffer on this earth because of the fall of man. God uses our times of strife for good, for a reason, and a purpose even though we do not understand it. At all times, we can take comfort that God will not forsake us but shape us. A wise Pastor once told me, that we may never know the reason for our suffering on this earth, but in the presence of the Lord our God, it shall be revealed. In the face of any suffering, there is comfort in hope, “as for me I will always have hope,” Psalm 71:14 reads (Norton, 2010)**.**

Summary

With the current research focused on BC in general, there is little research on the QOL of TNBC survivors with no research on this population’s unmet mental health needs, prevalence of PTSD, or PTG. Negative mental health factors, like PTSD symptoms, affect the survivor's QOL and even their rate of mortality after treatment (Dinapoli et al., 2021; Ng et al., 2017). Post-traumatic growth has been shown to be effective in improving QOL and mental health symptoms in BC patients, but first, the clinical needs must be identified. Identification of needs can empower healthcare teams to identify, assess and even prevent serious mental healthcare problems in TNBC survivors, and lead to the clinical development of programs that empower PTG.

CHAPTER 3: RESEARCH METHOD

Overview

This mixed-method study investigated PTSD symptoms, PTG, QOL, and unmet mental health care needs among TNBC survivors 18 years old and older, 2-5 years post-treatment, and who were diagnosed in the stages between 2b-4. Chapter three outlines the research design, participants, procedures, measures, and qualitative and qualitative analyses.

Research Questions and Hypotheses

Research Questions

RQ1: What are the levels of PTSD among TNBC survivors who are 2-5 years post-treatment?

RQ 2: What are the levels of PTG among TNBC survivors who are 2-5 years post-treatment?

RQ 3: What are the levels of overall QOL, as well as physical, social/family, emotional, functional, and BC-specific well-being among TNBC survivors who are 2-5 years post-treatment?

RQ4: Do levels of PTSD, and/or PTG predict overall QOL levels among TNBC survivors 2-5 years post-treatment?

RQ 5: What are the unmet mental health needs of survivors' post-treatment?

Hypotheses

Hypothesis 1(RQ1): TNBC survivors 2-5 years post-treatment will have moderate PTSD symptoms.

Hypothesis 2 (RQ2): TNBC survivors 2-5 years post-treatment will have moderate levels of PTG.

Hypothesis 3 (RQ3): TNBC survivors 2-5 years post-treatment will have low scores on overall QOL, as well as physical, social/family, emotional, functional, and BC-specific well-being.

Hypothesis 4: PTSD and PTG levels will predict overall QOL among TNBC survivors 2-5 years post-treatment.

Research Design

I examined the research topics by conducting a mixed method approach using a convergent parallel design, taking qualitative and quantitative data, relating, and comparing them then interpreting the results of the qualitative and quantitative data to be collected from volunteer participants. Data collection will be through questionnaires. Several short answer questions will follow the questionnaires. The data will assist in exploring the mental health unmet needs, PTSD symptoms, PTG experience, and QOL.

Participants

Participants for this study consisted of survivors of TNBC who are 18 and over, 2-5 years post-treatment, and who were diagnosed in stages 11b-4. Survivors were recruited from the American Psychosocial Oncology Society's database and various TNBC support groups. I sought permission from online platform administrators to recruit.

The proposed participant sample size for the quantitative portion was up to 100 participants per availability and response. Following the questionnaires, there were several questions. I used the interpretivist model based on understanding reality specifics to a time and context. It was important in this study to gather responses to short answer questions, analyze the answers, and create an analysis report. I used the analysis report to identify the common themes of survivors' unmet mental health needs to offer a better sense of what those are.

Instrumentation and Measurement

Self-report questionnaires were provided through an internet link to the Qualtrics survey, Liberty University's online survey platform. The proposed questionnaires included demographics, Post-Traumatic Growth Inventory (PTGI), Post-Traumatic Checklist -Civilian Version (PCL-C), and FACT-B (See Appendix D). The qualitative portion was included after the questionnaires and included several short answer questions to assess unmet mental health needs. Permission to use the study proposal's measurement scales was obtained if necessary.

Demographic Data

Demographic data was collected to include gender, age, education, marital status, employment status, education, place of residence, treatment(s), metastasis status, and lymph node involvement.

The Post-Traumatic Growth Inventory

The Post-Traumatic Growth Inventory (PTGI) is currently the most used measurement scale of post-traumatic growth (Horswill et al., 2016). The PTGI is a 21-item self-reporting questionnaire that includes five subscales (See Appendix D). The subscales include new possibilities, relating to others, appreciation of life, personal growth, and spiritual change (Mattson et al., 2018; Tedeschi & Calhoun, 1996). Example items include "I changed my priorities about what is important in life." Response options use a 6-point Likert scale, 0-5, ranging from 0= I did not experience this change because of my crisis, and 5 = I experienced this change to a very great degree because of my crisis (Tedeschi & Calhoun, 1996). Research has revealed the PTGI has good internal, construct, and discriminate validity (Horswill et al., 2016;

Mattson et al., 2018; Rodríguez-Rey et al., 2016; Tedeschi & Calhoun, 1996). The PTGI items were summed to create a total score ranging from 0-50, with higher scores indicating more PTG (Tedeschi & Calhoun, 1996).

Post Traumatic Stress Disorder

Post-Traumatic Stress Disorder was measured using the PTSD Checklist - Civilian Version (PCL-C; see Appendix D). The PCL-C is a 17-item questionnaire corresponding to symptoms in the DSM-IV. According to Vazquez et al. (2020), the PCL-C is a validated screening tool for PTSD symptoms and is used for post-traumatic stress symptoms. The study participants rated symptom severity from 1 to 5, specifically related to "cancer treatment or your experience with cancer" on a scale from 1 ("not at all") to 5 ("extremely") (Vazquez et al., 2020). The PCL-C items were summed, with scores ranging from 17-85. A score of ≥ 50 is positive for clinically significant PTSS and diagnostic efficacy of 0.96 for PTSD. The Department of Veterans Affairs considers 44 as the cutoff score for clinically significant for PTSD, Vazquez et al. (2020) found studies often use PTSS as a framework to find subclinical PTSD symptoms coupled with clinically relevant PTSD that can fall shy of meeting the full clinical criteria for PTSD in the DSM-5 (Vazquez et al., 2020).

Quality of Life

Participants QOL was assessed using the Functional Assessment of Cancer Therapy-Breast (See Appendix D), which is the most used scale for measuring the quality of life in BC patients (Brady et al., 1997; Ursini et al., 2021). The FACT-B score is a total of 37 items with the following subscales: physical, social/family, emotional, and functional well-being to include the BC scale. An example from the FACT-B subscale is the statement, "I feel sad." Participants choose the corresponding number, for example, with 0=not at all and 4=very much so. Each subscale was scored independently and then summed for a total of all the subscale scores. Scores can range from 0-148 where 148 represents the most favorable score indicating the highest QOL (Brady et al., 1997; Yang et al., 2019)

Mental Health Needs

Upon the completion of the questionnaires, participants were asked to answer optional short answer questions to assess the presence of mental health issues, the extent mental health has been assessed, and mental health treatment recommendations post-treatment (See Appendix D). The short answer questions followed the quantitative portion for participants who chose to answer them. The questions were to help us better understand unmet mental health needs (see Appendix D).

Questions asked participants questions to explore a discussion on topics related to their specific TNBC journey. The questions were geared toward a better understanding of TNBC's unmet needs during the journey and what could have been helpful. The questions will hopefully offer insight into themes that stand out as related to areas of mental health importance.

Operationalization of Variables

PTSD is operationalized as participant's scores on the PCL-C (Vazquez et al., 2020).

QOL is operationalized as the participant's total score on the FACT-B and a total score on each subscale(Ursini et al., 2021).

Data Analysis

Qualitative analysis was performed using the Grounded Theory with an interpretivist paradigm approach. Thematic analysis was used to identify, analyze, and find themes summarizing the essence of several related codes (Sibeoni et al., 2017). The research design was founded on the inductive approach, where the data was examined for concepts (Yin 2015). The goal was to identify similarities and differences in the participants' accounts and to find recurrent patterns. The data-driven analysis with the inductive method equals coding the data without the orientation to theoretical ideas or researcher's presumptions (Sibeoni et al., 2017). Beginning with data collection, Yin's five-phase approach to qualitative data was applied. Yin's approach to qualitative data analysis consists of five steps: compiling data, disassembling, reassembling, and interpreting data, and concluding data (Yin, 2015).

Participants' typed responses were reviewed for common themes and trends among the answers. Categories were taken from the data and coding of the patient's experiences, and individual passages were examined. A database with password protection was used to manage data.

Delimitations, Assumptions, and Limitations

Delimitations in this study included cancer type, stage of cancer, age of participant, and the number of survivorship years. This study is about TNBC survivors, age 18 and over, and 2-5 years post-treatment. Other delimitations of this study included the variables investigated: PTSD, PTG, QOL, and unmet mental health needs among participants.

The assumptions of this study were grounded in the belief the participants answered honestly. A second assumption was the prevalence of ongoing and undiagnosed mental health symptoms were present. There is evidence of symptoms of depression and anxiety 2-5 years post-treatment. Survivors continue to have PTSD and/or symptoms of PTSD 2-5 years post-treatment. The assumptions are that the classification of stages two, three, and four and the different levels of the stages affect the individual experience of the BC disease. A final assumption was that survivors of TNBC have a poor quality of life post-treatment treatment.

The nature of the accuracy of self-report questionnaires is a limitation of the quantitative portion of the research study. The varying factors of individual diagnosis, like different stages, different treatments, different support offered, and hospital and oncology team differences, all may affect mental health symptoms or lack thereof. Also, the nature of self-reporting and its effects on the results, as well as the lack of an in-person clinical interview and clinician's diagnosis, are limitations. The survivor's condition and prognosis can vary and could alter the results. An individual's personality and resilience factors may differ and thus affect results, as well as extraneous factors of environment, hospital, education, socio-economic status, and the nature of self-reporting (Baník et al., 2022; Meraz et al., 2023). Outside differences in mental health treatment, like group therapy, can also impose limitations on the sample and do have an impact on symptom management.

Summary

This mixed-method study investigated the topics of interest (PTSD, PTG, QoL, unmet MH needs) within the specific population of TNBC survivors using specific self-report questionnaires. The quantitative data was used for descriptive statistical analyses. There were optional, short-answer questions following the questionnaires that looked at the unmet mental health needs of survivors. The study may offer information on TNBC survivors' mental health status whereas current research on mental health issues remains minimal in this population. The results may offer important research on PTSD, PTG, QOL, and unmet mental health needs in the “worst prognosis” subtype of BC, TNBC, and report on the psychological aspects of survivors of the TNBC disease.

CHAPTER 4: RESULTS

Overview

The purpose of this mixed-method research study was to gather information about the current mental health and unmet mental health needs of survivors of an aggressive subtype of breast cancer known as TNBC. There is a plethora of research on breast cancer, PTSD, and QOL, and there is a new interest in post-traumatic growth in BC patients. However, there is little research on the survivors of TNBC, a highly recurrent form of BC. The purpose of this study was to investigate mental health symptoms among women diagnosed with TNBC who have finished treatment. The study focused on symptoms related to post-traumatic PTSD, PTG, QOL, and unmet mental health needs in TNBC survivors 2-5 years post-treatment. Participants were recruited from two cancer programs and online support groups.

The research was guided by five research questions. Research questions 1-3 (RQ1, RQ2 & RQ3) focused on the levels of PTSD, PTG, and overall QOL among TNBC survivors 18 years of age and older 2-5 years post-treatment. The second part of the research questions (RQ4 & RQ5) focused on predictors of overall QOL and unmet mental health needs.

The quantitative portion of the research employed measurement tools to assess levels of PTSD (PLC-C; (Andrykowski et al., 1998; The U.S. Department of Veteran Affairs,)), PTG (PTGI; (Tedeschi & Calhoun, 1996)), and QOL (FACT-B; (FACIT.org, 2020)). The optional, short-answer questions that followed the questionnaires and investigated the unmet mental health needs of survivors. In this chapter, I will present the study's results focused on the research questions.

Descriptive Results

Following two modifications to expand eligibility criteria due to a decidedly too narrow focus, 61 responses were deemed valid, and 31 participants completed the open-ended questions about mental health needs. Participants were, on average, 41.7 years old (SD = 11.0), married, college educated, lived in the suburbs, were employed full-time before diagnosis, and currently were diagnosed with stage 2b TNBC with lymph node involvement, their cancer was not metastatic, and most had two different surgery and/or treatments. See Table 1 for the participant's demographic data and Table 2 for the clinical data.

Table 1

Demographics of Participants

	Frequency (*n*)	Percent (%)
Age (*M* = 41.7, *SD* = 11.0)		
Marital status		
Married	54	89
Divorced	3	5
Separated	1	2
Single	3	5
Education level		
Less than high school	1	2
High school graduate	3	5
Some college	17	28
2-year degree	15	25
4-year degree	18	30
Master's degree	7	12
Doctoral College or Medical degree	0	0
Place of Residence		
Urban	13	21

Suburban	26	43
Employment status before diagnosis		
Employed full time	25	41
Employed part-time	11	18
Unemployed not looking for work	19	31
Retired	3	5
Disabled	3	5
Current employment status		
Employed full time	40	66
Employed part-time	6	10
Unemployed not looking for work	1	2
Unemployed looking for work	1	2
Retired	5	8
Disabled	5	8
Student	1	2

Table 2

Clinical Demographics of Participants

	Frequency (*n*)	Percent (%)
TNBC stage at diagnosis		
2A	32	53
2B	14	23
3B	10	16
4	5	8
Lymph node involvement		
Yes	43	70
No	18	30
Metastasis		
Yes	30	49
No	31	51
Number of Treatment and Surgery Types		
One	12	17
Two	35	49
Three	19	27
Four	5	7

Checking Normality and Inter-Item Reliability

As shown in Table 3, PCL-C and FACT-B were normally distributed and all variables had good reliability. The PTGI had a positive kurtosis, but upon examination of the histogram (see Figure 1), it was due to upper outliers impacting the overall dispersion of scores and it artificially inflated the kurtosis value. Although the value exceeds one, the spread of scores is otherwise normal. Therefore, I used PTGI untransformed in all analyses.

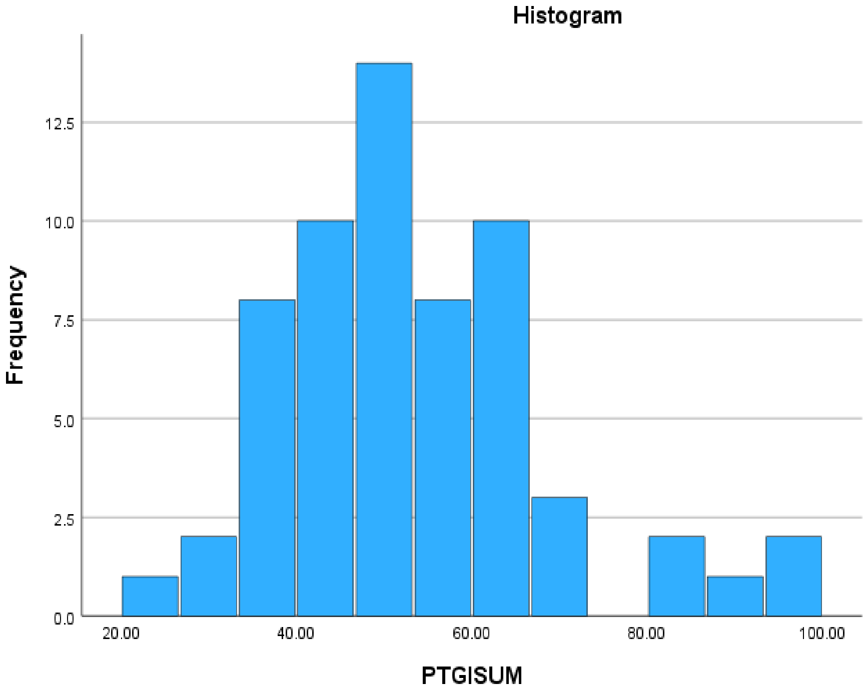
Table 3

Mean, Standard Deviation, Skewness, Kurtosis & Cronbach's Alpha

Variable	Mean (SD)	Skewness	Kurtosis	Cronbach's Alpha
PTSD Symptoms (PCL-C)	47.71 (10.57)	.33	.54	.85
Post-Traumatic Growth (PTGI)	53.17 (15.40)	.91	1.23	.81
Quality of Life (FACT-B Total)	80.67 (19.88)	.44	.41	.76
Functional	15.48 (5.78)	-0.04	-0.12	.73
Social	15.43 (5.84)	0.11	-0.50	.71
Physical	16.38 (5.74)	-0.38	-0.22	.68
Emotional	12.89 (5.07)	-0.06	-0.32	.69
Additional	20.51 (5.22)	-0.35	-0.06	.38

Figure 1

Histogram of Post-Traumatic Growth Inventory



Study Findings

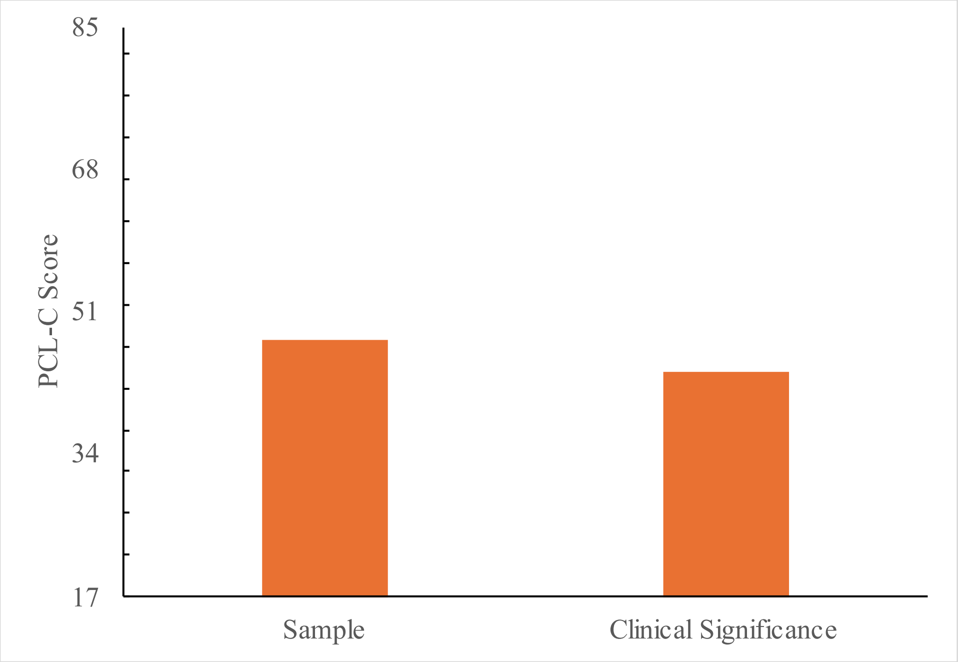
RQ1: What are the levels of PTSD among TNBC survivors who are 2-5 years post-treatment?

H*o*1: TNBC survivors 2-5 years post-treatment will have moderate PTSD symptoms.

Participants in this study reported high levels of PTSD symptoms (*M* = 48, *SD* = 12.22, 95% CI [44.60, 50.86]). I used a one-sample t-test to compare participant PTSD symptoms against the Dept. of Veteran’s Affairs clinically significant PTSD score of 44. Of the sample, 39 participants had a PCL-C score of 44 or larger indicating clinical significance for PTSD. The sample mean of 48 is 3.72 points above the Dept. of Veteran’s Affairs clinically significant PTSD score of 44 (*t* (60) = 2.38, *p* = .02), therefore the null hypothesis is rejected. See Figure 2.

Figure 2

PTSD Symptom Scores for TNBC Survivors 2+ Years Post-Treatment Compared to Clinically Significant PTSD Cut-Off Scores



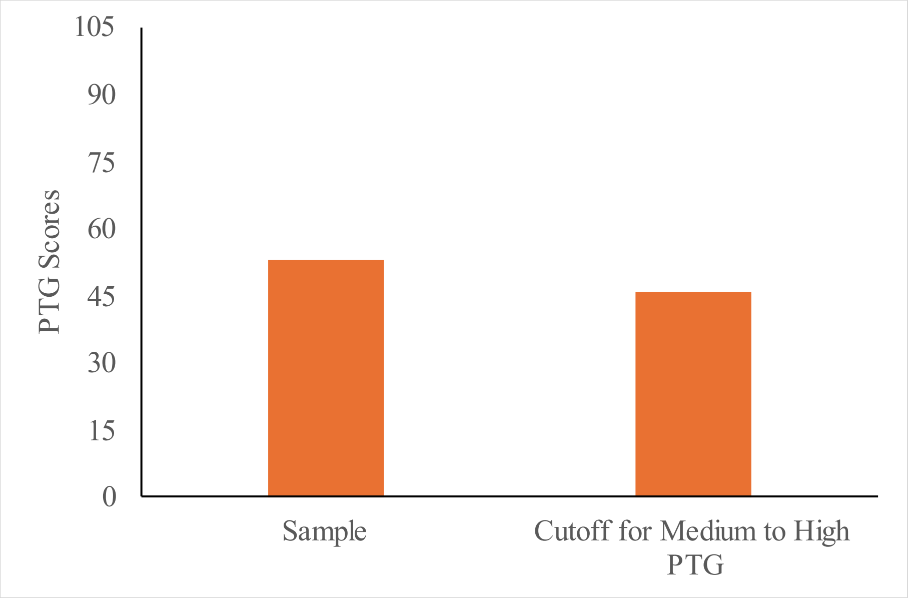
RQ 2: What are the levels of PTG among TNBC survivors who are 2-5 years post-treatment?

H*o* 2: TNBC survivors 2-5 years post-treatment will have moderate levels of PTG.

TNBC survivors in the study displayed a mean PTGI score of 53 (*SD* =15.40, 95% CI [49.22, 57.11]). The minimum score of 25 and the maximum score of 98 indicated that all participants had some level of PTG. PTGI scores of $\leq$ 45 represent low PTG, and $\geq$ 46 represent medium to very high levels of PTG (Mazor et al., 2016). A one-sample t-test comparing TNBC survivors' average PTGI score compared to 45 suggests that the study participants, on average, had medium to high levels of PTG, resulting in the rejection of the second null hypothesis (t (60) = 4.14, p <.001).

Figure 3

PTG Symptom Scores for TNBC Survivors 2+ Years Post-Treatment Compared to Cut-Off of "Medium" to "High" PTG



RQ 3: What are the levels of overall QOL, as well as physical, social/family, emotional, functional, and BC-specific well-being among TNBC survivors who are 2-5 years post-treatment?

H*o* 3: TNBC survivors 2-5 years post-treatment will have low scores on overall QOL, as well as physical, social/family, emotional, functional, and BC-specific well-being.

TNBC survivors reported moderate levels of overall QOL (*M* = 80.67, *SD* = 19.88). The minimum score of participants was 41 and the maximum was 132. The hypothesis was the survivors would have a low QOL; however, the survivors had a moderate score of 80 out of 148 so the null hypothesis was retained.

Interestingly, one-sample t-tests comparing my study sample's QOL with that of TNBC patients who just completed treatment (Vadaparampil et al., 2017) supports the conclusion that TNBC survivors 2-5 years post-treatment have worse overall QOL, as well as each of the subscales of QOL (see Table 4).

Table 4

QOL Comparison for TNBC Immediately Post-Treatment vs 2-5 Years Post-Treatment

	TNBC Patients Post-Treatment, Vadaparampil, et al. (2017)	TNBC Survivors 2-5 Years Post Treatment	*t*(60)	*p*
	M (SD)	M (SD)		
Quality of Life (FACT-B Total)	90.1 (28.0)	80.67 (19.88)	-3.70	0.001
Functional	16.7 (7.6)	15.48 (5.78)	-1.65	.103
Social	18.7 (6.3)	15.43 (5.84)	-4.38	.001
Physical	18.2 (8.1)	16.38 (5.74)	-2.48	.016
Emotional	17.5 (5.1)	12.89 (5.07)	-7.11	.001
Additional	19.0 (7.5)	20.51 (5.22)	2.26	.028

RQ4: Do levels of PTSD, and/or PTG predict overall QOL levels among TNBC survivors 2-5 years post-treatment?

H*o* 4: PTSD and PTG levels will predict overall QOL among TNBC survivors 2-5 years post-treatment.

To determine whether there was a relationship between PTSD and QOL, and PTG and QOL, I conducted a Pearson's correlation analysis. The results indicated a moderate, negative relationship between PTSD and QOL (r = -0.72, p < .001). There was a weak, positive relationship between PTG and QOL (r = .26, p = .04). There was no linear relationship between PTG and PTSD (r = -.05, p > .05). To understand the relationship between the independent variables and the dependent variable, I conducted a multiple linear regression. The overall model indicated that PTG and PTSD are significant predictors of QOL ($F_{(2, 58)} = 37.86$, $p < .001$). PTSD significantly predicts QOL scores, and for every one-point score increase, the QOL score decreased by 1.15 points ($b = -1.15$, $p < .001$). The scores for the PTGI showed that for every one-point increase, the QOL score increased by 0.29 points ($b = 0.29$, $p < .05$). Finally, the PCL-C and the PTGI account for 56.6% of the variability in the QOL scores. The null hypothesis that PTSD and PTG levels will not predict overall QOL among TNBC survivors 2-5 years post-treatment is rejected. See Figure 3 and Figure 4 for a scatterplot of the findings.

Figure 3

Scatterplot of PTG Predicting QOL Total

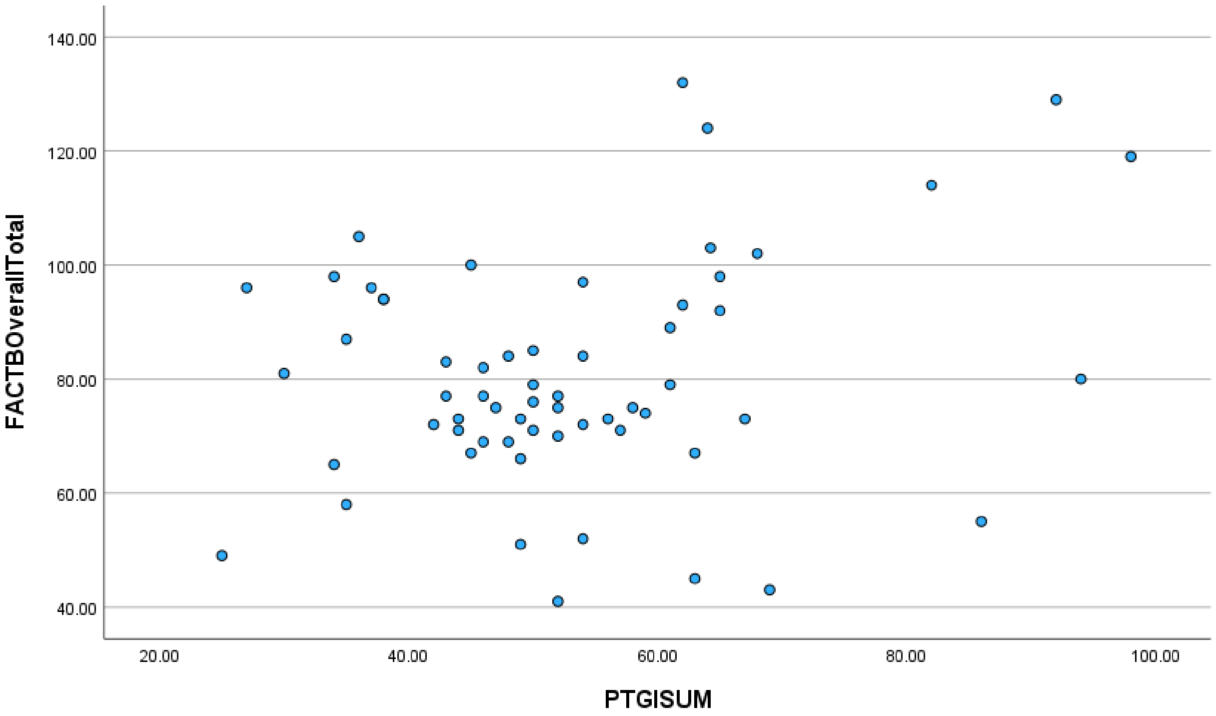
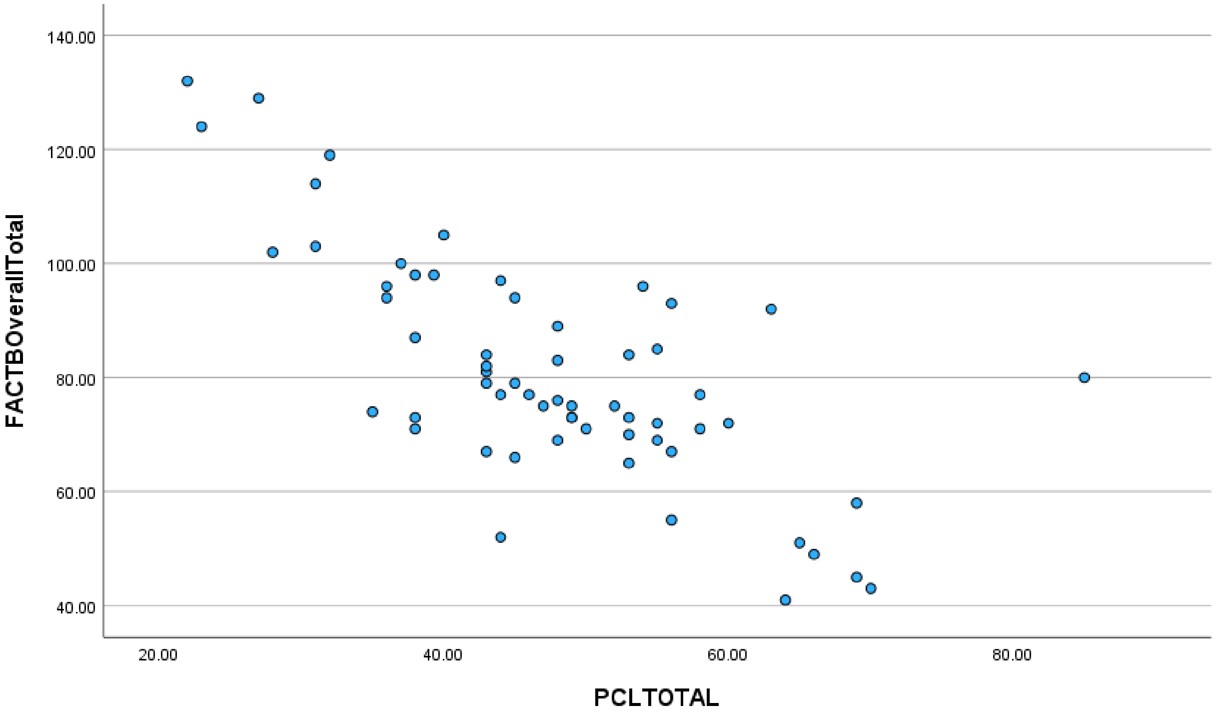


Figure 4

Scatterplot of PTSD Predicting QOL Total



Assumption Tests

All dependent variable measures were assessed for normality violations by examining the Q-Q Plots. No assumption violations were present. An additional assumption of a One Sample T-Test assumption is the independence of observations, which also passed. The assumption of continuous dependent variables is not violated, since all dependent variables are on an interval or ratio scale of measurement. Pearson Correlation Coefficients were assessed between the independent variables (PCL-C & PTGI) for the assumption of multicollinearity for the multiple linear regression analysis. Based on these results, there is no violation of the multicollinearity assumption (*r* = -.05).

RQ 5: What are the unmet mental health needs of survivors post-treatment?

Following the pre-existing scales, nine questions were included that pertained to the individual's experience regarding mental health needs. There were four yes/no questions, one check all that apply, and four short answers. The yes or no questions and check all that apply were answered by all 61 participants. The short answers were optional; only 31 out of 61 participants completed this portion of the study.

Twenty-five out of the 61 respondents, which accounts for 41%, indicated they were offered therapy as a coping resource after treatment. The findings, shown in Table 4, revealed that most TNBC survivors’ treatment teams did ask about their mental well-being (88.5%). Out of the TNBC survivors, 29.5% said they were diagnosed with some mental health issues after the completion of their cancer treatment. 62.1% of the survivors said they did have discussions about what to expect in the survivorship stage of TNBC. Twenty-five percent of these respondents felt their mental health needs were still unmet.

Table 5 indicates that TNBC survivors were offered a variety of mental health resources upon completion of treatment. Support group therapy was the most frequently offered resource, available to 62.3% of survey respondents. Fifty-one percent of survivors were offered medication for anxiety, while 28% were offered medicines for depression. Other resources offered included supportive therapies and included meditation (39.3%), yoga (29.5%), and music therapy (26.2%). In summary, a variety of resources and a range of support options were offered to these TNBC survivors, with support groups and anxiety medication being the most prevalent. (See Table 5).

Table 4

Mental Health Experiences and Needs

Question	Response	Percent (%)
Did anyone on your treatment team ask you about your mental health?	Yes	88.5
	No	11.5
Have you been diagnosed with any mental health issues post-treatment?	Yes	29.5
	No	70.5
Did anyone on your treatment team discuss what to expect in survivorship?	Yes	62.1
	No	37.9
Do you have any unmet mental health needs currently?	Yes	25
	No	75

Table 5

Mental Health Resources Offered

Resource	Percent (%)
Support Group	62.3
Medication for Anxiety	50.8
Therapy	41.0
Meditation	39.3
Yoga	29.5
Medication for Depression Music	27.9

Music Therapy	26.2

Due to the short answers being optional, only 31 out of 61 total participants completed this portion of the study. In Tables 6 and 7, the short answer questions about unmet mental health needs are represented by predominant themes that were revealed from the participant’s answers.

Table 6

Themes for Improving Mental Health

Question	Response	Percent (%)
What could have improved your mental health during the transition to the survivorship phase?	Support, lack of, more information	46
	Counseling & Therapy	29
	Information on survivorship	17
	Support group	8
What could improve your mental health now?	Counseling & Therapy	36
	Time off work	18
	Exercise	14
	Medication	14
	Support group	9
	Unsure	9

Table 7

Themes for Current Mental Health Challenges and Needs

Question	**Response**	**Percent (%)**

What is your biggest mental health challenge currently?	Anxiety	29
	Fear of recurrence	14
	Depression	10
	Cognitive issues	10
	Money	10
	Insomnia	10
	Other miscellaneous mental health Symptoms	23
What are your unmet mental health needs?	Anxiety	21
	Depression	21
	Support issues	21
	Other (Worry, sadness, passing on the BRCA gene, panic, PTSD, anger, and irritability)	17
	PTSD	12
	Cognitive	8

Short answer question one: What could have improved your mental health during the transition to the survivorship phase? Counseling was mentioned in some way by 29% of participants.

The survivors' short answers identified several important factors that potentially affected mental health outcomes, such as a lack of support and lack of information about transitioning to survivorship and feeling alone when treatment was completed.

One quote from a participant relayed several ideas that coaligned with several other survivors' experiences.

> Participant A: After my active treatment, I felt like I was all on my own. All the guidance during active treatment was gone and I was left trying to navigate the effects of putting my life back together while finally fully absorbing all that happened. Survivorship is so, so hard bc [because] all of a sudden, you’re completely alone without the constant of your medical team. Survivorship is a beautiful thing and something I’m beyond thankful for, but I remember how scary and incredibly overwhelming it all was at first, I think patients should receive visits with their medical team at least once a month as almost a check-in…patients value time with their oncologists during active treatment, that having that transitional period for a few months, something as simple as a quick office visit, just so the patient can feel reassured the emotions they’re experiencing while trying to navigate a new life, is substantial. Yes, there are therapists and yes, oncologists are already over-booked, but there is just that connection a patient has from diagnosis through treatment that makes it more meaningful.
>
> Participant B: Being able to understand survivor guilt, losing friends to TNBC who have passed, and proper counseling instead of an oncologist & the BC support worker kept saying I just need to be grateful to be alive &move on. I have felt a complete lack of care once out of treatment.

> Participant C stated, [It would have been helpful to have] a better understanding of what was normal or things to expect or watch out for post-treatment.

Question two: What could improve your mental health now?" Again, counseling and therapy were predominant themes; 36% of participants mentioned counseling and therapy. Participants used phrases like, "being treated for the reason for the feelings and thoughts. One participant added, "[Help] coping with PTSD and going down the rabbit hole of worry," and several participants just answered "counseling" or "therapy."

Question number three: What is your biggest mental health challenge currently? "Anxiety" was the most frequent response with 29%. Anxiety and fear of recurrence were the top reported biggest mental health challenges. Participant D stated, "Anxiety, depression, and support," as one woman said, were the three items that were the top three reported unmet mental health needs.

> Participant E: Anxiety about the cancer returning and how all the environmental stressors, family stress, and financial stressors and [how] they increase the cancer risk and overall health.

However, 23% responded with different mental health symptoms like depression, brain fog, PTSD, self-worth (issues), sadness, grief, anger, irritability, and a fear of "passing on the BRCA (gene mutation) to (my) kids." Participant F responded, "I need to continue to live in the moment, to not worry so much about recurrence," a participant responded.

> Participant G: Memory – [I] can't remember things day-to-day; energy level (is) very low. [I] can't do as much as I used to mentally or physically.

Question four: Do you have any unmet mental health needs currently? Fifteen participants (25%) answered yes, 45 (75%) answered no, and one participant did not answer. (Not listed in Tables 6 & 7).

In question five: What are your unmet mental health needs? The predominant themes for unmet mental health needs among participants were "anxiety and depression." Participant H, a survivor whose TNBC metastasized and spread to other parts of the body, stated, "When I was in stage 2, the hospital offered a helpful support group. Once I became stage 4, I stopped being invited to the group. It is like, now what? Having that local connection helped."

In conclusion, the participant results reflected similar experiences in feeling a lack of care in the transition to survivorship, with a lack of information about treatment side effects and what one should expect, feeling pushed out of care teams and groups, and just in general feeling alone with no understanding of what is happening.

Summary

To summarize Chapter 4, the results are significant and offer new information on PTSD, PTG, QOL, and unmet mental health needs among TNBC. The TNBC survivors 2-5 years post-treatment had high levels of PTSD, with a mean score of PTSD symptoms that is clinically significant for PTSD as defined by the Department of Veteran Affairs for civilians. The TNBC survivors 2-5 years post-treatment had moderate PTG and QOL. However, TNBC survivors 2-5 years post-treatment had lower QOL than TNBC patients post-treatment. Additionally, lower PTSD and higher PTG both predicted higher total QOL.

The yes or no questions and check all that apply were answered by all 61 participants. The responses identified significant gaps in providing mental health resources to these TNBC survivors. Of all the participants, less than half were offered therapy, yet over half were offered support group therapy, which is not appropriate for all clients. Anxiety medications were offered much more often than medications for depression. With depression and anxiety often overlapping, this might indicate a lack of continuity of care or a need for more in-depth diagnostic evaluation. Unfortunately, alternative support therapies weren’t majorly offered, which could indicate a shortage of these services or a lack of education concerning the importance and effectiveness of these treatment modalities.

The qualitative short-answer portion revealed survivors’ responses had themes that indicated the need for counseling and therapy, more resources, care, information, and support. The responses revealed therapy and counseling were believed to be what could have improved mental health during the transition to the survivorship phase and improve current mental health. The biggest mental health challenges reported were anxiety and fear of recurrence. Anxiety, depression, and the need for support ranked equally among unmet mental health needs.

In the next chapter, I will compare these findings to research on PTSD and PTG among the unspecified subtypes of the BC population, as well as highlight the clinical and research implications.

CHAPTER 5: DISCUSSION

Overview

The purpose of this mixed-method research was to investigate the levels of PTSD, PTG, QOL, and unmet mental health needs among women who have survived TNBC and who have completed treatment for the disease. In this chapter, I will provide a summary and discussion detailing the key findings and comparing them to the literature reviewed in earlier chapters of the dissertation. Chapter 5 concludes with findings, themes, limitations, an explanation of how the study contributes to the understanding of the theory of constructs, and a summary.

Summary of Findings

Survey findings revealed new information on the levels of PTSD, PTG, QOL, and unmet mental health needs of TNBC survivors 2-5 years after they completed treatment. The TNBC survivors showed clinically significant levels of PTSD symptoms, offering new information on this population and their mental health. The TNBC survivors of 2-5 years post-treatment had moderate PTG and QOL. TNBC survivors 2-5 years post-treatment had lower QOL than non-TNBC patients post-treatment (Vadaparampil et al., 2017). Additionally, lower PTSD and higher PTG both predicted higher total QOL. The data showed PTSD and PTG can co-exist together and are predictors of QOL.

The survivors’ responses to the questions following the assessment tools revealed several key insights into what was offered to the participants upon entering the survivorship phase. Most respondents (88.5%) reported their treatment team did ask about their mental health. However, 29.5% of the survivors were eventually diagnosed with some type of mental health issue post-treatment. Furthermore, 62.1% of the participants said they had some discussion about survivorship and what they should expect; however, 25% still felt as though their mental health needs were not met. Notably, a recurring theme in the optional short answer responses was the lack of sufficient information provided about what to expect in the survivorship stage.

Only 41% of the TNBC survivors indicated they were offered individual therapy as a resource upon treatment completion; however, 62% were offered support group services, indicating the group was the most often offered resource to incoming survivors. Important to note, however, that individual therapy and support group therapy offer different types of therapeutic techniques and do not fit every therapy candidate. Other support resources offered included medication for anxiety (50.8%), therapy (41.0%), meditation (39.3%), yoga (29.5%), medication for depression (27.9%), and music therapy (26.2%). Despite the availability of these resources, there appears to be a gap in addressing survivors' needs, as shown by participants' reports of unmet mental health needs.

The data emphasizes the importance of comprehensively addressing mental health needs among this population. A significant portion of survey participants reported that they were offered mental health resources and did have discussions about their mental health and well-being. However, the short answer responses pointed out there was a lack of counseling and therapy, as well as not enough information was given about what to expect in survivorship. The discrepancy that was found between the availability of resources like support groups and the reported unmet mental health needs indicates resources may not fully be meeting the TNBC survivors' needs, and/or additional types of support might be helpful. In summary, the findings highlight the need for ongoing evaluation and enhancement of mental health support resources and services for TNBC survivors to ensure the different facets of their mental health and well-being are thoroughly addressed.

Participants identified a lack of adequate support and information during the transition from active treatment to survivorship. The survivors expressed a need for more comprehensive counseling and therapy. There was a theme that participants did not feel like they received adequate support and education about how to move from active treatment to post-treatment. Participants revealed ongoing therapy was needed to manage residual mental health issues like anxiety, and depression, and coping with the fear of recurrence.

Anxiety as a mental health challenge centering around the fear of recurrence was a predominant theme, which aligns with the fact that TNBC has the highest recurrence rate of all breast cancers (Gonçalves et al., 2018). Participants also reported depression, insomnia, and cognitive impairments such as memory issues and brain fog to be among the challenges faced in the survivorship phase.

The respondents reported unmet mental health needs were depression, anxiety management, PTSD symptoms and a need for support. Participants expressed a need for targeted interventions addressing these specific mental health concerns. Broader support needs included issues related to self-worth, physical pain management, and financial stability, all of which indicate gaps in current survivorship care programs.

Discussion

The results of this study offer valuable insights into the real-life, lived experiences of these TNBC survivors’ and their mental health needs, as they navigate this period of transition from active treatment into survivorship and beyond. The themes highlighted the complex impact of psychological, social, and every day factors affecting the transition into survivorship and its influence on outcomes.

Discussion of Findings

The findings of this study highlight clinically significant levels of PTSD, the presence of moderate PTG and QOL, and unmet mental health needs among TNBC survivors. I will discuss each finding in turn. Research has found evidence of PTSD and PTG in BC and cancer patients (Morrill et al., 2008). What is important here is that PTSD is associated with lower QOL and PTG is associated with better QOL. This study supports the evidence of high levels of PTSD, the presence of PTG, poorer QOL, and unmet mental health needs in the TNBC survivor population, warranting focus and attention on TNBC and its long-term impacts on this population.

PTSD

Research Question 1 examined the PTSD levels in TNBC survivors 2-5 years post-treatment. Investigating PTSD throughout this research was grounded in the framework of the Stress and Coping model, developed by Lazarus and Folkman (1985), with the interaction between environmental events (TNBC) and the individual’s appraisal of them (Folkman & Lazarus, 1985). Stress in this study was the TNBC diagnosis, with PTSD symptoms developing when the patient perceived the cancer as taxing or exceeding one’s ability to cope. (Folkman & Lazarus, 1985).

The current study found evidence of clinically significant PTSD among the respondents, which corroborates previous findings in research. Past studies have shown patients with BC have a significant risk of developing PTSD because of the life-threatening, traumatic nature of the disease (Carletto et al., 2019). Studies have also revealed that BC can serve as a stressor to create symptoms to reach a “formal” diagnosis of PTSD (Andrykowski et al., 1998). As previously mentioned, Chan et al. (2018) conducted a study that suggested that more than one-third of cancer survivors were clinically diagnosed with PTSD six months after diagnosis. Chan’s research also revealed that participants met the criteria for PTSD at the study's four-year follow-up (Chan et al., 2018). In one study, researchers found high levels of cancer-related PTSS were present several years after treatment in both survivors and caregivers (De Padova et al., 2020). The current study found evidence to support this past research about PTSD in BC patients and survivors finding levels of clinically significant PTSD in TNBC survivors 2-5 years post-treatment.

Unmet mental health needs like anxiety and depression can lead to PTSD, and PTSD has been found to go undiagnosed for years after cancer treatment (De Padova et al., 2021). It is critical to develop prevention, identification, and intervention programs for these survivors, and this study supports the gap and continued lack of attention that has been given to these issues. This phase of the cancer journey still has little to no research. To improve mental health and QOL in the survivorship phase, these issues must be addressed. Long-term PTSD can hinder recovery, hinder treatment results, and may increase recurrence rates (Niedzwiedz et al., 2019). Studies show there is a lack of follow-up and treatment plans addressing mental health in patients transitioning into survivorship. As discussed in Chapter 2, Leano et al. (2019) found evidence that BC patients have a significant risk of developing PTSD and that it can go undiagnosed well into survivorship. The prevalence of cancer-related PTSD is between 4%-55%. Notably, 64% of participants in the current sample had a PCL-C score of 44 or higher, indicating clinical significance for PTSD. However, despite more cancer patients making it to survivorship, little is known about the long-term impacts of BC on mental health, and even less is known about the impact on TNBC survivors (Carreira et al., 2018). The current study indicated high levels of PTSD 2-5 years into survivorship, supporting past research. Research has shown BC to be a trigger for PTSD, and TNBC appears to be no exception. The results of this study back up Leano et al.'s (2019) idea that more research and attention should be placed on mental health in BC and TNBC survivors so that providers and clinicians can develop treatment programs to address mental health in this population and this stage of the disease journey. As in this study, the presence of clinically significant PTSD in TNBC survivors 2-5 years post-treatment warrants support, PTSD continues to go undiagnosed and treated. Therefore, oncology teams must develop mental health assessments, interventions, and treatment plans to provide appropriate clinical interventions (Leano et al., 2019).

PTG

With RQ2, the study examined the levels of PTG among TNBC survivors who are 2-5 years post-treatment. Researchers agree and this current study supports that a cancer diagnosis has negative, traumatic effects on a patient's mental health and presents with significant levels of PTSD symptoms (Leano et al., 2019) As mentioned in previous chapters, however, patients also experience positive changes known as post-traumatic growth (PTG). The current study found evidence of PTG in all participants supporting prior research (Seiler & Jenewein, 2019). Fekih-Romdhane et al. (2022) found previous research suggested there is a prevalence of PTG in 98% of women diagnosed with BC occurring between 1-5.5 years after diagnosis. Our study found evidence in 100% of the TNBC survivors 2-5 years post-treatment, which supports Michalczyk et al. (2023) findings that all participants in their study had some form of PTG.

Evidence shows that fostering PTG and resilience during cancer treatment may result in better psychological adjustments to the disease (Seiler & Jenewein, 2019). Looking through the lens of the Stress and Coping model and the PTG theory, patients diagnosed with a life-threatening disease like TNBC may try to make meaning out of the disease experience to adjust to the disease. The participants in this study all had some evidence of this experience taking place.

As mentioned in Chapter 2, Michalczyk et al.'s (2022) study did present with mental health issues indicative of PTSD, and they continued to experience intrusive thoughts, arousal, and avoidance, but PTG and PTSD can co-exist. The current study supports past research showing PTSD and PTG simultaneously.

In current literature, research showed that BC trauma can lead to PTG in some women, and that corroborates with the theoretical model of PTG in an oncological setting (Michalczyk et al., 2022). This study adds information on TNBC survivors and the presence of PTG in all study participants. Capaldi et al.'s research (2023) revealed that PTG is a pathway to becoming more resilient, leading to improved psychological outcomes (Capaldi et al., 2023). My findings of higher PTG being related to higher QOL reinforce this concept. Going forward, to improve TNBC survivors' QOL, it could be helpful to identify treatment strategies to foster PTG for better mental health and the reduction of PTSD symptomatology.

QOL

In RQ3, using the FACT-B assessment tool, TNBC survivors 2-5 years post-treatment were assessed for individual levels of their overall QOL, with the breakdown of subsets physical, social/family, emotional, functional, and BC-specific well-being. There are two studies at the date of this paper specifically on TNBC and QOL. One study was among Chinese TNBC survivors (Shen et al., 2020) the second study was of African American TNBC survivors (Vadaparampil et al., 2017). Note that AA and Chinese TNBC patients in these studies did not differ in their levels of QOL. In the current study, TNBC survivors showed a significantly lower

QOL than those reported by Vadaparampil et al. (2017) and Shen et al. (2020) ($t(60) = -3.70$, $p < .001$). The current study revealed lower FACT-B scores than previous studies: Shen et al.'s (2020) score of 90.4, Vadaparampil et al.'s (2017) FACT-B score of 90.1 and as noted in that study an average total score prior was commonly $\geq$100. The major differences found between the current study and Vandparampil and Shen's were treatment stage and ethnicity. Vadaparampil et al. (2017) focused on the African American population, whereas Shen et al. (2020) focused on the Chinese population. The current study was open to the general population of TNBC survivors.

There are confounding variables among the three studies related to ethnicity. African Americans have higher levels of risk for BRCA 1&2 gene mutations and breast cancers, as well as differences in socioeconomic status, access to healthcare, lifestyle differences, and cultural beliefs and practices. To improve the QOL of TNBC survivors, it is important to understand the findings that both PTSD and PTG were found to predict QOL.

In RQ4, the study examined whether or not levels of PTSD, and/or PTG predict overall QOL levels among TNBC survivors. There is no specific research study on this question related to TNBC; however, it is well established that PTSD is associated with lower QOL, and PTG is associated to improved QOL (Morrill et al., 2008). In this study when PTSD increased, the QOL scores decreased, and when PTG increased so did the QOL scores. Therefore, to improve the survivor's QOL, understanding both predictors is imperative in helping survivors improve QOL.

Unmet Mental Health Needs

The last portion of the research (RQ5), sought to get a glimpse of the unmet mental health needs of survivors post-treatment 2-5 years post-treatment. The findings of this study shed light on TNBC survivors' unmet mental health needs and revealed a significant gap in psychological services. Less than half, 41%, of respondents reported being offered individual therapy, supporting existing literature that highlights an inconsistency in access to psychotherapy for survivors of cancer (Krebber et al., 2014). As mentioned throughout this research study, untreated mental health symptoms can lead to PTSD, and as revealed in this study's findings, symptoms of PTSD are present post-treatment. Therefore, the persistence of mental health issues in survivors of BC, including the TNBC survivors in this study, is evident. Brown et al. (2020) revealed that over one-third of patients initially diagnosed with symptoms of PTSD following a BC diagnosis had persistent symptoms or worsening symptoms four years post-diagnosis, reflected in the experiences of this study's participants who had symptoms of PTSD 2-5 years post-treatment.

The short answer responses and the themes highlighted more challenges faced by TNBC survivors in accessing mental health services and support. Respondents expressed a need for continued support after treatment completion. The survivors’ responses emphasized the need for regular check-ins with medical teams and support staff to help address emotional needs during the transition to survivorship. Also, a clear need for emotional support and counseling emerged. Many respondents pointed out struggles with anxiety, depression, and PTSD, as well as a sense of abandonment.

There was a systematic review done in 2019 that compared BC and other cancer survivors; BC experienced a high level of unmet needs (Mirosevic et al., 2022). The study found the most prevalent was fear of recurrence, then information needs, which were also mentioned in many of this study’s short answer responses. In previous studies, the most endorsed unmet need was fear of recurrence, followed by a need for information, both also prevalent in this study’s short answer responses. In an Australian study, breast cancer survivors reported unmet psychosocial needs that were not being met as the following: fear of recurrence, uncertainty about the future, stress on their family, sexual changes, and a need to reduce and manage stress (Lisy et al., 2019). In the current study, both fear of recurrence and stress were mentioned as well.

Respondents identified various unmet mental health needs and post-treatment challenges, like survivor's guilt and lack of access to counseling and emotional support. There was an indication of the lack of and desire for more information about and a clearer plan of what to expect in survivorship. The absence of routine follow-up scans and doctor visits added to the anxiety and stress of navigating transitioning into survivorship. The identified themes in this study align with the existing literature on the unmet mental health needs of BC survivors. Previous research has pointed out the persistence of mental health issues post-treatment and the importance of early intervention and access to therapy and counseling services. This study's findings further contribute to a better understanding of the challenges faced by survivors of TNBC and the importance of addressing the unmet mental health needs of these survivors. Through developing prevention, intervention, and comprehensive survivorship care programs tailored to survivors, we may be able to reduce high mental health symptoms like PTSD and improve the QOL of survivors.

Implications

The study findings contribute new data to the lack of research on TNBC survivors and spotlight their mental health needs post-treatment. It is well documented that BC patients and survivors are at high risk for PTSD, and this study's findings offer information on PTSD levels in TNBC survivors(Brown et al., 2020). The participants in this study reported high levels of PTSD in the period following treatment up to five years. The results support the research by

Cordova and Andrykowski (1998) that PTG and PTSD levels coexist, and for PTG to develop, there must be PTSS. Importantly, PTG has been found to facilitate psychological recovery (Michalczyk et al., 2022). Therefore, clinical interventions to facilitate PTG in survivors with PTSD may help alleviate symptoms and improve QOL.

These findings support the research that has pointed out the need to educate care teams and create clinical treatment plans specific to the BC patient. As research suggests, BC patients are making it to survivorship; however, for TNBC patients, the odds are stacked against them those five years post-treatment. This period is especially stressful, and this study's findings reinforce there is a lack of care in this period for mental health needs and that there is a need for education and clinical care plans aimed at following and caring for those transitioning into survivorship. The qualitative data results also support these findings, there was a pattern that indicated the need for more support, information on what to expect, and counseling during survivorship. For example, therapy and counseling were common themes for what could have improved and can still improve TNBC survivors' mental health. The short answer questions highlighted some of the ongoing mental health needs of survivors and brought attention and awareness to the possible needs of future survivors.

“Anxiety, PTSD, depression, brain fog,” a participant responded when asked about what her unmet mental health needs are.

“Nobody did anything to help my mental health,” one respondent answered.

“Talking to me about what to expect after treatment is finished” could have improved one participant's mental health.

“Is it going to come back, and (I) pray that my children haven’t inherited my BRCA1 faulty gene.”

Chapter Five revealed critical implications for addressing the unmet mental health needs of TNBC survivors. The findings emphasize the need for comprehensive survivorship care plans that are tailored to and prioritize the survivor’s psychological well-being and improve their QOL. Early intervention and access to psychological resources, like counseling, which focus on the challenges faced in this stage of cancer, are critical in filling the gap and better meeting the mental health needs of TNBC patients and survivors.

This study's findings emphasize the need for healthcare providers to be more educated on the unique challenges faced by TNBC survivors. Collaborative efforts between healthcare providers, mental healthcare providers, survivors, and support networks are critical in developing, evaluating, and implementing interventions that specifically help meet the identified mental health needs of those entering and living in the survivorship stage. Also, healthcare organizations, mental healthcare providers, and policymakers must prioritize and allocate resources to support mental healthcare programs and services that will ensure survivors get the comprehensive care they need to thrive and have a good QOL many years beyond treatment completion.

Implication for the Christian Worldview

From a Christian worldview, the church offers a caring body of people who are a support system to others in need and suffering, like TNBC survivors in the aftermath of this traumatic experience. As many people in hard times often question, “Why is this happening to me?” so may the survivor. The clinical implications of this study offer more insight to Christians into the possible emotional and spiritual needs of this population. By having more information about the TNBC survivor’s experience, the church can be better equipped to offer support.

Christians offer hope through prayer and life in Christ and hope is an integral part of living through difficult times. Christians find hope and can offer hope in God's promises, strength, and assurance both in this life and in eternity. In James 5:15, the prayer of faith will save the one who is sick, and the Lord will raise him, (Norton, 2010). For people living with life-threatening illnesses, like TNBC, the hope of healing, and living can be as important as the treatment. Research has shown fostering hope promotes PTG, which in this study was shown to increase QOL.

As Christians this serves twofold, as facilitators of hope through Christ and as workers for God in our field. From a Christian worldview, it is important to consider how faith can influence the TNBC survivor's journey and mental well-being. Understanding how Christian beliefs and practices can impact coping mechanisms and resilience can offer much insight into the holistic care of the TNBC survivor. Developing an understanding of how doctors, nurses, treatment planners, counselors, patients, and survivors can be brought together to gather more research and develop more prevention/intervention plans for TNBC survivors is critical. This collaboration may develop targeted treatment programs that nurture hope and spirituality, fostering resilience and potentially mitigating symptoms of PTSD through fostered PTG.

The call for Christians and researchers is to offer necessary support by integrating these perspectives into oncology plans, survivorship planning, and clinical practices, healthcare providers can create more comprehensive and effective care plans tailored to the holistic needs of TNBC survivors. We must take the implications of this study and move forward to the next steps in research and practice, ensuring that the mental health needs of TNBC survivors are met with the compassion and care they deserve. Integrating spiritual support and community resources within clinical treatment plans can significantly enhance psychological care outcomes.

Limitations

There were limitations in this study. One limitation was in recruiting participants. With TNBC only accounting for 10-15% of BC patients, it was challenging to identify and obtain the desired sample size of n=120. After a low participation response initially, the survey criteria were revised to expand eligibility criteria from 2-3 years post-treatment to 2-5 years post-treatment, and 18-50 years old to 18 and over and then it was reopened. There was a lack of response from breast health navigators and oncology units contacted for recruitment. Therefore, participant selection came from a small number of sources: the APOS membership database and online support groups.

Many different factors could have affected the mental health scores in this survey. For example, patients varied in the different stages and tumor characteristics, which could have affected their mental health. The participant's stage at diagnoses and times between the 2-5 years may impose differences unaccounted for in this study. Other factors such as variations among individual's family support, access to medical care, and mental health history before diagnosis could also have affected outcomes.

The participants' unique resilience factors, coping skills, and prior mental health symptoms, like past trauma, may have affected outcomes but were not addressed in this study. According to the theories that guided this research (Cognitive Model of PTSD, Stress & Coping Theory, the two-pathway model of resilience, and PTG Theory), a survivor's unique coping skills, resilience, and history, among other factors, can impact whether they develop PTG and/or PTSD. Several important limitations to mention are the error of self-reports, the lack of resources required to do longitudinal research over time among the TNBC survivors, and the lack of participation from oncology staff and hospitals.

Recommendations for Future Research

Given the lack of research on TNBC, coupled with the aggressiveness of the disease, early onset, and high recurrence rate, women diagnosed with TNBC are faced with negative statistics from the start. Hearing they have BC, a life-threatening disease, evokes fear and a sense of mortality. Hearing they have TNBC takes the diagnosis threat up a notch, from bad to worse, and lowers their chances of survival immediately. There have been several large studies that found patients with TNBC have worse clinical outcomes and higher recurrence rates compared with hormone receptor-positive and HER-2/neu receptor-positive breast cancer patients. Patients with TNBC have been shown to have the highest rate of recurrence within the first 5 years after diagnosis, with a significant decrease and plateauing of the recurrence rate afterward (Reddy et al., 2018)). TNBC attacks younger women and is diagnosed in later stages, also lessening the chances of survival. For all these reasons and more, researchers must do more research on this deadly disease's effect on women.

Research shows that mental health disorders affect physical health and in cancer patients, it affects survival rates, this is why researchers must begin to study cancer-related PTSD and develop prevention, intervention, and treatment modalities that are specific to cancer and breast cancer. In the future, we need more studies on mental health and TNBC. Is TNBC and its deadly statistics causing even higher levels of PTSD in this BC subtype of survivors? It is so important to identify the level of PTSD because PTSD decreases survival rates. This survey’s participants point out that therapy and counseling could have and can improve their mental health, so clinicians need to have a background in cancer-specific mental health needs. It is important to identify PTG levels, so clinicians may collaborate with the patients to develop skills to specifically increase PTG and promote hope for living.

Further, the experience of cognitive dissonance between expectations that God is good, yet He allowed cancer, or that God is sovereign, yet God did not stop cancer may introduce spiritual struggle in a cancer survivor (Exline et al., 2014). Indeed, Winkleman et al. (2013) found that 58% of people with advanced cancer did report a spiritual struggle. Park and Folkman (1997) suggest that finding meaning is associated with better psychological adjustment. Further, higher levels of meaning-making among cancer survivors are associated with better psychological well-being (Kroemeke & Sobczyk-Kruszelnicka, 2023; Krok et al., 2021). Many people can grow in their faith as they explore how God has redeemed a hardship for their good (Exline et al., 2014). Therefore, identifying the presence of a spiritual struggle among cancer survivors and exploring meaning/growth in the cancer journey may be important for both repairing a spiritual struggle and facilitating better mental health (King et al., 2016). Regardless of the use of the faith component, it is important to examine unmet needs from a clinical standpoint to improve cancer management and develop tailored interventions.

Summary

The findings are key because the information presented is new and wasn’t investigated before this study. TNBC survivors have the highest recurrence rate among the BC population. The period when the statistics are the highest for TNBC to return is within the two to five years post-treatment, which is the period examined in this research study. Several key findings are that TNBC survivors showed clinically significant levels of PTSD in survivorship. The TNBC survivors all experienced some level of PTG. The new data on PTG levels in TNBC survivors as of the date of this paper had not been investigated. The QOL among the TNBC survivors was poorer in this study than in past research investigating TNBC QOL immediately post-treatment. The qualitative data as of the date of this paper had not been examined to my knowledge, and the answers showed a repetition of topics stressing the need for more counseling and therapy and more resources and education on what to expect in the transition into survivorship. The main psychological issues in these survivors were anxiety, fear of recurrence, and depression. The high rates of PTSD symptoms and unmet mental health needs in the survivors of TNBC survivors show there is a need for targeted mental health care services to reduce survivors' mental anguish and improve their quality of life in the survivorship phase.

Clinically, there is a need for more research on TNBC survivors and their follow-up mental health care needs. It is essential that specific screening for PTSD be developed to monitor these patients who are susceptible to recurrence. Prevention, intervention, and treatment of PTSD, fostering PTG for improved mental health will go a long way in helping improve treatment response to cancer and hopefully improve well-being, decreasing some recurrence, but certainly improving this population’s QOL. Future research can be geared toward intervention development, long-term follow-up studies, evaluating survivorship programs, healthcare provider training, breaking down barriers to treatment and incorporating technology-based intervention, all of which can best be facilitated by bringing providers and survivors to the table for forums, discussions, and further research. Currently, there is much work to be done, as evidenced and best said by one survivor in this study:

Mental health during transitioning through survivorship could have been improved by “(my care team) being able to understand survivor guilt, losing friends to TNBC who have passed, and proper counseling. Instead of (the) oncologist & the BC support worker kept saying, ‘I just need to be grateful to be alive &move on.’ I have felt a complete lack of care once out of treatment, most TNBC warriors around the world seem to have regular visits with their oncologist or surgeon, yet here once you are done treatments, they can't wait to push you out the door, there is a lot of confusion on who I can or can't, to be honest, I've had TNBC twice now.”

APPENDIX A: Participant Forms

Permission Request

October 25, 2023

Vicki Davidson

Breast Health Navigator

Novant Health

Charlotte, NC

Dear Ms. Davidson,

As a graduate student in the Psychology Department at Liberty University, I am conducting research as part of the requirements for a doctorate degree. The title of my research project is “Triple-Negative Breast Cancer Survivors: An Investigation of Post-Traumatic Stress Disorder, Post-Traumatic Growth, Quality of Life and Unmet Mental Health Needs in Survivors of Triple-Negative Breast Cancer and the purpose of my research mental health status and needs of TNBC survivors diagnosed at stage 11B-4 who are 2-5 years post-treatment.” I request your permission to research with volunteers affiliated with your cancer center.

Participants will be asked to complete an online questionnaire assessing post-traumatic growth, quality of life, post-traumatic stress symptoms, and answer some questions about their mental health needs. The data will be used to offer some understanding about the mental health status and needs of TNBC survivors. Participants will be presented with informed consent information prior to participating. Participating in this study is completely voluntary, confidential and participants are welcome to discontinue participation at any time.

Thank you for considering my request. If you choose to grant permission, respond by email to [redacted] with a signed statement on official letterhead indicating your approval. A permission letter document is attached for your convenience.

.

Sincerely,
Carla Horton Gray, LCMHC
Doctoral Candidate

Appendix B: Recruitment Materials

Recruitment Email or Letter

Dear Potential Participant,

As a graduate student in the Psychology Department, I am conducting research as part of the requirements for a doctorate degree at Liberty University. My research aims to investigate post-traumatic stress disorder symptoms, post-traumatic growth, quality of life, and unmet mental health care needs among triple-negative breast cancer survivors. I am writing to invite you to join my study.

Participants must be at least 18 years old, diagnosed at stage 11B-4 and 2-5 years post-treatment of receiving surgery and chemotherapy. Participants will be asked to complete an online questionnaire. The online survey should take approximately 45 minutes to complete. The interviews will take 20-30 minutes. Participation will be completely confidential, and no personal, identifying information will be collected, unless participants choose to provide their email in order to be entered in a raffle for a chance to win one of three Amazon gift cards.

A consent document is provided as the first page of the survey, followed by questions to make sure that you meet the study criteria. The consent document contains additional information about my research. After you have read the consent information and indicated you would like to take part in the study, please click here (insert Qualtrics link).

Sincerely,

Carla Horton Gray, LCMHC
Psychology student at Liberty University
[redacted]

Recruitment: Social Media

FACEBOOK

ATTENTION TRIPLE-NEGATIVE BREAST CANCER SURVIVORS: I am conducting research as part of the requirements for a Doctor of Psychology degree at Liberty University. The purpose of my research is to better understand the impact TNBC has on survivors' mental health, their unmet mental health needs, and effects on quality of life. Participants must be at least 18 years old, diagnosed with Triple-Negative Breast Cancer at stage 11B-4, and 2-5 years post-treatment of receiving surgery and chemotherapy. Participants will be asked to complete an online questionnaire taking approximately 30 minutes. Participation will be completely confidential, and no personal identifying information will be collected unless participants choose to give their email to be entered in a drawing to receive one of three $50 gift cards for Amazon.com. If you would like to participate and meet the study criteria, please click here (include a hyperlink to the online survey). A consent document is provided as the first page of the survey.

Recruitment: Verbal Script (Phone or In Person)

Hello Participant,

As a graduate student in the Psychology department, I am conducting research as part of the requirements for a doctorate degree at Liberty University. The purpose of my research is to better understand the impact TNBC has on survivors' mental health, their unmet mental health needs, and effects on quality of life. I am inviting you to join my study.

Participants must be ages 18-50 years old, diagnosed at stage 11B-4 and are between two to three years post-treatment of receiving surgery and chemotherapy. Participants will be asked to complete questionnaires. The questionnaires should take approximately 30 minutes to complete. Participation will be completely confidential, and no personal identifying information will be collected unless participants choose to provide an email in order to be entered in a raffle for a chance to win one of three $50 gift cards to Amazon.com.

To participate, please complete the attached survey and return it by email to [redacted] If you are interested in completing the additional interview, please indicate so in your email. If you meet my participant criteria, I will contact you to schedule an interview and work with you to schedule a time for an interview.

A consent document is provided as the first page of the survey and is attached to this email. The consent document contains additional information about my research.

Because participation is confidential, you do not need to sign and return the consent document unless you would prefer to do so. After you have read the consent form, please complete, and return the survey. Doing so will indicate that you have read the consent information and would like to take part in the study.

Participants will be entered in a raffle to receive one of three $50 gift cards to Amazon.com.

Thank you for your time. Do you have any questions?

Appendix C: Consent Materials

Consent

Title of the Project: Triple-Negative Breast Cancer Survivors: An Investigation of Post-Traumatic Stress, Post-Traumatic Growth, Quality-of-Life and Unmet Mental Health Needs in Survivors of Triple-Negative Breast Cancer.
Principal Investigator: Carla Horton Gray, Doctoral Candidate, Psychology Department, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. To participate, you must be a triple-negative breast cancer survivor diagnosed between stages 2b-4, and 2-5 years post-treatment, and must be at least 18 years old. Taking part in this research project is voluntary.
Please take time to read this entire form and ask questions before deciding whether to take part in this research.

What is the study about and why is it being done?

The purpose of my research is to better understand the impact TNBC has on survivors' mental health, their unmet mental health needs, and effects on quality of life. I would like to use this information to inform mental health care and oncology providers of TNBC survivors.

What will happen if you take part in this study?

If you agree to be in this study, I will ask you to do the following:

1. Complete an online survey asking about post-traumatic stress, post-traumatic growth, quality of life, and unmet mental health needs. This will take about 30 minutes.
2. Provide your email address to be contacted if you should win one of the gift cards.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.
Benefits to society include providing important information about the psychological impacts of TNBC to assist clinical teams to best address the mental health needs of TNBC survivors 2-5 years after treatment.

What risks might you experience from being in this study?

The expected risks from participating in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researchers will have access to the records. Interviews will be conducted in a location where others will not easily overhear the conversation. Recordings will be stored on a password-locked computer for three years and then deleted. The researcher and members of her doctoral committee will have access to these recordings.

How will you be compensated for being part of the study?

Participants completing the online survey will be entered into a raffle to receive one of three $50 Amazon gift cards.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study exit the survey and close your internet browser, then please let the researcher know at the email address/phone number included in the next paragraph.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is Carla Horton Gray. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact her at (828)337-3089 or [redacted]. You may also contact the researcher's faculty sponsor, Dr. Natalie Hamrick, at [redacted]

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and want to talk to someone other than the researcher~~[s]~~, **you are encouraged** to contact the IRB. Our physical address is Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA, 24515; our phone number is 434-592-5530, and our email address is irb@liberty.edu.

Disclaimer: The Institutional Review Board (IRB) is tasked with ensuring that human subjects research will be conducted in an ethical manner as defined and required by federal regulations. The topics covered, and viewpoints expressed or alluded to by student and faculty researchers are those of the researchers and do not necessarily reflect the official policies or positions of Liberty University.

Your Consent

Before agreeing to be part of the research, please be sure that you understand what the study is about. If you have any questions about the study, you can contact Carla Horton Gray using the above information.

I have read and understood the above information. I have asked questions and have received answers. [redacted]

Appendix D: Instruments

Eligibility Criteria

Please review the eligibility criteria for this research study. Check to indicate you meet the requirements.

I am 18 years of age or older.

☐ Yes

☐ No

I was diagnosed with triple-negative breast cancer.

☐ Yes

☐ No

My stage at the time of diagnosis was one of the following: stage 2B, 3A, 3B, 4.

☐ Yes

☐ No

I had one of the following procedures and/or treatments (please click all that apply):

__Lumpectomy

__Single mastectomy

__Double mastectomy

__Radiation

__Chemotherapy

I am at or between two- and three-years post-treatment.

☐ Yes

☐ No

Demographics

Please fill out the demographic questionnaire.

1. What is your age?_______
2. Marital Status

☐ Married

☐ Single

☐ Divorced

☐ Widowed

3. Education (please check the highest degree received).

☐ High school diploma

☐ Associate degree

☐ Bachelor’s degree

☐ Master’s degree

☐ Doctorate

4. Place of Residence

☐ Urban

☐ Suburban

☐ Rural

5. Employment status before diagnosis

☐ Employed full-time.

☐ Employed part-time.

☐ Unemployed looking for work.

☐ Unemployed not looking for work.

☐ Retired

☐ Student

☐ Disabled

6. TNBC stage at diagnosis

☐ Stage 2B

☐ Stage 3A

☐ Stage 3B

☐ Stage 4

7. Lymph node involvement

☐ Y

☐ N

8. Metastasis

☐ Y

☐ N

9. Treatments: check all that apply.

☐ Lumpectomy

☐ Single mastectomy

☐ Double mastectomy

Chemotherapy

☐ Radiation

Post-Traumatic Growth Inventory

Indicate for each of the statements below the degree to which this change occurred in your life as a result of the crisis/disaster, using the following scale.

0 = I did not experience this change as a result of my crisis.

1 = I experienced this change to a very small degree as a result of my crisis.

2 = I experienced this change to a small degree as a result of my crisis.

3 = I experienced this change to a moderate degree as a result of my crisis.

4 = I experienced this change to a great degree as a result of my crisis.

5= experienced this change to a very great degree as a result of my crisis.

0 1 2 3 4 5

1. I changed my priorities about what is important in life.

2. I have a greater appreciation for the value of my own life.

3. I developed new interests.

4. I have a greater feeling of self-reliance.

5. I have a better understanding of spiritual matters.

6. I more clearly see that I can count on people in times of trouble.

7. I established a new path for my life.

8. I have a greater sense of closeness with others.

9. I am more willing to express my emotions.

10. I know better that I can handle difficulties.

11. I am able to do better things with my life.

12. I am better able to accept the way things work out.

13. I can better appreciate each day.

14. New opportunities are available which wouldn't have been otherwise.

15. I have more compassion for others.

16. I put more effort into my relationships.

17. I am more likely to try to change things which need changing.

18. I have a stronger religious faith.

19. I discovered that I'm stronger than I thought I was.

20. I learned a great deal about how wonderful people are.

21. I better accept needing others.

*The Post Traumatic Growth Inventory (PTGI) is scored by adding all the responses. Individual factors are scored by adding responses to items on each factor. Factors are indicated by the Roman numerals after each item below. Items to which factors belong are not listed on the form administered to clients.

PTSD Checklist – Civilian Version (PCL-C)

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, and pick the answer that indicates how much you have been bothered by that problem *in the last month*.

	Response	**Not at all (1)**	**A little bit (2)**	**Moderately (3)**	**Quite a bit (4)**	**Extremely (5)**
1.	Repeated, disturbing *memories, thoughts, or images* of a stressful experience from the past?					
2.	Repeated, disturbing *dreams* of a stressful experience from the past?					
3.	Suddenly *acting* or *feeling* as if a stressful experience *were happening* again (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					

6. Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?

7. Avoid *activities* or *situations* because they *remind you* of a stressful experience from the past?

8. Trouble *remembering important parts* of a stressful experience from the past?

9. Loss of *interest in things that you used to enjoy*.

10. Feeling *distant* or *cut* off from other people?

11. Feeling *emotionally numb* or being unable to have loving feelings for those close to you?

12. Feeling as if your *future* will somehow be *cut short*?

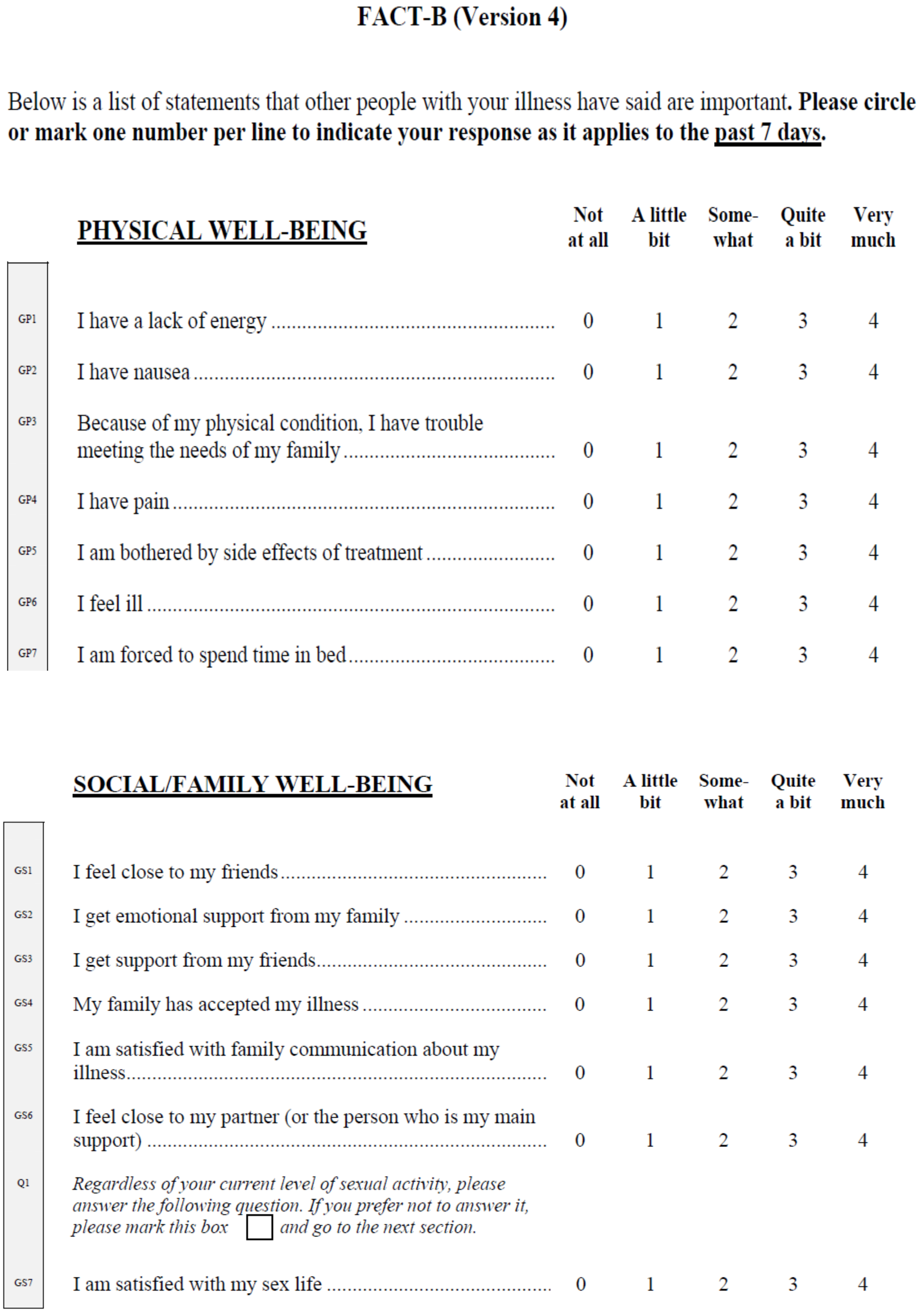
13. Trouble *falling* or *staying asleep*?

14. Feeling *irritable* or having *angry outbursts*?

15. Having *difficulty concentrating*?

16. Being *"super alert"* or watchful on guard?

17. Feeling *jumpy* or easily startled?

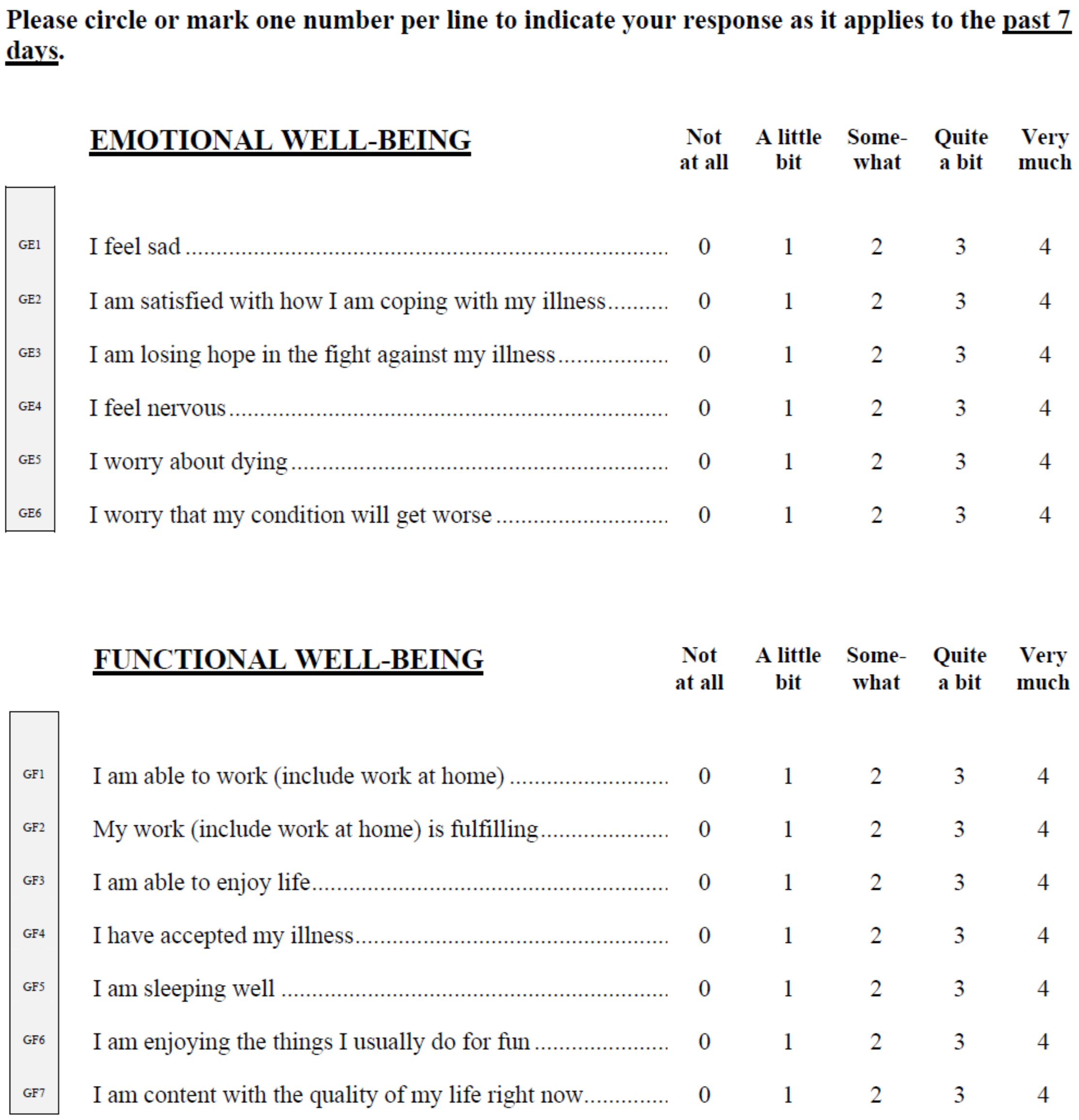


FACT-B (Version 4)

Below is a list of statements that other people with your illness have said are important. **Please circle or mark one number per line to indicate your response as it applies to the past 7 days.**

	PHYSICAL WELL-BEING	**Not at all**	**A little bit**	**Some-what**	**Quite a bit**	**Very much**
GP1	I have a lack of energy	0	1	2	3	4
GP2	I have nausea	0	1	2	3	4
GP3	Because of my physical condition, I have trouble meeting the needs of my family	0	1	2	3	4
GP4	I have pain	0	1	2	3	4
GP5	I am bothered by side effects of treatment	0	1	2	3	4
GP6	I feel ill	0	1	2	3	4
GP7	I am forced to spend time in bed	0	1	2	3	4

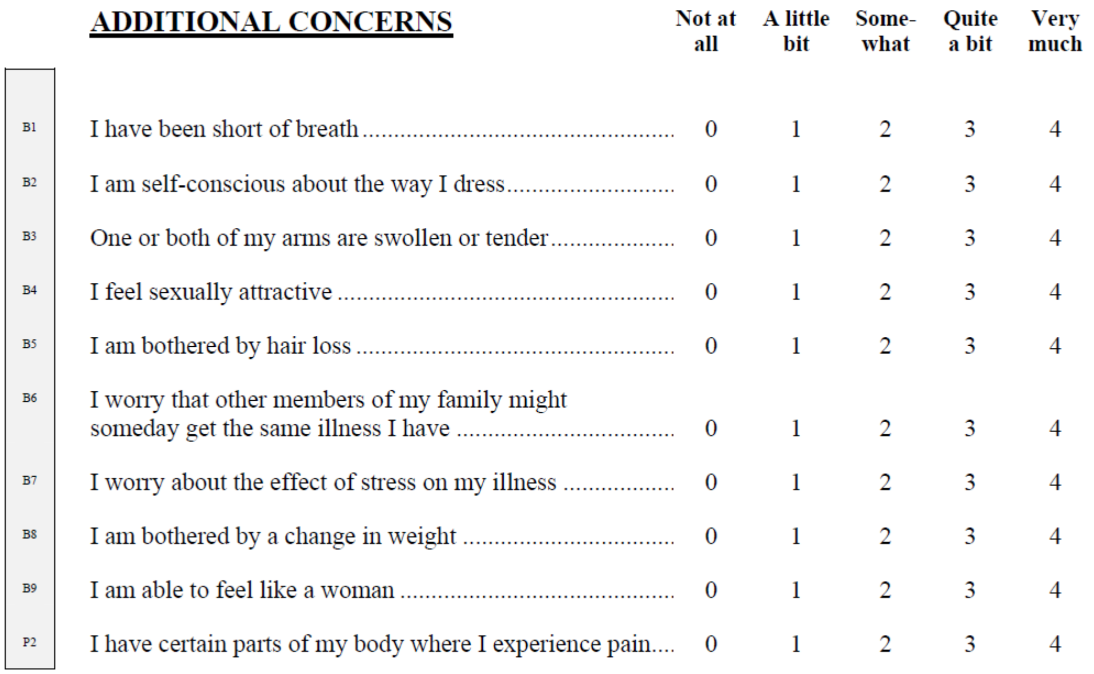
	SOCIAL/FAMILY WELL-BEING	**Not at all**	**A little bit**	**Some-what**	**Quite a bit**	**Very much**
GS1	I feel close to my friends	0	1	2	3	4
GS2	I get emotional support from my family	0	1	2	3	4
GS3	I get support from my friends	0	1	2	3	4
GS4	My family has accepted my illness	0	1	2	3	4
GS5	I am satisfied with family communication about my illness	0	1	2	3	4
GS6	I feel close to my partner (or the person who is my main support)	0	1	2	3	4
Q1	*Regardless of your current level of sexual activity, please answer the following question. If you prefer not to answer it, please mark this box* ☐ *and go to the next section.*					
GS7	I am satisfied with my sex life	0	1	2	3	4



Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

	EMOTIONAL WELL-BEING	Not at all	A little bit	Some-what	Quite a bit	Very much
GE1	I feel sad	0	1	2	3	4
GE2	I am satisfied with how I am coping with my illness	0	1	2	3	4
GE3	I am losing hope in the fight against my illness	0	1	2	3	4
GE4	I feel nervous	0	1	2	3	4
GE5	I worry about dying	0	1	2	3	4
GE6	I worry that my condition will get worse	0	1	2	3	4

	FUNCTIONAL WELL-BEING	Not at all	A little bit	Some-what	Quite a bit	Very much
GF1	I am able to work (include work at home)	0	1	2	3	4
GF2	My work (include work at home) is fulfilling	0	1	2	3	4
GF3	I am able to enjoy life	0	1	2	3	4
GF4	I have accepted my illness	0	1	2	3	4
GF5	I am sleeping well	0	1	2	3	4
GF6	I am enjoying the things I usually do for fun	0	1	2	3	4
GF7	I am content with the quality of my life right now	0	1	2	3	4



	ADDITIONAL CONCERNS	**Not at all**	**A little bit**	**Some-what**	**Quite a bit**	**Very much**
B1	I have been short of breath	0	1	2	3	4
B2	I am self-conscious about the way I dress	0	1	2	3	4
B3	One or both of my arms are swollen or tender	0	1	2	3	4
B4	I feel sexually attractive	0	1	2	3	4
B5	I am bothered by hair loss	0	1	2	3	4
B6	I worry that other members of my family might someday get the same illness I have	0	1	2	3	4
B7	I worry about the effect of stress on my illness	0	1	2	3	4
B8	I am bothered by a change in weight	0	1	2	3	4
B9	I am able to feel like a woman	0	1	2	3	4
P2	I have certain parts of my body where I experience pain	0	1	2	3	4

Mental Health Needs Questionnaire

1. Has anyone on your treatment team asked you about your mental health recently? Yes/No
2. Have you been diagnosed with any mental health issues recently? Yes/No (if yes, list)
3. Did anyone on your treatment team discuss what to expect in survivorship? Yes/No

4. Which of the following mental health resources were offered to you upon finishing treatment (check all that apply:

☐ therapy

☐ support group

☐ yoga

☐ meditation

☐ medication for depression

☐ medication for anxiety

☐ music therapy

5. What could have improved your mental health during the transition phase into survivorship?

6. What could improve your mental health now?

7. What is your biggest mental health challenge currently?

8. Do you have any unmet mental health needs currently?

9. What are your unmet mental health needs?

Mental Health Resources

- Breast Health Navigators and medical doctors
- American Cancer Society: https://reach.cancer.org/p/p1
- National Cancer Institute:
- Susan G. Komen: 1-877-465-6636 or email helpline@komen.org
- BetterHelp.com
- Grow Therapy: https://growtherapy.com/
- Talkspace: talkspace.com
- Regain
- National Mental Health Hotline: 866-903-3787
- National Alliance on Mental Illness: 1-800-950-6264

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