Understanding Mental Health in Breast Cancer from Screening to Survivorship: An Integrative Phasic Model and Tool

Justine Fortin, MSc,[a,b,c] Émilie Rudd, BSc,[c] Claudia Trudel-Fitzgerald, PhD,[c,d,e] Matthew J Cordova, PhD,[f] Marie-France Marin, PhD,[a,c] Alain Brunet, PhD,[b,g,h*]

[a]Université du Québec à Montréal, Montréal, Canada; [b]Douglas Institute Research Centre, Verdun, Canada; [c]Research Center of the Institut Universitaire en Santé Mentale de Montréal, Montréal, Canada; [d]Université du Québec à Trois-Rivières, Trois-Rivières, Canada; [e]Lee Kum Sheung Center for Health and Happiness, Harvard T.H. Chan School of Public Health, Boston, USA; [f]Palo Alto University, Palo Alto, USA; [g]McGill University, Montréal, Canada. [h]National PTSD Research Centre, University of the Sunshine Coast, Sunshine Coast, Australia.

***Correspondence to: Justine Fortin, MSc, Université du Québec à Montréal, Montréal, QC, Canada** (email : justine.fortin@umontreal.ca) *Note : the corresponding author will be changed to Alain Brunet at the end of the review process.

ORCID

0000-0002-7536-7363 (Fortin); 0000-0001-8826-6206 (Rudd); 0000-0001-9989-4259 (Trudel-Fitzgerald); 0000-0003-0562-1407 (Cordova); 0000-0003-0297-5680 (Marin); 0000-0003-2185-1704 (Brunet)

Understanding Mental Health in Breast Cancer from Screening to Survivorship: An Integrative Phasic Model and Tool

Abstract

Integrative models of mental illness and health in psycho-oncology are aimed at all types of cancer, although the patients' experiences and issues may vary. This review summarizes the different theories and models of mental illness and health pertaining to the breast cancer experience and proposes an integrative phasic model applicable to the breast cancer trajectory. Five databases were searched for studies related to breast cancer mental health and illness theories and models. The PRISMA checklist form was used to extract the essential information from the included studies. Eleven theories and models on the experience of breast cancer were found. The integrative model based on these theories and models illustrates that the breast cancer experience is conceptualized as a trajectory with seven landmark "*events*", each associated with a pathogenic "*challenge*" leading to six possible "*symptoms*", 1) psychological distress with anxious features, 2) psychological distress with depressive features, 3) non-specific distress 4) psychological distress with trauma-related features 5) low health-related quality of life, and 6) fear of recurrence. The Breast Cancer Psychological Integrative Phasic Model is supported by a simple clinical tool (BreastCancerPsych - Integrative Clinical Tool) that serves as a valuable resource throughout the care trajectory. These integrative phasic model and clinical tool are designed to help mental health clinicians formulate treatments that are tailored to the needs of their patients, especially for trajectories that are not marked by resilience.

Keywords: Oncology, Breast cancer, Mental Health, Illness, Medicine

Introduction

Breast cancer is the most common type of cancer among women, with more than 2 million cases worldwide (Bray et al., 2018). Despite the fact that its incidence has been declining, the number of cases for a given year remains high, with an estimated 29 400 breast cancer diagnoses expected in 2023 in Canada (Bray et al., 2018; Canadian Cancer Society, 2022; Jemal et al., 2011). Although the remission rate has surged to 96% in recent years in North America, a good survival rate does not necessarily speak of the mental health *functioning* of a cancer survivor (Bower, 2008).

There is consensus that the breast cancer trajectory includes screening, diagnosis, post-diagnosis/pre-treatment, treatment, post-treatment, and survivorship phases (Brattheim et al., 2017; Iwamitsu et al., 2005; Lam et al., 2010). The recurrence phase can be added as a seventh phase, as it represents a critical period for ongoing patient monitoring (Pedersen et al., 2022). The screening phase detects cancer through a lump or anomaly identified by the individual, a partner, or during an annual mammography, while the diagnosis phase refers to when screening test results are announced (Sitt et al., 2018). Post-diagnosis/pre-treatment covers the time between diagnosis and treatment initiation (Brattheim et al., 2017). The treatment phase includes managing the patient to cure tumors, prevent recurrence or spread, and relieve symptoms (e.g., breast pain, lump, redness, nipple discharge) (Canadian Cancer Society, 2022). The post-treatment phase starts after treatments (Trayes & Cokenakes, 2021). The survivorship phase begins when there are no cancer signs for at least 5 years post-treatment (Miller et al., 2008). Finally, recurrence occurs if breast cancer stem cells return, either at the original site or elsewhere (Fillon, 2022). These phases pose various challenges to patients' mental health.

The emergence of psycho-oncology highlights that cancer affects patients psychologically, not just physically (Holland, 2002, 2018). As survival rates increase, greater attention to the

psychological aspects of the disease is necessary. Various theories and models of mental illness and health, building on psycho-oncology, explore psychological responses across the cancer trajectory and the psychological, social, and behavioral factors affecting cancer risk and survival (Holland, 2018; Jacobsen & Andrykowski, 2015; Kangas & Gross, 2020; Lang-Rollin & Berberich, 2018; Stanton et al., 2015). Integrating these models into practice allows tailored interventions to address patients' mental health alongside medical treatment, improving coping strategies and quality of life (Rodriguez et al., 2014). However, existing integrative models are generalized for all cancers, though patients' experiences vary by diagnosis (Deshields et al., 2011, 2014; Trudel-Fitzgerald et al., 2013). For example, breast cancer differs in biological traits (e.g., hormone receptor, HER2 status), risk factors (e.g., BRCA mutations), prevention methods, and screening (Sitt et al., 2018; Trayes & Cokenakes, 2021). These factors contribute to distinct mental health challenges, as women with breast cancer report higher distress than those with gastrointestinal or lung cancers (Trudel-Fitzgerald et al., 2013), emphasizing the need for breast cancer-specific models across the care trajectory.

The objective of this review is twofold: Firstly, to summarize the various pathogenic theories and models that have been developed or applied specifically for breast cancer and argue that each of the seven phases presents distinct challenges and may lead to psychological symptoms reaching a pathological level necessitating treatment. Secondly, to develop a conceptual integrative model and clinical tool, based on existing models, which will include the main challenges, various psychological distress symptoms and incorporates the different phases of the care trajectory.

Methods

In order to meet the current objectives, the PRISMA methodology was followed to conduct the review (Liberati et al., 2009; Moher et al., 2009).

Data collection

Five databases were chosen to search for studies related to breast cancer published in peer-reviewed journals: PsycInfo, Web of Science, PubMed, and CINAHL. Keywords were selected with the help of an experienced librarian in the field. We searched for the keywords [breast cancer or cancer breast or breast neoplasm* or neoplasm* breast or breast tumo* or breast carcinoma* or mammary cancer or mammary carcinoma*] AND [illness theory or illness model* or mental health theory or mental health model* or psych* theory or psych* model*] in the databases with no year constraints in June 2023. As the search progresses, more keywords were identified and added as needed. A second round of searching was conducted in January 2024 before the analysis was carried out.

Eligibility criteria

To qualify for inclusion in the sample, the theories/models had to: a) be developed or adapted to breast cancer experience b) address the mental illness or health of patients living with breast cancer during at least one phase of the breast cancer trajectory (screening, diagnosis, post-diagnosis / pre-treatments, treatments, post-treatments and survivorship or recurrence) c) report at least one psychological distress symptom (valid self-report measure or non-self-report): depressive, anxiety, non-specific distress, trauma-related features or quality of life/well-being[1]; d) be available in English or French; and e) be available in hardcopy or downloadable form. Exclusion criteria were studies that presented theories/models that were a) developed or adapted for cancer in general or other cancer type b) empirical studies reporting statistical models. Randomized trials were excluded as they typically focus on testing interventions or treatments rather than developing or integrating theoretical models, which was the goal of this review (Booth et al., 2012; Thomas et

[1] See Supplemental for definition and rational behind these various psychological distress symptoms.

al., 2012).Furthermore, no grey literature (e.g., dissertations, policy documents, conference abstracts) was included in the study, as we aimed to ensure the reliability and rigor of our findings by focusing exclusively on peer-reviewed articles from selected databases (Hackenbroich et al., 2022; Hopewell et al., 2007).

Procedure and synthesis

Afterward, articles whose title and abstract fit the inclusion criteria were exported to the Rayyan website (Ouzzani et al., 2016). On this platform, two research team members (double-blinded) [JF; ER] selected the articles that could be part of the final sample based on the abstract. When uncertainties about the eligibility of studies occurred, a third person investigated until 100% agreement was achieved [AB]. The PRISMA checklist form was used to extract the essential information from the remaining articles, and the exclusion criteria were then be applied. Quality appraisal and/or formal risk of bias assessments were not conducted, as the focus was on synthesizing concepts, theories, and models rather than evaluating the methodological quality of individual studies (Gough et al., 2012). Nevertheless, the strengths and limitations of each theory or model included were evaluated in accordance with review guidelines (Gough et al., 2012). Data was extracted for all studies rated as eligible, including the following fields: authors, year published, study location, sample characteristics, data collection and analysis.

Developing the integrative model and Clinical tool

The integrative model was developed through an analysis of selected studies, chosen based on their documented challenges, phases, and psychological symptoms. These studies were systematically categorized according to the phases they addressed and specific aspects relevant to the model described in each. Subsequently, the model served as the foundation for the development of a

clinical tool, which incorporates considerations of illness challenges, symptoms, and phases. This tool was presented at the 39th Canadian Association of Psychosocial Oncology (CAPO) conference (https://www.capo.ca/CAPO-2024; Fortin et al., 2024), where it received feedback from psychosocial experts, including researchers, patient partners, and caregivers. This feedback informed revisions aimed at enhancing the tool's potential usability and integration into clinical practice (Domecq et al., 2014).

Results

Theories and Models of Event-Related Mental Illness and Health in Breast Cancer

We found eleven theories and models on the experience of breast cancer that we will briefly summarize (see Figure 1). The descriptive additional information of each theory and model can be found in Table 1.

[INSERT FIGURE 1 ABOUT HERE]

Figure 1. PRISMA Flow Diagram of study selection process (36)

Table 1. Descriptive data of the mental health and illness theories and models for breast cancer (*n* = 11)

[INSERT TABLE 1 ABOUT HERE]

Braden et al.'s Combined and Alternative Model

Braden et al. (1998) posits that the stimuli that allow patients to learn about their disease are the psychological (i.e., depression burden) and physical side effects experienced (e.g., nausea) as part of the cancer diagnosis and treatment. For Badger et al. (2004), who adapted the model to breast

cancer population, the perceived severity of illness serves as a trigger for patients living with breast cancer to initiate a learning process (i.e., making sense of their illness experience). Especially during the treatment phase, this learning process can trigger depressive symptoms, which may eventually be overcome by the perception of having the resources to adapt psychologically and physically to cancer (Badger et al., 2004).

Functional Model of Counterfactual Thinking

Roese's (1994) functional theory of counterfactual thinking argues that receiving a breast cancer diagnosis activates mental representations of past alternatives, producing both positive and negative emotions (Roese, 1994; Gilbar & Hevroni, 2007). The coping strategy employed—whether adaptive (e.g., spirituality, seeking social support) or less adaptive (e.g., avoiding disease information)—influences the experience and evaluation of having breast cancer (Al-Azri et al., 2009; Cowley et al., 2000). For instance, younger patients using strategies characterized by combative spirit and fewer strategies characterized by hopelessness/impotence, anxiety, and fatalism coped better (Schnoll et al., 1998; Wang et al., 2013).

Social comparison is a key coping strategy in counterfactual thinking. This strategy can positively or negatively affect psychological adjustment to breast cancer (Wood et al., 1985). Patients without immediate comparison points who look to media "supercopers" may feel inadequate (Wood et al., 1985; Taylor & Lichtman, 2003). Others may either compare themselves to similar individuals (similarity perspective), which is both adaptive and informative or to those better off (upward comparison perspective), which is usually detrimental (Wood et al., 1985; Van der Zee et al., 2000). Downward comparison, comparing oneself to those less fortunate, can boost self-esteem (Wood et al., 1985; Van der Zee et al., 2000). Yet, the most effective strategy appears to be comparing oneself to similar individuals (Wood et al., 1985; Van der Zee et al., 2000).

Human Response to Illness Model (HRTI)

Mitchell et al.'s (1991) model describes anxiety as a multidimensional response, manifesting physiologically (e.g., accelerated heart rate), pathophysiologically (e.g., cortisol levels), behaviorally (e.g., aggression, isolation), and emotionally (e.g., introspection, shared meaning). Pedersen et al. (2010) adapted only the physiological dimension for breast cancer, where anxiety is a response to a perceived threat like cancer (Stark & House, 2000; Smith & Vale, 2006). Anxiety triggers physiological responses to reinstate homeostasis (Smith & Vale, 2006; Steimer, 2002), with the central nervous system determining whether an event is threatening (Pedersen et al., 2010). When it is, the sympathetic nervous system and hypothalamic-pituitary-adrenal axis activate (Smith & Vale, 2006; Steimer, 2002), increasing heart rate, blood pressure, and blood vessel dilation (Pedersen et al., 2010), while the adrenal gland releases cortisol (Pedersen et al., 2010). If homeostasis isn't restored, pathological anxiety can arise, leading to more severe health issues or psychiatric comorbidities (Pedersen et al., 2010; Stark & House, 2000).

Illness Intrusiveness Theoretical Framework

Patients' health-related quality of life can fluctuate when one's daily functioning is altered by a life-threatening illness, such as breast cancer (Devins et al., 2006). The Illness Intrusiveness Theoretical framework of Devins (2010) was applied to six common types of cancers, including breast cancer, which provides an understanding that psychosocial (e.g., social support, spirituality), contextual (e.g., level of education, age), and disease/treatment (e.g., severity of illness, side effects) factors modulate the level of health-related quality of life reported by patients in the treatment and post-treatment phases (Devins et al., 2006). In fact, having to commit to a treatment plan (e.g., several chemotherapy appointments) and to live with various treatment side effects means that breast cancer can become an intrusion into the patient's life balance, be perceived as an

additional stressor to the daily hassles, and in turn, interfere with various life domains (Sohl et al., 2014; Avis et al., 2012). Altogether, such intrusion may lead to psychological distress, particularly to depressive symptoms (Sohl et al., 2014).

Machine Learning-Based Pipeline Theory

This theory was adapted for patients living with breast cancer by Kourou et al. (2021) as they attempted to identify predictors of depressive symptoms that could impede readjustment. Specifically, the model illustrates that the individual's sense of coherence (i.e., sense of control, meaning, and positive expectations), social and cognitive functioning, resilience, and self-efficacy in coping with cancer were statistically related to reported depressive symptoms (Kourou et al., 2021). However, few medical factors (i.e., cancer stage and menopausal status) appeared to be associated with the observed depressive symptoms, which was explained by two possible reasons (Kourou et al., 2021). The first is that the data used to develop the theory were collected early in the cancer trajectory, which probably reflects a period where patients are still in shock and focus on the overall diagnosis and treatment challenges rather than on specific medical variables (Kourou et al., 2021). The medical variables may be more important in later phases of the disease trajectory (Wang et al., 2020). The second is that patients' reactions are shaped by their understanding of the situation and their ability to manage it, as well as by the symptoms experienced, rather than by specific medical facts, which are just one more piece of information processed as part of the larger self-regulatory mechanism (Kourou et al., 2021). Other authors also suggest that depressive symptoms increase over time and tend to follow anxiety symptoms during the breast cancer trajectory (Stanton et al., 2015; Yang et al., 2022).

Mishel's Uncertainty in Illness

Mishel's (1990) theory suggests that uncertainty following an event like a cancer diagnosis can impair one's ability to interpret the disease and outcomes. Uncertainty arises when insufficient information prevents categorization of the event, but it's not deemed feared or desired until its implications are clear (e.g., symptom impact on mental health; Mishel, 1990). This vague situation can lead to various conclusions (Mishel, 1990). The theory has been applied to breast cancer patients, from screening to post-diagnosis (Liao et al., 2008). In 134 breast cancer patients, uncertainty at screening correlated with post-mastectomy anxiety (Cho, 2000). Another study showed higher uncertainty and anxiety levels before than after diagnosis in 127 patients (Liao et al., 2008), likely due to the unpredictability of the unknown versus diagnosis details making outcomes clearer (Deane & Degner, 1998). Regardless of the stage, patients with benign tumors reported lower uncertainty and anxiety than those with malignant tumors (Liao et al., 2008), highlighting the importance of tumor type in mental health. The theory also applies to breast cancer survivors in remission (Wang et al., 2020; Maheu et al., 2021), where uncertainty may affect hope, complicating survivorship (Wonghongkul et al., 2000). However, aging survivors report fewer physical symptoms, reducing uncertainty and improving mental health (Maheu et al., 2021), though time/age isn't directly considered in the theory.

The Network Model of Post-traumatic Stress Disorder (PTSD)

This theory posits that a cancer diagnosis can trigger pathological stress reactions linked to the severity and uncertainty of the life-threatening disease (Kangas et al., 2002). Cancer is represented as a memory network of interconnected elements, including images (e.g., tumor on mammogram), cognitions (e.g., "I'm going to die"), emotions (e.g., fear), physiological responses (e.g., shortness of breath), sensory experiences (e.g., dizzy), meanings (e.g., loss of control), and behaviors (e.g., avoidance). Stimulating one element can trigger others, with seemingly unrelated stimuli activating

trauma responses. To protect against the threat to survival, many patients engage in denial or avoidance (Kangas et al., 2002). However, avoidance of negative emotions can lead to hypoactivation (e.g., emotional numbness) and hinder recovery by preventing habituation and corrective learning in the cancer fear network (Kangas et al., 2002). Recovery requires activating the fear network and incorporating new, safety-related information to reduce the perceived threat (Kangas et al., 2002).

Recurrence Model 1: Fear of Cancer Recurrence

At the survival and recurrence phases of cancer, fear of recurrence can be experienced. Accordingly, some models have been developed in this field and applied to breast cancer specifically. The first is the Fear of Cancer Recurrence model, which puts forward that fear is a multidimensional construct in which external and internal cues (e.g., physician cues and symptom cues) increase patient's perceived risk of recurrence (Lebel et al., 2018; Yang et al., 2022). Fear of recurrence includes, but is not limited to, worries about breast cancer returning or progressing, regret about treatment decisions, memory dysfunction, lack of self-efficacy, and difficulty making plans (Maheu et al., 2021). In relation to the symptomatology associated with PTSD, it has been noted that the fear of recurrence is associated with hypervigilance towards physical symptoms and interpreting these sensations as evidence of recurrence (Yang et al., 2022). Additionally, unrealistic fears and misjudgment of danger are noted in survivors who perceive themselves at high risk of recurrence (Maheu et al., 2021). A potential or existing threat of cancer recurrence may contribute to maintain a cycle of anxiety and relief (Maheu et al., 2021). However, the authors did not comment on the directionality of whether fear of recurrence comes before anxiety symptoms or vice versa.

Recurrence Model 2: Network Model of Fear of Recurrence

Another recurrence model is the Network Model of Fear of Cancer Recurrence, which portrays the inter-relationships between the fear of cancer recurrence, anxiety, and depressive symptoms (Yang et al., 2022). The model posits that anxiety symptoms enhance the fear of breast cancer recurrence and depressive symptoms (Yang et al., 2022). Indeed, "feeling afraid," "uncontrollable worry," and "restlessness" are anxiety symptoms that are connected to the fear of cancer recurrence (Yang et al., 2022; Mutsaers et al., 2016). However, the authors did not address the directionality of these variables, which makes it difficult to draw conclusions about which psychological reaction comes before the other.

Recurrence Model 3: Hopelessness Theory of Depression

The third model of recurrence is the Hopelessness Theory of Depression, which posits that social support and hopelessness are powerful predictors of depressive symptoms (Brothers & Andersen, 2009) and has been applied to patients living with a recurrent breast cancer diagnosis. Women diagnosed with recurrent breast cancer may feel hopeless, as the trajectory of the disease will likely not lead to survival, but rather to death, and in turn develop depressive symptoms (Yang et al., 2022; Brothers & Andersen, 2009; Sarenmalm et al., 2009). A protective factor that modulates these depressive symptoms would be consistent and positive social support (Brothers & Andersen, 2009). For instance, patients who do not have a romantic partner appear to be more prone to developing depressive symptoms following their diagnosis of recurrent breast cancer (Brothers & Andersen, 2009).

Trajectory of Breast Cancer Explanatory Framework

The Trajectory of Breast Cancer (TBC) explanatory framework offers a theoretical synthesis that highlights women's stories of living with breast cancer (Smit et al., 2019). The TBC framework is

formed of eight core themes that synthesize key experiences from screening to survivorship (Smit et al., 2019). For instance, issues associated with breast cancer burden, confrontations over existential issues, illness or symptom appraisal as not being worrisome, sources of available support, belonging to the healthcare system, self versus others, self-image, and survivor identity are elements that patients may struggle with. Patients living with breast cancer may experience these eight core themes in varied ways due to individual emotional differences in facing a given situation. Therefore, they need to put forth strategies to overcome these challenges (Smit et al., 2019). It has been shown that sensitivity from the healthcare professionals and social support may reduce the negative mental health impacts of breast cancer throughout the trajectory (Sacks et al., 2016).

Limitations of existing models and theories

Current models and theories contribute to our comprehension of specific aspects of the care trajectory experience, yet they often lack crucial information. While these models and theories offer valuable insights into individual symptoms of psychological distress (e.g., only focusing on anxiety symptoms), they may fall short in providing a comprehensive understanding of the broader impact on the patient's mental health. Furthermore, these models and theories typically concentrate on one or two phases of the trajectory, primarily focusing on the treatment phase, thereby neglecting mental health challenges that may arise across all stages. Lastly, the recurrence phase, while not universally experienced by all patients, is frequently overlooked in existing models and theories. Recognizing the significance of patients' mental health throughout the entire trajectory underscores the necessity for an integrative model that comprehensively addresses mental health challenges across each breast cancer phase, offering a more holistic and effective approach to care. An important innovation of the integrative model lies in its reliance on theories and models that

were originally constructed using either qualitative (e.g., Smit et al., 2019) or quantitative (e.g., Kourou et al., 2021) data. What sets our model apart is its distinctive approach of incorporating both types of data sources, providing a more comprehensive foundation.

A Proposed Integrative Model and Clinical Tool

Across the various theories and models of mental illness and health applicable to the breast cancer experience that were presented above, there are patterns of symptoms that can be synthesized into a single overarching, integrative model. To this end, the theory of Séguin et al. (2012) is leveraged, which postulates that the breast cancer trajectory from illness to recovery represents a personal crisis spanning several months to years, and which can be divided into seven phases (Séguin et al., 2012). Each phase is marked by a landmark "event" with its own specific "challenge" and in most cases a predominant "symptom" domain (Séguin et al., 2012). The proposed integrative model considers the full range of theories, models, symptoms of psychological distress, quality of life, fear of recurrence, and the trajectory of the disease (see Figure 2).

[INSERT FIGURE 2 ABOUT HERE]

Figure 2. The Breast Cancer Psychological Integrative Phasic Model

Breast Cancer Psychological Integrative Phasic Model

(1) Screening. The first time a lump is felt in the breast would be considered the first landmark "event". Once the abnormality is discovered, it eventually leads the patient to consult a doctor for biopsy (Katapodi et al., 2004). Psychologically, this discovery triggers a personal crisis related to one or more intrapsychic issues (i.e., challenges), which are potentially pathogenic. Physiologically, the fear of undergoing screening tests (e.g., mammograms and biopsies) and

possibly receiving a diagnosis can cause stress that manifests itself in psychological (perceived stress) and physiological (cortisol secretion) responses (Smith & Vale, 2006; Steimer, 2002; Stark & House, 2000). The main "challenge" experienced during the screening phase is that the discovery of the anomaly creates uncertainty and concerns, as proposed by Mishel's Uncertainty in Illness theory (Mishel, 1990) and the TBC framework (Smit et al., 2019). At this point, the main "symptom" dimension that emerges is one congruent with anxiety, which can manifest as physiological responses (Gilbar & Hevroni, 2007) and the so-called non-specific or general distress. Patients are in an unknown situation, which may activate a variety of catastrophizing scenarios regarding their daily lives, health, and future (Wang et al., 2020). A common trauma and stressors-related (TSR) and/or anxiety symptom during this phase is avoidance (Smit et al., 2019). Avoidance often stems from a fear of receiving bad news or a reluctance to confront medical issues, which can unfortunately lead to delayed diagnosis and treatment (Smit et al., 2019). Also, quality of life is often compromised (Mokhatri-Hesari, 2020), negatively affecting emotional well-being (e.g., difficulty coping with the possibility of having cancer), social well-being (e.g., not receiving the expected social support), and existential/spiritual (e.g., meaning in life) dimensions (Mokhatri-Hesari, 2020; Avis et al., 2012).

(2) Diagnosis. The communication of the results of the biopsy is considered the landmark "event" of the diagnostic phase. This event is an unfolding process with different stages, from confirming a cell type to determining the genetic details and hormone sensitivity, which all have implications for treatment. The main "challenge" in receiving the diagnosis is that patients are faced with an imbalance in their health. In some cases, the cancer diagnosis can be perceived as life-threatening, since it can sometimes lead to death (Smit et al., 2019; Reich et al., 2008). The announcement of the diagnosis alone can trigger symptoms of psychological distress and

predispose patients to psychiatric disorders for the rest of their illness trajectory, as the Human Response to Illness Model (Mitchell et al., 1991) and the Illness Intrusiveness Theoretical Framework propose (Devins, 2010). For other patients, the diagnosis is a form of relief in that they can finally put a name on their so-far unknown condition and regain control of their lives. The "symptom" developed or accentuated by the diagnostic phase is one of peritraumatic distress (Brunet et al., 2001), exemplified by shock, fear, dissociation, non-specific distress, and the onset of TSR symptoms (Cordova et al., 2007). A strong physiological and/or psychological stress response may also emerge at the time of diagnosis, and this may tend to decrease in the presence of protective factors (e.g., social support) or become chronic (Smith & Vale, 2006; Carlson & Bultz, 2003). The diagnosis phase can also be characterized by specific anxiety symptoms when breast cancer is considered a non-life-threatening danger (Stark & House, 2000). Not surprisingly, anxiety symptoms appear to be lower in patients diagnosed with benign tumors than in those diagnosed with malignant tumors (Liao et al., 2008). Depressive symptoms are predicted to appear later in the trajectory, as the losses become more apparent, so any depressive symptoms at this stage are mainly observed in patients who were experiencing them before the screening phase (Vahdaninia et al., 2010). Quality of life is influenced by the presence of other psychological symptoms, such as TSR symptoms (e.g., denial, hypervigilance), and the extent to which such symptoms interfere with daily life (Stanton et al., 2015).

(3) Between diagnosis and treatment. Treatment decision-making and waiting for treatment initiation after being diagnosed with breast cancer is the landmark "event" of the phase between the diagnosis and the treatment. The main "challenge" regarding decision-making is that in many cases, patients are given choices between treatment approaches, which requires them to digest complex information about probability and make decisions they may not feel prepared to

make (Maheu et al., 2021). Also, the waiting phase is again associated with uncertainty and the unknown, and coping with it represents the second main "challenge" in this phase. This time, the uncertainty is associated with the treatment(s) and the prognosis of the cancer according to Mishel's Uncertainty in Illness theory (Mishel, 1990). The main "symptom" dimension of this phase can be characterized by a blend of anxiety, depression, non-specific distress and TSR symptoms. It is also during this phase that patients introspect and evaluate their health status and various issues such as family, social, and professional life, which may lead some to a sense of grief or loss (e.g., loss of health) and develop depressive symptoms, according to the machine learning-based pipeline theory (Kourou et al., 2021). A positive evaluation can lead to a better quality of life, whereas a negative one can cause or exacerbate the development of various symptoms of psychological distress (Mokhatri-Hesari, 2020).

(4) Treatment. The next landmark "event" of the breast cancer trajectory is when the patient living with breast cancer begins treatments (e.g., radiotherapy, chemotherapy). Two "challenges" may emerge during this phase. The first one is that many will be affected by new functional limitations (e.g., in their professional or familial roles), mainly because of treatment side effects. This represents a major issue in their self-perception, according to Braden et al.'s (1998) combined and alternative model. The second challenge is that some patients will develop body image problems, mainly related to the mastectomy, which can accentuate the feeling of loss of control and thus have an impact on self-esteem and quality of life, as per the machine learning-based pipeline theory of Kourou et al. (2021) and the TBC framework of Smit et al. (2019). The treatment phase leads to even more heterogeneous trajectories, and it is difficult to identify a unique predominating "symptom" dimension. Psychological distress, anxiety, depression, and TSR symptoms are all quite likely. During this phase, the physical side effects (e.g., insomnia, fatigue,

nausea, pain) associated with treatments may compound the psychological symptoms (Deshields et al., 2011; Braden et al., 1998). Quality of life can also be seriously affected by the treatments and their side effects in one or several domains, including general health, physical symptoms, sexual functioning, emotional well-being, cognitive impairment, role functioning, social well-being and existential/spiritual issues (Movsas, 2003). Coping style (e.g., seeking social support) at this stage will have a major influence on the mental health of patients, as the TBC framework suggests (Smit et al., 2019). Additionally, patients living with a metastatic breast cancer may experience treatment interruptions without progressing to subsequent phases, intensifying psychological symptoms compared to patients with a higher chance for recovery (e.g., early-stage diagnoses) (Badger et al., 2004).

(5) Post-treatment. The end of the treatment is the next landmark "event" in the breast cancer trajectory. During this phase, patients attempt to recover and try to make sense of what has happened to them. This represents their main "challenge." Yet, another "challenge" is that although the medical treatments are completed, the side effects of the treatments may continue to persist (e.g., pain, hair loss, fatigue, memory difficulties) and thus influence patients' quality of life, according to Braden et al.'s combined and alternative model (Braden et al., 1998). A third "challenge" that is empirically documented and clinically reported is the deterioration of social support (Smit et al., 2019; Fong et al., 2017). Follow-up with the medical team becomes rarer from this stage onwards, and declines (e.g., going from several professionals to just one to do follow-up) (Fong et al., 2017). The social support from family and friends can also lessen (i.e., the end of treatment marks the disappearance of the cancer and the impression that the patient no longer needs functional (e.g., going to appointments) and emotional (e.g., less perceived unknown) support. This is reported in the TBC framework (Smit et al., 2019). Moreover, social constraints—social

responses that overtly and/or covertly inhibit talking about the cancer experience—may also emerge and lead to increased distress (Adams et al., 2015). The predominant "symptoms" during this phase are depression-related and those associated with a TSR disorder (e.g., reexperiencing or recalling unpleasant memories) (Kourou et al., 2021). Feelings of loss (e.g., breasts, hair) or grief, associated with depressive symptoms, may resurface. Quality of life domains can all be affected by the post-treatment challenges, especially the emotional and social well-being, but also role functioning (Movsas, 2003).

(6) Survivorship (remission). Once there are no more signs of cancer after the completion of treatment, women are confronted with yet another landmark "event." Patients must now adapt their pre-cancer life to their new reality, for example by returning to the workplace. The survival phase's main "challenge" can be conceptualized for many patients as regaining control over their newfound health and life, leading to a decrease or disappearance of the various symptoms of psychological distress (Maheu et al., 2021). However, for those whose symptoms are too severe or whose emotional issues have not been properly dealt with, recovery is incomplete, and the symptoms may persist or even worsen. The "symptoms" of depression and TSR are often prevalent during the survival phase (Britton et al., 2010). Anxiety and non-specific distress are especially present in patients who fear that their cancer will return, which happens more often for patients who conceptualize their cancer as a chronic illness rather than an acute condition (Maheu et al., 2021; Yang et al., 2022). Certain issues (e.g., loss of self-confidence, poor body image) that developed during previous phases may persist into this phase or emerge (Smit et al., 2019).

(7) Recurrence. Traces of cancer may be discovered after treatment has ended, and after a period during which the disease could no longer be detected. This represents that last landmark "event" in the trajectory. This latest event differs from the previous ones, as it brings the patient

back to the beginning of the trajectory (i.e., the screening phase), but with a new perspective. A major "challenge" associated with cancer recurrence occurs because, despite all efforts to get rid of the cancer, some of its cells have remained. There is a sense of failure and hopelessness to overcome (Brothers & Andersen, 2009). Patients living with a recurrent diagnosis often face another main "challenge": an existential crisis, grappling with the fragility of life and the possibility of a shortened lifespan. Additionally, they may endure the "challenge" of a continuous physical burden from long-term treatments and chronic side effects, significantly impacting their quality of life. For patients undergoing screening for a potential recurrent breast cancer diagnosis, hopelessness tends to be the predominant "symptom," reflecting a more depressive state compared to those with early-stage diagnoses (Brothers & Andersen, 2009). As for the diagnosis phase, learning that the cancer has returned can cause an emotional shock similar to the first breast cancer diagnosis. However, the concerns and uncertainty are experienced differently, as the patient has already been through each event in the trajectory and, by definition, now faces a poorer prognosis. According to the Fear of Cancer Recurrence model (Yang et al., 2022) and the Network Model of Fear of Cancer Recurrence (Yang et al., 2022), the recurrence phase, which is not experienced by all cancer survivors, is associated with many TSR "symptoms," such as hypervigilance (especially physical symptoms) and fear. Depressive symptoms may also be present in some patients who do not have strong social support or effective coping strategies, as the Hopelessness Theory of Depression states (Brothers & Andersen, 2009).

The integrative model has some limitations. The Trajectory of Male Breast Cancer framework shows that the experience of men living with a breast cancer diagnosis is different from that of women (Rudd et al., 2023), and in that sense, the current model does not necessarily apply to men. In addition, the model does not consider psychiatric disorders that pre-exist in patients

living with breast cancer, so the symptoms associated with each phase of the disease trajectory may be experienced differently (Pedersen et al., 2010). Some studies argue that individuals with a psychiatric disorder may be less likely to access primary care services, or their mental illness may overshadow their cancer symptoms, resulting in cancers being diagnosed later with a worse prognosis (Cunningham et al., 2015). Also, the quality of health care, or the likelihood of receiving appropriate and timely treatment once a diagnosis is made, is reduced in this population, making the issues associated with the disease trajectory distinct from those without prior diagnoses (Cunningham et al., 2015; Kisely et al., 2013). Finally, individual biopsychosocial factors may also modulate psychological responses to breast cancer depending on whether they are identified as risk (e.g., younger age, diagnosis of psychiatric disorder, fatigue, pain, holding minoritized racial/ethnic or sexual/gender identities; Collins et al., 2014; Kisely et al., 2013; Wang et al., 2020) or protective factors (e.g., good social support, being married; Kisely et al., 2013), and therefore, should be considered while using the Breast Cancer Psychological Integrative Phasic Model.

BreastCancerPsych (BPC) - Integrative Clinical Tool

The Breast Cancer Psychological Integrative Phasic Model could be integrated into clinical practice, as it theoretically highlights the main challenges and types of prevalent psychological symptoms associated with each event in the care trajectory. Please refer to Figure 3 for the proposed simple clinical tool (BreastCancerPsych (BCP) – Integrative Clinical Tool) that can be filled by the patient living with breast cancer. This tool serves as a valuable resource, facilitating a more nuanced understanding of the patient's mental health journey, thereby enabling tailored interventions and support throughout the care continuum.

[INSERT FIGURE 3 ABOUT HERE]

Figure 3. BreastCancerPsych (BPC) - Integrative Clinical Tool

Discussion

The purpose of this paper was to propose an integrative model based on theories and models of mental illness and health applied to breast cancer in women. We introduce the Breast Cancer Psychological Integrative Phasic Model triggered by various stressful and/or traumatic life events that occurred throughout the breast cancer trajectory, inspired by Séguin et al.'s traumatic model (Séguin et al., 2012). Clinically, our proposed model suggests that there are seven "events" (screening, diagnosis, post-diagnosis but pre-treatment, treatments, remission, survivorship, recurrence) in the breast cancer trajectory. These breast cancer-related events can lead to six possible psychological patterns of symptoms, the most common being 1) psychological distress with anxious features, 2) psychological distress with depressive features, 3) non-specific distress, 4) psychological distress with trauma and stressor related features, 5) low health-related quality of life, and 6) fear of recurrence, thus encompassing all symptoms of psychological distress that are observed in patients living with breast cancer (Casey, 2012). On one hand, the main challenges experienced at each phase of the trajectory are associated with anticipation, uncertainty, fear of suffering or death, which could give rise to anxious, TSR and non-specific distress symptoms (Séguin et al., 2012; Brunet et al., 2001). On the other hand, each event in the trajectory may provoke a sense of real (e.g., breast) or symbolic (e.g., self-image) 'loss', which could elicit depressive and grief symptoms (Séguin et al., 2012).

As the framework of the National Institute of Mental Health's Research Domain Criteria (RDoC) implied, distinguishing psychological symptoms following psychiatric categories like in the DSM-5 is not always efficient when developing treatment theories to clinically help patients (Cuthbert & Insel, 2013). Indeed, the RDoC may complement the DSM-5 by proposing to study

the nature of mental health and mental health disorder in terms of varying degrees of dysfunction in general psychological/biological systems (Cuthbert & Insel, 2013). Therefore, the Breast Cancer Psychological Integrative Phasic Model allows visualization of overlapping symptoms of psychological distress (i.e., anxiety, depression, non-specific distress, and TSR symptoms) and their impact on quality of life and fear of recurrence, and this new approach may help identify the areas that are most affected in patients living with breast cancer (Cuthbert & Insel, 2013). The Breast Cancer Psychological Integrative Phasic Model allows for a temporal understanding of the issues that arise from each phase of the trajectory, but also the etiology of each symptom of psychological distress. Clinicians and medical teams can rely on this model to develop treatments directly related to the experience of patients living with breast cancer. Indeed, the later the interventions are proposed during the breast cancer trajectory, the more the psychological symptoms are likely to become pathological (McGorry et al., 2018). For this reason, it is critical to provide appropriate psychological support to patients in the early stages of their breast cancer trajectory.

Existing evidence suggests that more than one-third of patients living with breast cancer present symptoms of psychological distress requiring attention from healthcare professionals specifically after receiving the cancer diagnosis (Fortin et al., 2021). Despite the challenges posed by limited resources in many health systems/centers, which may hinder screening for psychological distress during the initial phase, current literature indicates that patients are typically evaluated after treatment initiation (Carlson & Bultz, 2003; Riba et al., 2023; Van Amstel et al., 2013). However, the integrative model emphasizes addressing psychological symptoms and main challenges early to optimize patient care and quality of life. In order to support this, the BreastCancerPsych (BCP) – Integrative Clinical Tool was created to allow patients to maintain a

private journal of their journey, documenting challenges and symptoms, which can positively impact their mental health (Baikie & Wilhelm, 2005; Kashdan & Rottenberg, 2010). Moreover, for patients requiring external psychosocial support, this tool can provide comprehensive insights into their experiences, enabling psycho-oncology professionals to deliver more personalized care and interventions throughout the trajectory, potentially alleviating the impact of time constraints and resource limitations identified by Butow and Hiller (209). This approach not only enhances treatment adherence but also improves overall quality of life, potentially influencing survival outcomes (Wang et al., 2020; Holland et al., 2013).

Conclusion

The purpose of this article was twofold, namely, to summarize existing theories of mental health that are applicable to the breast cancer experience and create an integrative model based on these theories. The proposed Breast Cancer Psychological Integrative Phasic Model allows for the integration of the different event-related issues that may arise across different phases of the disease trajectory (i.e., screening, diagnosis, post-diagnosis and pre-treatment, treatment, post-treatment, survival (remission) and recurrence), which may trigger psychological distress symptoms, low health-related quality of life and fear of recurrence. For some patients, these event-related issues may also lead to resilience (subclinical). It would therefore be interesting to develop treatment models that consider patients living with breast cancer's experience according to the phase of the trajectory they are in, but also according to the type(s) of psychological symptoms that are present.

Data availability

This review synthesized data exclusively from the published literature. A search of PsycInfo, Web of Science, PubMed, and CINAHL databases was conducted to identify relevant studies published

that met the predetermined eligibility criteria. All data analyzed in this review are available in the public domain.

Funding

The authors did not receive any funding to conduct this study.

Disclosure Statement

The authors declare no conflict of interest.

References

Adams, R. N., Winger, J. G., & Mosher, C. E. (2015). A meta-analysis of the relationship between social constraints and distress in cancer patients. *Journal of Behavioral Medicine*, 38(2), 294–305. https://doi.org/10.1007/s10865-014-9601-6

Al-Azri, M., Al-Awisi, H., & Al-Moundhri, M. (2009). Coping with a diagnosis of breast cancer: Literature review and implications for developing countries. *Breast Journal, 15*(6), 615-622. https://doi.org/10.1111/j.1524-4741.2009.00812.x

Anderson, R. A., Mansi, J., Coleman, R. E., Adamson, D. J. A., & Leonard, R. C. F. (2017). The utility of anti-Müllerian hormone in the diagnosis and prediction of loss of ovarian function following chemotherapy for early breast cancer. *European Journal of Cancer*, 87, 58-64. https://doi.org/10.1016/j.ejca.2017.10.001

Avis, N. E., Levine, B. J., Naughton, M. J., Case, D. L., Naftalis, E., & Van Zee, K. J. (2012). Explaining age-related differences in depression following breast cancer diagnosis and treatment. *Breast Cancer Research and Treatment, 136*(2), 581–589. https://doi.org/10.1007/s10549-012-2277-0

Badger, T. A., Braden, C. J., Mishel, M. H., & Longman, A. (2004). Depression burden, psychological adjustment, and quality of life in women with breast cancer: Patterns over time. *Research in Nursing & Health, 27*(1), 19-28. https://doi.org/10.1002/nur.20002

Baikie, K. A., & Wilhelm, K. (2005). Emotional and physical health benefits of expressive writing. *Advances in Psychiatric Treatment, 11*(5), 338-346. https://doi.org/10.1192/apt.11.5.338

Bidstrup, P. E., Christensen, J., Mertz, B. G., Rottmann, N., Dalton, S. O., & Johansen, C. (2015). Trajectories of distress, anxiety, and depression among women with breast cancer: Looking beyond the mean. *Acta Oncologica, 54*(5), 789-796. https://doi.org/10.3109/0284186X.2014.1002571

Booth, A., Papaioannou, D., & Sutton, A. (2012). *Systematic approaches to a successful literature review*. Sage.

Bower, J. (2008). Behavioral symptoms in patients with breast cancer and survivors. *Journal of Clinical Oncology, 26*(5), 768-777. https://doi.org/10.1200/JCO.2007.14.3248

Braden, C. J., Mishel, M. H., & Longman, A. J. (1998). Self-help intervention project: Women receiving breast cancer treatment. *Cancer Practice, 6*(2), 87-98. https://doi.org/10.1046/j.1523-5394.1998.1998006087.x

Brattheim, B., Slettmyr, K., Grønvold, H., Sørlie, R., Lundgren, S., & Rekdal, R. (2017). Breast cancer patients' experiences with information and communication in cancer disease trajectories. *CEUR Workshop Proceedings*, 7-19.

Bray, F., Ferlay, J., Soerjomataram, I., Siegel, R. L., Torre, L. A., & Jemal, A. (2018). Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians, 68*(6), 394-424. https://doi.org/10.3322/caac.21492

Britton, J. C., Lissek, S., Grillon, C., Norcross, M. A., & Pine, D. S. (2010). Development of anxiety: The role of threat appraisal and fear learning. *Depression and Anxiety, 28*(1), 5-17. https://doi.org/10.1002/da.20733

Brothers, B. M., & Andersen, B. L. (2009). Hopelessness as a predictor of depressive symptoms for breast cancer patients coping with recurrence. *Psycho-Oncology, 18*(3), 267-275. https://doi.org/10.1002/pon.1394

Brunet, A., Weiss, D. S., Metzler, T. J., Best, S. R., Neylan, T. C., Rogers, C., & Marmar, C. R. (2001). The Peritraumatic Distress Inventory: A proposed measure of PTSD criterion A2. *American Journal of Psychiatry*, 158(9), 1480–1485. https://doi.org/10.1176/appi.ajp.158.9.1480

Canadian Cancer Society. (2022). Le cancer n'est pas qu'une seule maladie, c'est plus de 100 maladies. Retrieved June 7, 2022, from https://www.cancer.ca/fr-ca/?region=qc

Carlson, L. E., & Bultz, B. D. (2003). Cancer distress screening: Needs, models, and methods. *Journal of Psychosomatic Research, 55*(5), 403-409. https://doi.org/10.1016/S0022-3999(03)00514-2

Casey, P. (2012). Adjustment disorder. *CNS Drugs, 23*(11), 927-938. https://doi.org/10.2165/11311000-000000000-00000

Cho, O. H. (2000). Uncertainty, anxiety and coping with mastectomy for breast cancer. *Journal of Korean Academy of Nursing, 30*(4), 1006-1017. https://doi.org/10.4040/jkan.2000.30.4.1006

Clayton, M. F., Mishel, M. H., & Belyea, M. (2006). Testing a model of symptoms, communication, uncertainty, and well-being in older breast cancer survivors. *Research in Nursing & Health, 29*(1), 18-39. https://doi.org/10.1002/nur.20108

Collins, J. C., Rocco, T. S., & Bryant, L. O. (Eds.). (2014). *Health and wellness concerns for racial, ethnic, and sexual minorities: New directions for adult and continuing education* (Vol. 142). John Wiley & Sons.

Cordova, M. J., Giese-Davis, J., Golant, M., Kronenwetter, C., Chang, V., & Spiegel, D. (2007). Breast cancer as trauma: Posttraumatic stress and posttraumatic growth. *Journal of Clinical Psychology in Medical Settings*, 14, 308–319. https://doi.org/10.1007/s10880-007-9083-6

Cowley, L., Heyman, B., Stanton, M., & Milner, S. J. (2000). How women receiving adjuvant chemotherapy for breast cancer cope with their treatment: A risk management perspective. *Journal of Advanced Nursing, 31*(2), 314-321. https://doi.org/10.1046/j.1365-2648.2000.01295.x

Cunningham, R., Sarfati, D., Stanley, J., Peterson, D., & Collings, S. (2015). Cancer survival in the context of mental illness: A national cohort study. *General Hospital Psychiatry, 37*(6), 501-506. https://doi.org/10.1016/j.genhosppsych.2015.06.003

Cuthbert, B. N., & Insel, T. R. (2013). Toward the future of psychiatric diagnosis: The seven pillars of RDoC. *BMC Medicine*, 11(1), 1-8. https://doi.org/10.1186/1741-7015-11-126

Deane, K. A., & Degner, L. F. (1998). Information needs, uncertainty, and anxiety in women who had a breast biopsy with benign outcome. *Cancer Nursing, 21*(2), 117-126. https://doi.org/10.1097/00002820-199804000-00005

Deshields, T. L., Potter, P., Olsen, S., Liu, J., & Dye, L. (2011). Documenting the symptom experience of cancer patients. *Journal of Supportive Oncology, 9*(6), 216-223. https://doi.org/10.1016/j.suponc.2011.06.003

Deshields, T. L., Potter, P., Olsen, S., & Liu, J. (2014). The persistence of symptom burden: Symptom experience and quality of life of cancer patients across one year. *Supportive Care in Cancer, 22*(4), 1089-1096. https://doi.org/10.1007/s00520-013-2049-3

Devins, G. M. (2010). Using the Illness Intrusiveness Ratings Scale to understand health-related quality of life in chronic disease. *Journal of Psychosomatic Research, 68*(6), 591-602. https://doi.org/10.1016/j.jpsychores.2009.05.006

Devins, G. M., Bezjak, A., Mah, K., Loblaw, D. A., & Gotowiec, A. P. (2006). Context moderates illness-induced lifestyle disruptions across life domains: A test of the illness intrusiveness theoretical framework in six common cancers. *Psycho-Oncology, 15*, 221–233. https://doi.org/10.1002/pon.940

Domecq, J. P., Prutsky, G., Elraiyah, T., Wang, Z., Nabhan, M., Shippee, N., et al. (2014). Patient engagement in research: A systematic review. *BMC Health Services Research, 14*(1), 89. https://doi.org/10.1186/1472-6963-14-89

Easterling, D. V., & Leventhal, H. (1989). Contribution of concrete cognition to emotion: Neutral symptoms as elicitors of worry about cancer. *Journal of Applied Psychology, 74*(5), 787-796. https://doi.org/10.1037/0021-9010.74.5.787

Else-Quest, N. M., LoConte, N. K., Schiller, J. H., & Hyde, J. S. (2009). Perceived stigma, self-blame, and adjustment among lung, breast, and prostate cancer patients. *Psychology & Health, 24*(8), 949-964. https://doi.org/10.1080/08870440802074664

Fillon, M. (2022). Breast cancer recurrence risk can remain for 10 to 32 years. *CA: A Cancer Journal for Clinicians, 72*(3), 197-199. https://doi.org/10.3322/caac.21724

Fong, A. J., Scarapicchia, T. M. F., McDonough, M. H., Wrosch, C., & Sabiston, C. M. (2017). Changes in social support predict emotional well-being in breast cancer survivors. *Psycho-Oncology*, 26(5), 664-671. https://doi.org/10.1002/pon.4064

Fortin, J., Leblanc, M., Elgbeili, G., Cordova, M. J., Marin, M. F., & Brunet, A. (2021). The mental health impacts of receiving a breast cancer diagnosis: A meta-analysis. *British Journal of Cancer, 125*(11), 1582-1592. https://doi.org/10.1038/s41416-021-01542-3

Fortin, J., Rudd, É., Trudel-Fitzgerald, C., Brunet, A., & Marin, M.-F. (2024). Mind matters: Decoding the psychological challenges of breast cancer with an integrative framework and clinical tool for mental health. In *Abstracts of the 39th Annual CAPO Conference—Building Hope: Integrating Sustainable, Innovative and Accessible Care in Psychosocial Oncology*; June 6-7, 2024. Current Oncology, MDPI, 3379-3494. https://doi.org/10.3390/curroncol31060257

Gilbar, O., & Hevroni, A. (2007). Counterfactuals, coping strategies and psychological distress among breast cancer patients. *Anxiety, Stress & Coping, 20*(4), 383-392. https://doi.org/10.1080/10615800701378958

Gough, D., Oliver, S., & Thomas, J. (2012). *An introduction to systematic reviews* (2nd ed.). Sage Publications.

Hackenbroich, S., Kranke, P., Meybohm, P., & Weibel, S. (2022). Include or not to include conference abstracts in systematic reviews? Lessons learned from a large Cochrane network meta-analysis including 585 trials. *Systematic Reviews, 11*(1), 178.

Hermelink, K., Höhn, H., Hasmüller, S., Gallwas, J., Härtl, K., Würstlein, R., & Köhm, J. (2014). Brief distress screening in clinical practice: Does it help to effectively allocate psycho-oncological support to female cancer inpatients? *Breast Care, 9*(2), 129. https://doi.org/10.1159/000360788

Holland, J. C. (2002). History of psycho-oncology: Overcoming attitudinal and conceptual barriers. *Psychosomatic Medicine, 64*(2), 206-221. https://doi.org/10.1097/00006842-200203000-00004

Holland, J. C. (2018). Psycho-oncology: Overview, obstacles, and opportunities. *Psycho-Oncology, 27*(5), 1364-1376. https://doi.org/10.1002/pon.4692

Holland, J. C., Andersen, B., Breitbart, W. S., Buchmann, L. O., Compas, B., Deshields, T. L., & Freedman-Cass, D. A. (2013). Distress management. *JNCCN, 11*(2), 190-209. https://doi.org/10.6004/jnccn.2013.0027

Hopewell, S., McDonald, S., Clarke, M. J., & Egger, M. (2007). Grey literature in meta-analyses of randomized trials of health care interventions. *Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.MR000010.pub3

Iwamitsu, Y., Shimoda, K., Abe, H., Tani, T., & Okawa, M. (2005). Anxiety, emotional suppression, and psychological distress before and after breast cancer diagnosis. *Psychosomatics, 46*(1), 19-24. https://doi.org/10.1176/appi.psy.46.1.19

Jacobsen, P. B., & Andrykowski, M. A. (2015). Tertiary prevention in cancer care: Understanding and addressing the psychological dimensions of cancer during the active treatment period. *American Psychologist, 70*(2), 134-145. https://doi.org/10.1037/a0036513

Jemal, A., Bray, F., Center, M. M., Ferlay, J., Ward, E., & Forman, D. (2011). Global cancer statistics. *CA: A Cancer Journal for Clinicians, 61*(2), 69-90. https://doi.org/10.3322/caac.20107

Kangas, M., & Gross, J. J. (2020). The affect regulation in cancer framework: Understanding affective responding across the cancer trajectory. *Journal of Health Psychology, 25*(1), 7-25. https://doi.org/10.1177/1359105317748468

Kangas, M., Henry, J. L., & Bryant, R. A. (2002). Posttraumatic stress disorder following cancer: A conceptual and empirical review. *Clinical Psychology Review, 22*(4), 499-524. https://doi.org/10.1016/S0272-7358(01)00118-0

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*(7), 865-878. https://doi.org/10.1016/j.cpr.2010.03.001

Katapodi, M. C., Lee, K. A., Facione, N. C., & Dodd, M. J. (2004). Predictors of perceived breast cancer risk and the relation between perceived risk and breast cancer screening: A meta-analytic review. *Preventive Medicine, 38*(4), 388-402. https://doi.org/10.1016/j.ypmed.2003.11.012

Kenne Sarenmalm, E., Thorén-Jönsson, A. L., Gaston-Johansson, F., & Öhlén, J. (2009). Making sense of living under the shadow of death: Adjusting to a recurrent breast cancer illness. *Qualitative Health Research, 19*(8), 1116-1130. https://doi.org/10.1177/1049732309341728

Kisely, S., Crowe, E., & Lawrence, D. (2013). Cancer-related mortality in people with mental illness. *JAMA Psychiatry, 70*(2), 209-217. https://doi.org/10.1001/jamapsychiatry.2013.278

Kourou, K., Manikis, G., Poikonen-Saksela, P., Mazzocco, K., Pat-Horenczyk, R., Sousa, B., Oliveira-Maia, A., Mattson, J., Roziner, I., Pettini, G., Kondylakis, H., Marias, K., Karademas, E., Simos, P., & Fotiadis, D. I. (2021). A machine learning-based pipeline for modeling medical, socio-demographic, lifestyle, and self-reported psychological traits as predictors of mental health outcomes after breast cancer diagnosis: An initial effort to define resilience effects. *Computers in Biology and Medicine, 131*, 104266. https://doi.org/10.1016/j.compbiomed.2021.104266

Lam, W., Bonanno, G. A., Mancini, A. D., Ho, S., Chan, M., Hung, W. K., Or, A., & Fielding, R. (2010). Trajectories of psychological distress among Chinese women diagnosed with breast cancer. *Psycho-Oncology, 19*(10), 1044-1051. https://doi.org/10.1002/pon.1658

Lang-Rollin, I., & Berberich, G. (2018). Psycho-oncology. *Dialogues in Clinical Neuroscience, 20*(1), 13-22. https://doi.org/10.31887/DCNS.2018.20.1/ilangrollin

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company.

Lebel, S., Maheu, C., Tomei, C., Bernstein, L. J., Courbasson, C., Ferguson, S., Harris, C., Jolicoeur, L., Lefebvre, M., Muraca, L., Ramanakumar, A. V., Singh, M., Parrott, J., & Figueiredo, D. (2018). Towards the validation of a new, blended theoretical model of fear of cancer recurrence. *Psycho-Oncology, 27*(11), 2594-2601. https://doi.org/10.1002/pon.4880

Liao, M. N., Chen, M. F., Chen, S. C., & Chen, P. L. (2008). Uncertainty and anxiety during the diagnostic period for women with suspected breast cancer. *Cancer Nursing, 31*(4), 274-283. https://doi.org/10.1097/01.NCC.0000305744.64452.fe

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., et al. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *Journal of Clinical Epidemiology, 62*(10), e1-e34. https://doi.org/10.1371/journal.pmed.1000100

Lopes, C., Severo, M., Fontes, F., Lopes-Conceição, L., Ferreira, A., Pereira, S., Lunet, N., & Araújo, N. (2022). Trajectories of anxiety and depression symptoms over five years since breast cancer diagnosis: Results of the NEON-BC prospective study. *Healthcare*, 10(4), 661. https://doi.org/10.3390/healthcare10040661

Maheu, C., Singh, M., Tock, W. L., Eyrenci, A., Galica, J., Hébert, M., Frati, F., & Estapé, T. (2021). Fear of cancer recurrence, health anxiety, worry, and uncertainty: A scoping review about

their conceptualization and measurement within breast cancer survivorship research. *Frontiers in Psychology, 12,* 1129. https://doi.org/10.3389/fpsyg.2021.644932

McGorry, P. D., Ratheesh, A., & O'Donoghue, B. (2018). Early intervention—An implementation challenge for 21st century mental health care. *JAMA Psychiatry, 75*(6), 545-546. https://doi.org/10.1001/jamapsychiatry.2018.0621

Miller, K., Mularski, B. A., & McIntee, J. (2008). Seasons of survivorship revisited. *Cancer Journal, 14*(6), 369-374. https://doi.org/10.1097/PPO.0b013e31818edf60

Mishel, M. H. (1990). Reconceptualization of the uncertainty in illness theory. *Journal of Nursing Scholarship, 22*(4), 256-262. https://doi.org/10.1111/j.1547-5069.1990.tb00225.x

Mitchell, P. H., Gallucci, B., & Fought, S. G. (1991). Perspectives on human response to health and illness. *Nursing Outlook, 39*, 154–158.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G., PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine, 151*(4), 264–W64. https://doi.org/10.7326/0003-4819-151-4-200908180-00135

Mokhatri-Hesari, M. (2020). Health-related quality of life in breast cancer patients: Review of reviews from 2008 to 2018. *Health and Quality of Life Outcomes, 18*(1), 1-25. https://doi.org/10.1186/s12955-020-01591-x

Movsas, B. (2003). Quality of life in oncology trials: A clinical guide. *Seminars in Radiation Oncology*, 13(3), 235–247. https://doi.org/10.1016/S1053-4296(03)00029-8

Mutsaers, B., Jones, G., Rutkowski, N., Tomei, C., Leclair, C. S., Petricone-Westwood, D., Simard, S., & Lebel, S. (2016). When fear of cancer recurrence becomes a clinical issue: A qualitative

analysis of features associated with clinical fear of cancer recurrence. *Supportive Care in Cancer, 24,* 4207-4218. https://doi.org/10.1007/s00520-016-3248-5

Nozawa, K., Shimizu, C., Kakimoto, M., Mizota, Y., Yamamoto, S., Takahashi, Y., Ito, A., Izumi, H., & Fujiwara, Y. (2013). Quantitative assessment of appearance changes and related distress in cancer patients. *Psycho-Oncology, 22*(9), 2140-2147. https://doi.org/10.1002/pon.3268

Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan—a web and mobile app for systematic reviews. *Systematic Reviews, 5*(1), 1-10. https://doi.org/10.1186/s13643-016-0384-4

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., et al. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Pang, K. Y. (2016). The psychological response of Asian women experiencing breast cancer: Implications for culturally sensitive nursing care. *Asian/Pacific Island Nursing Journal, 1*(4), 159-167. https://doi.org/10.9741/23736658.1011

Parahoo, K. (2006). *Nursing research: Principles, process and issues* (2nd ed.). Palgrave Macmillan.

Parker, P. A., Baile, W. F., Moor, C. D., & Cohen, L. (2003). Psychosocial and demographic predictors of quality of life in a large sample of cancer patients. *Psycho-Oncology, 12*(2), 183-193. https://doi.org/10.1002/pon.635

Pedersen, N., Ekmekcioglu, B., Madsen, L., Christiansen, P., Ejlertsen, B., Lash, T. L., et al. (2022). The incidence of breast cancer recurrence 10-32 years after primary diagnosis. *JNCI: Journal of the National Cancer Institute, 114*(3), 391-399. https://doi.org/10.1093/jnci/djab202

Poole, K., & Lyne, P. A. (2000). The 'cues' to diagnosis: Describing the monitoring activities of women undergoing diagnostic investigations for breast disease. *Journal of Advanced Nursing*, 31(4), 752–758. https://doi.org/10.1046/j.1365-2648.2000.01345.x

Reich, M., Lesur, A., & Perdrizet-Chevalier, C. (2008). Depression, quality of life and breast cancer: A review of the literature. *Breast Cancer Research and Treatment*, 110(1), 9–17. https://doi.org/10.1007/s10549-007-9706-5

Riba, M. B., Donovan, K. A., Ahmed, K., Andersen, B., Braun, I., Breitbart, W. S., & Darlow, S. D. (2023). NCCN Guidelines® insights: Distress management, version 2.2023: Featured updates to the NCCN guidelines. *JNCCN Journal of the National Comprehensive Cancer Network, 21*(5), 450-457. https://doi.org/10.6004/jnccn.2023.0026

Rodriguez, K. L., Bayliss, N., & Alexander, S. C. (2014). Using psychological frameworks alongside the biopsychosocial model: A case study in oncology. *Journal of Health Psychology, 19*(3), 432-439. https://doi.org/10.1177/1359105313486513

Roese, N. J. (1994). The functional basis of counterfactual thinking. *Journal of Personality and Social Psychology, 66*(5), 805–818. https://doi.org/10.1037/0022-3514.66.5.805

Rowland, J. H., & Baker, F. (2005). *Cancer and quality of life*. Kluwer Academic Publishers.

Rudd, E., Fortin, J., & Brunet, A. (2023). Men's stories of living with breast cancer: A systematic review, metasynthesis, and proposed framework. *Psychology of Men & Masculinities, 24*(4), 291-310. https://doi.org/10.1037/men0000438

Sacks, A. A., Perestelo-Perez, L., Rodriguez-Martin, B., Cuellar-Pompa, L., Lopez Algara, M., & Hernandez Gonzalez. (2016). Breast cancer patients' narrative experiences about communication

during the oncology care process: A qualitative study. *European Journal of Cancer Care, 25*(5), 719-733. https://doi.org/10.1111/ecc.12384

Sarenmalm, K. E., Thorén-Jonsson, A. L., Gaston-Johansson, F., & Ohlén, J. (2009). Making sense of living under the shadow of death: Adjusting to a recurrent breast cancer illness. *Qualitative Health Research, 19*(8), 1116-1130. https://doi.org/10.1177/1049732309341728

Schmid-Buchi, S., Halfens, R. J., Muller, M., Dassen, T., & van den Borne, B. (2008). Factors associated with supportive care needs of patients under treatment for breast cancer. *European Journal of Oncology Nursing, 12*(5), 482-488. https://doi.org/10.1016/j.ejon.2008.06.004

Schnoll, R. A., Harlow, L. L., Stolbach, L. L., & Brandt, U. (1998). A structural model of the relationships among stage of disease, age, coping, and psychological adjustment in women with breast cancer. *Psycho-Oncology, 7*(2), 69-77. https://doi.org/10.1002/(SICI)1099-1611(199803/04)7:2<69::AID-PON286>3.0.CO;2-8

Séguin, M., Brunet, A., & LeBlanc, L. (2012). *Intervention en situation de crise et en contexte traumatique* (2nd ed.). Montréal: Gaëtan Morin.

Shapiro, S. L., Lopez, A. M., Schwartz, G. E., Bootzin, R., Figueredo, A. J., Braden, C. J., & Kurker, S. F. (2001). Quality of life and breast cancer: Relationship to psychosocial variables. *Journal of Clinical Psychology, 57*(4), 501-519. https://doi.org/10.1002/jclp.1026

Sitt, J., Lui, C. Y., Sinn, H. Y., & Fong, C. Y. (2018). Understanding breast cancer screening—Past, present, and future. *Hong Kong Medical Journal, 24*(2), 166. https://doi.org/10.12809/hkmj177123

Smith, S. S., & Vale, W. W. (2006). The role of the hypothalamic-pituitary-adrenal axis in neuroendocrine responses to stress. *Dialogues in Clinical Neuroscience, 8*(4), 383-395. https://doi.org/10.31887/DCNS.2006.8.4/ssmith

Smit, A., Coetzee, B. J. S., Roomaney, R., Bradshaw, M., & Swartz, L. (2019). Women's stories of living with breast cancer: A systematic review and meta-synthesis of qualitative evidence. *Social Science & Medicine, 222*, 231-245. https://doi.org/10.1016/j.socscimed.2019.01.020

Sohl, S. J., Levine, B., Case, D. L., Danhauer, S. C., & Avis, N. E. (2014). Trajectories of illness intrusiveness domains following a diagnosis of breast cancer. *Health Psychology, 33*(3), 232–241. https://doi.org/10.1037/a0032388

Spiegel, D., & Sephton, S. E. (2001). Psychoneuroimmune and endocrine pathways in cancer: Effects of stress and support. *Seminars in Clinical Neuropsychiatry, 6*(4), 252-265. https://doi.org/10.1053/scnp.2001.22927

Stanton, A. L., & Bower, J. E. (2015). Psychological adjustment in breast cancer survivors. In L. B. B. Anderson, & J. L. Mulhall (Eds.), *Psycho-oncology* (pp. 124-140). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199363315.003.0011

Stark, D. P. H., & House, A. (2000). Anxiety in cancer patients. *British Journal of Cancer, 83*(10), 1261-1267. https://doi.org/10.1054/bjoc.2000.1405

Stefanek, M. E., Derogatis, L. R., & Shaw, A. (1987). Psychological distress among oncology outpatients: Prevalence and severity as measured with the brief symptom inventory. *Psychosomatics, 28*(10), 530-539. https://doi.org/10.1016/S0033-3182(87)72871-3

Steimer, T. (2002). The biology of fear- and anxiety-related behaviors. *Dialogues in Clinical Neuroscience, 4*(3), 231–249. https://doi.org/10.31887/DCNS.2002.4.3/tsteimer

Sullivan, M. D., & Yesavage, J. A. (1987). Geriatric patients' attitudes toward use of medication in the treatment of depression. *Journal of the American Geriatrics Society, 35*(6), 643-646. https://doi.org/10.1111/j.1532-5415.1987.tb03102.x

Tacon, A. M., & Caldera, Y. (2001). Mindfulness, self-compassion, and empathy among family caregivers of cancer patients. *Mindfulness, 2*(2), 110-116. https://doi.org/10.1007/s12671-010-0039-x

Taylor, S. E., & Lichtman, R. R. (2003). Social comparison in adjustment. In *Social psychology of health: Key readings* (pp. n.a.-n.a.). Psychology Press.

Tennen, H., Affleck, G., Urrows, S., Higgins, P., & Mendola, R. (1992). Perceiving control, construing benefits, and daily processes in rheumatoid arthritis. *Canadian Journal of Behavioural Science, 24*(2), 186-203. https://doi.org/10.1037/h0078727

Thomas, J., Harden, A., & Newman, M. (2012). Synthesis: Combining results systematically and appropriately. In P. Petticrew & H. Roberts (Eds.), *Systematic reviews in the social sciences: A practical guide* (pp. 179-210). John Wiley & Sons.

Thomson, S., & Whitaker, K. L. (2018). Exploring the role of a symptomatic patient's decision making in influencing help seeking delays. *Journal of Health Services Research & Policy, 23*(1), 16-23. https://doi.org/10.1177/1355819617733125

Trayes, P., & Cokenakes, S. (2021). Breast cancer treatment. *American Family Physician, 104*(2), 171-178.

Trudel-Fitzgerald, C., Savard, J., & Ivers, H. (2013). Evolution of cancer-related symptoms over an 18-month period. *Journal of Pain and Symptom Management, 45*(6), 1007-1018. https://doi.org/10.1016/j.jpainsymman.2012.06.009

Visser, A., & van Andel, G. (2003). Psychosocial adaptation to cancer: Support for patients and professionals. *European Journal of Cancer, 39*(15), 2217-2223. https://doi.org/10.1016/S0959-8049(03)00542-7

Vahdaninia, M., Omidvari, S., & Montazeri, A. (2010). What do predict anxiety and depression in breast cancer patients? A follow-up study. *Social Psychiatry and Psychiatric Epidemiology, 45*, 355-361. https://doi.org/10.1007/s00127-009-0068-7

Van Amstel, F. K., Van den Berg, S. W., Van Laarhoven, H. W., Gielissen, M. F., Prins, J. B., & Ottevanger, P. B. (2013). Distress screening remains important during follow-up after primary breast cancer treatment. *Supportive Care in Cancer, 21*(8), 2107-2115. https://doi.org/10.1007/s00520-013-1764-0

Van der Zee, K., Buunk, B., Sanderman, R., Botke, G., & van den Bergh, F. (2000). Social comparison and coping with cancer treatment. *Personality and Individual Differences, 28*(1), 17-34. https://doi.org/10.1016/S0191-8869(99)00045-8

Van Esch, L., Roukema, J. A., Ernst, M. F., Nieuwenhuijzen, G. A., & De Vries, J. (2012). Combined anxiety and depressive symptoms before diagnosis of breast cancer. *Journal of Affective Disorders*, 136(3), 895-901. https://doi.org/10.1016/j.jad.2011.09.012

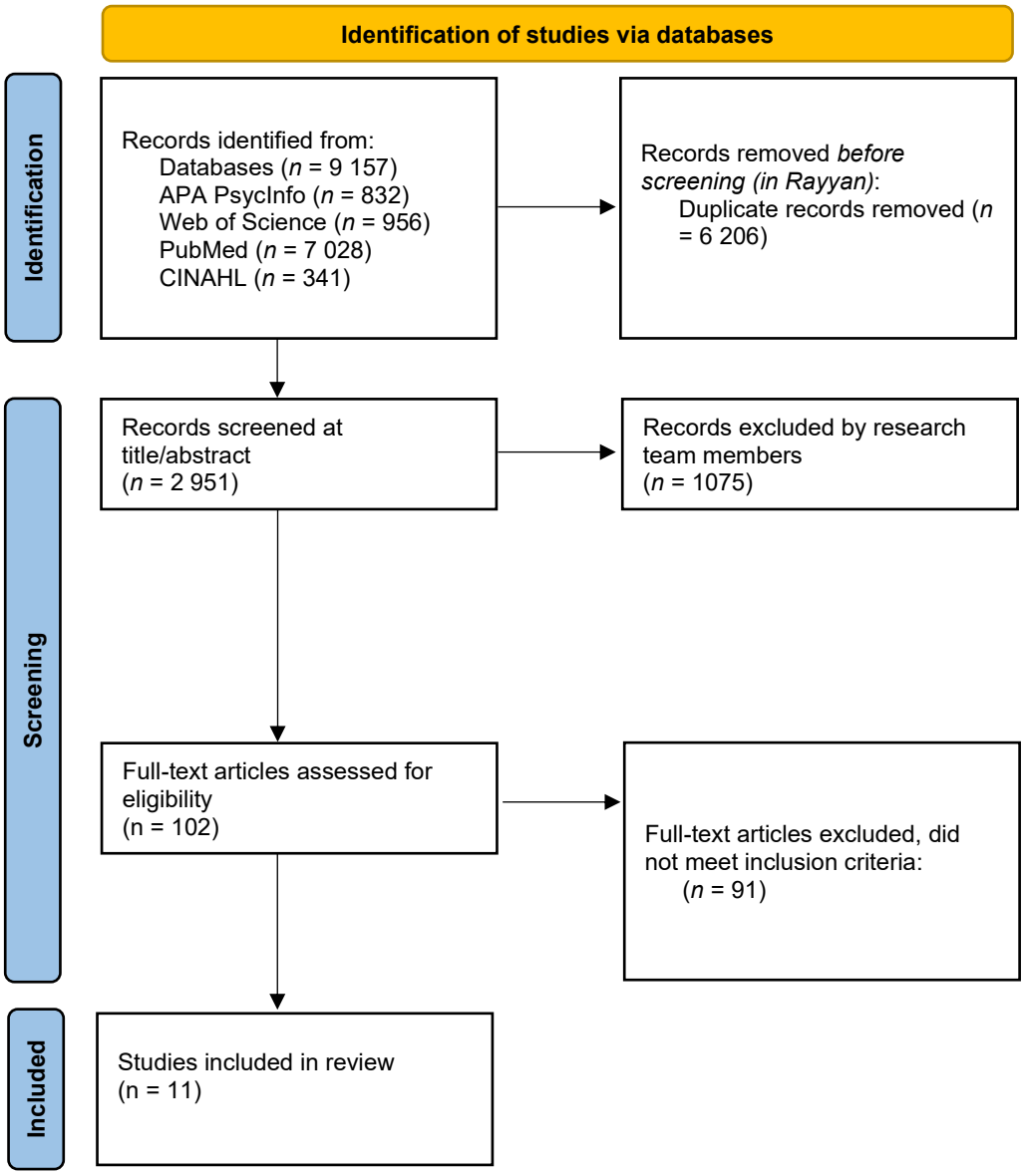
Wang, W. T., Tu, P. C., Liu, T. J., Yeh, D. C., & Hsu, W. Y. (2013). Mental adjustment at different phases in breast cancer trajectory: Re-examination of factor structure of the Mini-MAC and its correlation with distress. *Psycho-Oncology, 22*(4), 768-774. https://doi.org/10.1002/pon.3065

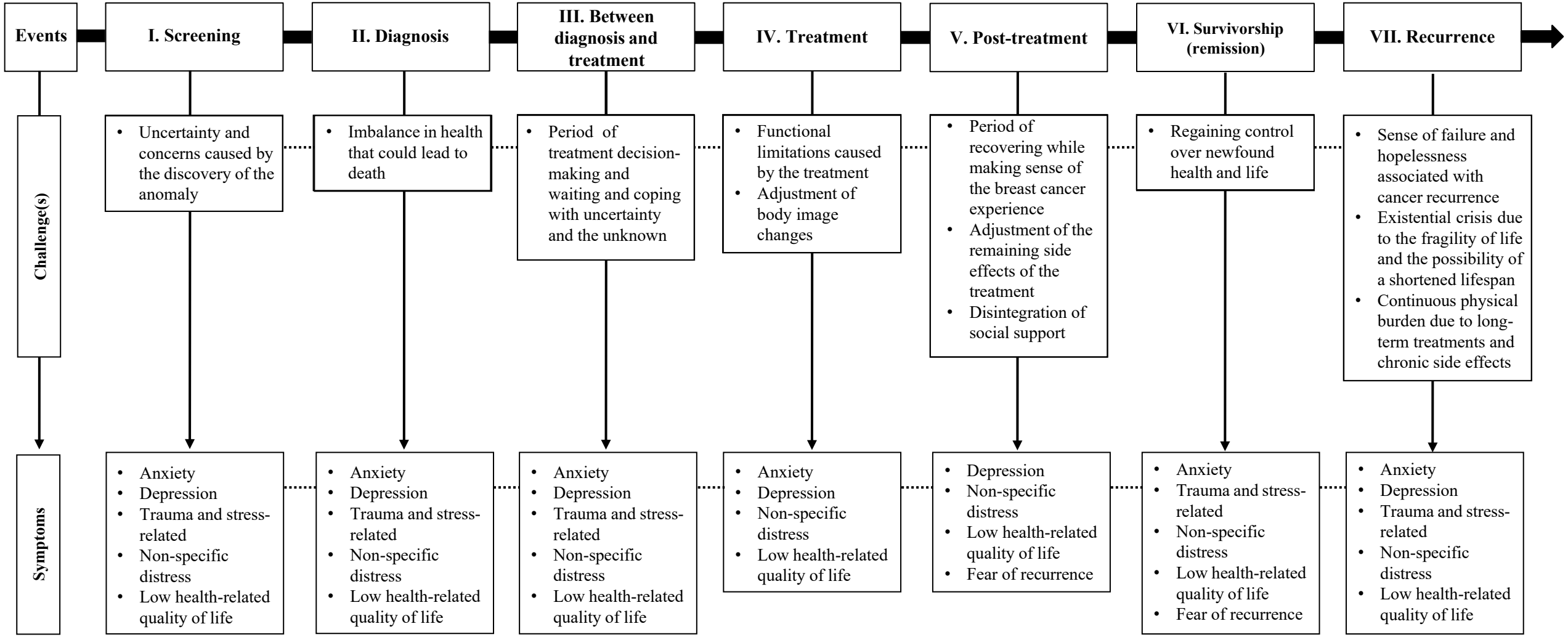
Wang, Z., Wang, Z., Yang, Z., & Lin, W. (2020). Prognostic value of depression and anxiety on breast cancer recurrence and mortality: A systematic review and meta-analysis of 282,203 patients. *Molecular Psychiatry*, 25(12), 3186–3197. https://doi.org/10.1038/s41380-020-00865-6

Wonghongkul, T., Moore, S. M., Musil, C., Schneider, S., & Deimling, G. (2000). The influence of uncertainty in illness, stress appraisal, and hope on coping in survivors of breast cancer. *Cancer Nursing, 23*(6), 422-429. https://doi.org/10.1097/00002820-200012000-00004

Wood, J. V., Taylor, S. E., & Lichtman, R. R. (1985). Social comparison in adjustment to breast cancer. *Journal of Personality and Social Psychology, 49*(5), 1169-1183. https://doi.org/10.1037//0022-3514.49.5.1169

Yang, Y., Sun, H., Luo, X., Li, W., Yang, F., Xu, W., Ding, K., Zhou, J., Liu, W., Garg, S., Jackson, T., Chen, Y., & Xiang, Y. T. (2022). Network connectivity between fear of cancer recurrence, anxiety, and depression in breast cancer patients. *Journal of Affective Disorders, 309,* 358-367. https://doi.org/10.1016/j.jad.2022.04.119


Identification of studies via databases
Identification
Records identified from:
Databases (n = 9 157)
APA PsycInfo (n = 832)
Web of Science (n = 956)
PubMed (n = 7 028)
CINAHL (n = 341)
Records removed before screening (in Rayyan):
Duplicate records removed (n = 6 206)
Screening
Records screened at title/abstract
(n = 2 951)
Records excluded by research team members
(n = 1075)
Full-text articles assessed for eligibility
(n = 102)
Full-text articles excluded, did not meet inclusion criteria:
(n = 91)
Included
Studies included in review
(n = 11)



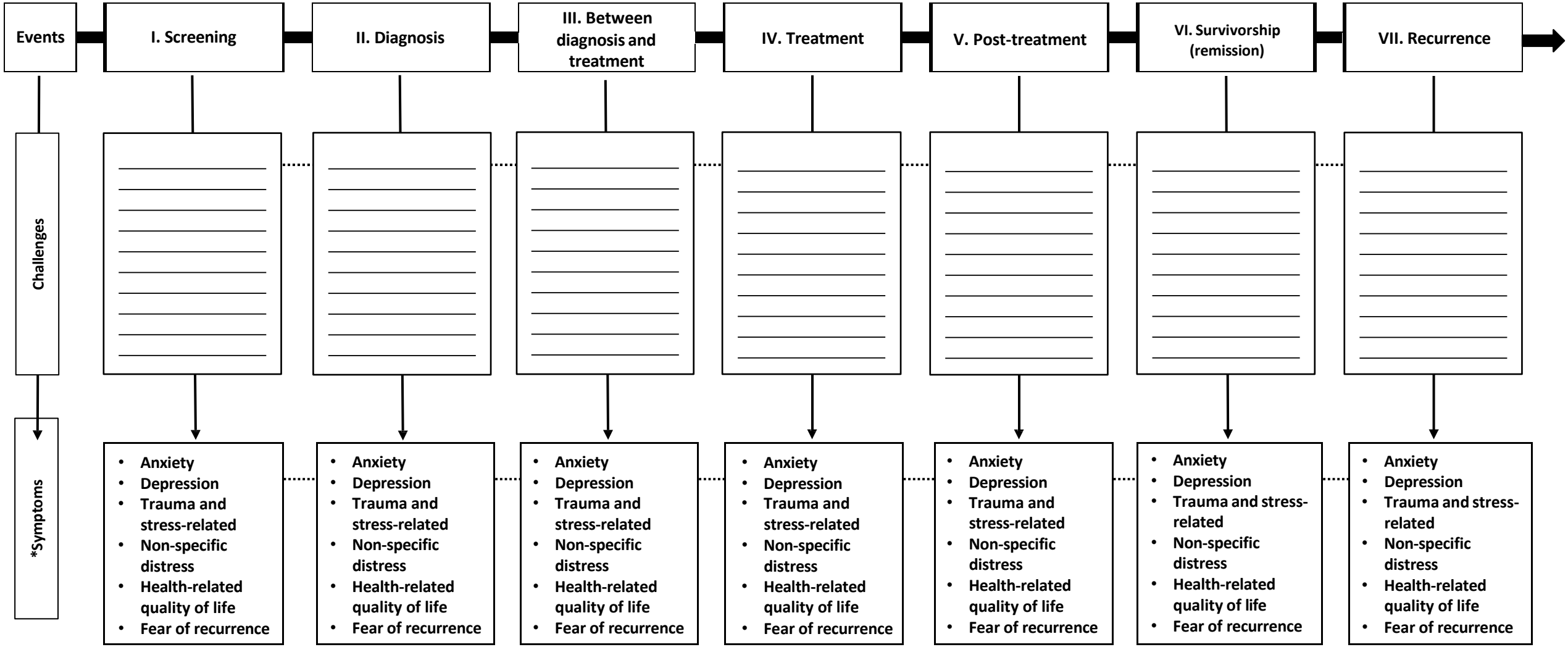
: If the challenges and symptoms from a previous phase are untreated or too severe, this can impact the challenges and symptoms in the next phase.

BreastCancerPsych (BCP) - Integrative Clinical Tool
(Fortin et al., 2024)

Patient's name: _____
Type: ☐ Malignant
☐ Benign
Diagnosis: _____

This clinical tool is designed to help you track your main challenges and psychological distress symptoms during your breast cancer journey. Remember, this tool is here to help you communicate your experiences clearly to your healthcare team. Be honest and thorough in your responses to get the best support possible. Please follow the steps below:

Step 1) Writing down your challenges. In the first box, write down any challenges you are experiencing. These could be physical, emotional, or practical challenges related to your breast cancer journey. Think about the things that are making your day-to-day life difficult. **Step 2) Highlighting your symptoms.** In the box below, you will see a list of symptoms. Please circle or highlight the symptoms that you are experiencing. Make sure to do this if the symptom is significantly affecting you, such as: Interfering with your ability to work, affecting your relationships with others, impacting other important areas of your life.



..... : If the challenges and symptoms from a previous phase are untreated or too severe, this can impact the challenges and symptoms in the next phase.

*See definitions and examples of the symptoms on page 2

Definitions and examples of the psychological distress symptoms

Anxiety

Definition: Refers to the apprehension, tension, or uneasiness that stems from the anticipation of danger, which may be internal or external. The person finds it difficult to control the worry.

Examples:
- Psychological stress
- Physiological stress
- Uncertainty
- Fear of the unknown
- Catastrophizing scenarios
- Loss of control
- …

Depression

Definition: Refers to having a low mood or feeling down. Depressive symptoms are psychological, physical, and physiological.

Examples:
- Sense of grief and/or loss
- Hopelessness
- Sense of failure
- Low self-esteem
- Worsened self-image
- Fatigue
- …

Trauma and stress-related (TSR)

Definition: Refers to a constellation of reactions following exposure to a traumatic experience (life-threatening event).

Example:
- Shock
- Perception of a life-threat
- Denial
- Avoidance
- Hypervigilance
- Dissociation
- …

Non-specific distress

Definition: Refers in oncology as any negative emotional, psychological and physical reaction to illness, which does not easily fit into the other symptoms category (i.e., anxiety, depression, low health-related quality of life, fear of recurrence, and trauma and stress-related symptoms categories).

Examples:
- Anhedonia
- Eating changes
- Sleep changes
- Motor agitation
- Hypersensitivity
- …

Health-related quality of life

Definition: Refers to a multidimensional concept that can be defined as the set of satisfactions and dissatisfaction experienced by a person about important areas of their life.

Examples:
- General health
- Physical symptoms
- Sexual functioning
- Emotional / social well-being
- Cognitive issues
- Existential/spiritual issues
- …

Fear of recurrence

Definition: Refers to the concern that cancer will return, progress, or metastasize, and is usually a negative emotional response experienced by breast cancer survivors.

Examples:
- Fear of the cancer coming back
- Fear of death
- …