

Ana Sofia Cardoso dos Santos



**Adjuvant vs. neoadjuvant chemotherapy in women with breast cancer:
Psychosocial correlates**

Universidade Fernando Pessoa
Faculdade de Ciências Humanas e Sociais
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Trabalho apresentado à Faculdade de Ciências Humanas e Sociais da Universidade Fernando Pessoa, como parte dos requisitos necessários para a obtenção do grau de Mestre em Psicologia Clínica e da Saúde, sob a orientação da Prof. Doutora Isabel Silva e a co-orientação da Prof. Doutora Rute Meneses

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List of Abbreviations

BC – Breast Cancer

BCS – Breast Cancer Subscale

BRCS – Brief Resilient Coping Scale

CD-RISC – Connor-Davidson Resilience Scale

CHUSJ – Centro Hospitalar Universitário de São João

CT – Chemotherapy

EWB – Emotional Well-Being

FACIT-Sp-12 – Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being–12 Item Scale

FACT-B – Functional Assessment of Cancer Therapy–Breast

FACT-G – Functional Assessment of Cancer Therapy–General

FWB – Functional Well-Being

HR-QoL – Health-Related Quality of Life

MBSR – Mindfulness-Based Stress Reduction

MSPSS – Multidimensional Scale of Perceived Social Support

PANAS – Positive and Negative Affect Schedule

PWB – Physical Well-Being

QLQ-BR23 – Quality of Life Questionnaire–Breast Cancer Module

QLQ-C30 – European Organization for Research and Treatment of Cancer Quality of Life Questionnaire–Core 30

QoL – Quality of Life

RT – Radiotherapy

SF-36 – 36-Item Short Form Health Survey

SWB – Social Well-Being

WHOQOL – World Health Organization Quality of Life

Introduction

The present dissertation has as its theme “Adjuvant vs. Neoadjuvant Chemotherapy in women with breast cancer: Psychosocial Correlates”. This subject was chosen for different reasons, namely: breast cancer was the most commonly diagnosed cancer globally in 2020 (Sung et al., 2021); the treatment often involves the use of chemotherapy, which has several side effects and long-lasting consequences (Coelho et al., 2017; Frazão & Skaba, 2013); and, there is still little literature that considers the psychological effects of breast cancer and chemotherapy in some of the areas studied in this investigation (i.e., spirituality, resilient coping, positive and negative affect).

Cancer is a chronic disease that is considered a serious health problem affecting public health (Karimi et al., 2020). Experiences of a breast cancer diagnosis and of cancer treatments are highly stressful for most women (Dooley et al., 2017).

The modalities of treatment for breast cancer include different types of surgery, radiotherapy, chemotherapy, and hormonotherapy (Cunha et al., 2017; Kreitler, 2019). chemotherapy can be administered after other treatments, like surgery and radiotherapy, assuming, in this case, the role of an adjuvant therapy (Beaver et al., 2016; Lennan, 2011). As such, it is used to reduce the possibility of tumour recurrence (Huang et al., 2019).

However, chemotherapy can also be used as first-line therapy, before surgery, being, therefore, a neoadjuvant therapy (Beaver et al., 2016; Lennan, 2011; Pessoa et al., 2007; van der Hage et al., 2007). Normally, neoadjuvant or primary chemotherapy is used in patients with locally advanced breast cancer to reduce the size of the tumour to make it operable (downstaging strategy) or in patients whose relationship between tumour dimension and breast volume ratio required a mastectomy and, therefore, an attempt is made to reduce the tumour and increase the use of breast-conserving surgery (downsizing strategy) (Fernandes & Cortes, 2020; Pessoa et al., 2007).

Consequently, when women are submitted to chemotherapy before surgery, that causes them an immediate feeling that they passed from “well” to “sick” very quickly (Beaver et al., 2016). On the contrary, when they have surgery first, that does not carry the same negative implications and allows them to have more time of preparation for the adjuvant chemotherapy (Beaver et al., 2016).

Nowadays, despite all the advances in this field, chemotherapy involves many side effects and extended treatment, sometimes even with hospitalizations (Coelho et al.,

2017). Therefore, not only the diagnosis, but also the treatments, can have intense effects on the psychological state of the patients (Reich et al., 2008).

Some side effects of chemotherapy are: alopecia (Sawada et al., 2009; Sebastián et al., 2007); early menopause (Rogers & Turner, 2011; Sebastián et al., 2007); nausea, vomits, and gastrointestinal disorders (Ballatori & Roila, 2003; Lennan, 2011; Rodrigues & Polidori, 2012); fatigue (Lôbo et al., 2014; Medeiros et al., 2019; Servaes et al., 2002); psychoneurological symptoms, such as concentrating issues (Badger et al., 2001; Ganz et al., 2004); psychological distress (Oh et al., 2020); swelling hands and feet (Byar et al., 2006; Ganz et al., 2004).

Regarding body image, the changes that happen on the external image of a woman with breast cancer represent a highly significant moment during chemotherapy, also carrying with it changes on the internal image since that affects their identity as a whole (Medeiros et al., 2019; Montarezi, 2008).

Consequently, facing breast cancer is a very intense experience that causes various challenges accompanied by stress, emotional distress, and adjustment difficulties (Boinon et al., 2014; Classen et al., 2008). Emotional adjustment to illness is influenced by the coping strategies individuals adopt to manage their disease (Gibbons et al., 2016; Kugbey et al., 2019). Furthermore, adjustment to an illness is normally linked to a good quality of life, subjective well-being, and global self-esteem (de Ridder et al., 2008).

Therefore, adjustment to cancer tends to be influenced by the domains referred previously and others, such as: spirituality, regardless of the religious affiliation, since it also helps with the management of the symptoms caused by treatments (Kumar & Parashar, 2015; Purnell & Andersen, 2009); resilience, since women who maintain good levels of psychological adjustment over time demonstrate they have good levels of resilience (Knobf, 2007); adaptive coping, because good adjustment to cancer shows that individuals cope with the disease in an adaptive way (Macía et al., 2019); and positive and negative affect, since a lower level of positive affect and a higher level of negative affect are related to psychological maladjustment, while a higher level of positive affect and a lower level of negative affect are associated to psychological adjustment (Cerezo et al., 2020). Furthermore, in the last years, social support has been recognized as an important predictor of better quality of life in cancer patients, since it is considered a crucial factor in the adjustment to cancer (Ganz et al., 2002; Kiaei et al., 2021; Manning-Walsh, 2005).

Thus, it was considered important to analyse the psychosocial factors associated with chemotherapy, either adjuvant or neoadjuvant, of women with breast cancer, in what refers to their quality of life, spirituality, positive affect, negative affect and resilient coping. As well as analyse whether there are associations between these four variables.

In order to carry out this investigation, a sample of 50 women with breast cancer who had been or were being submitted to chemotherapy at the Centro de Mama of Centro Hospitalar Universitário de São João (Oporto, Portugal) was studied. Participants gave their informed consent, before filling out a sociodemographic and clinical questionnaire, as well as four psychometric questionnaires (Portuguese versions): the Functional Assessment of Cancer Therapy–Breast (FACT-B); the Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being–12 Item Scale (FACIT-Sp-12); the Positive and Negative Affect Schedule (PANAS); and the Brief Resilient Coping Scale (BRCS). Data collection took place from January to June 2021.

Article 1: Psychosocial correlates of women with breast cancer: A systematized review

Abstract

The study of breast cancer and the associated treatments has suffered numerous advances in the last decades; however, breast cancer is still a disease that causes various changes in women's lives and, therefore, has various effects on their psychological state at different levels, namely on their quality of life and well-being.

As such, it was decided to carry out a systematized review of the literature to understand how the state of the art is at the moment regarding this theme. Therefore, the objectives of this review are: (a) to synthesise the current knowledge about how quality of life, social support, spirituality, positive affect, negative affect and resilient coping behave during the cancer experience in women with breast cancer; and (b) to summarise the psychological interventions that address these dimensions and their results.

As a research method, the B-On database was used with the following Boolean phrase: (("breast cancer"[TI]) AND ("quality of life or health-related quality of life") AND ("spirituality or religion or faith") AND ("positive affect or negative affect or positive emotions or negative emotions") AND ("resilience or resilient coping") AND ("chemotherapy")). The publication date considered was from 2011 to 2021. In total, 126 articles were obtained, of which only 27 remained: 22 quantitative and qualitative studies and 5 interventional studies.

The main conclusions drawn were: that many studies address these psychosocial features in women with breast cancer; that breast cancer and its treatments bring diverse side effects to women and that they have a major psychological impact, namely in their quality of life, their positive and negative affect, their spirituality, their social support, their resilience and their coping capacity; that social networks and spirituality have a large role on the quality of life and on the well-being of these women; and, that these psychosocial variables are mainly correlated with each other and as so influence each other.

Furthermore, intervention-wise it was found that some psychological interventions (e.g., mindfulness-based, spiritual, positive psychology-based) have been developed and administered in this population, targeting these psychosocial dimensions and achieved good results in improving them.

Keywords: breast cancer, quality of life, psychological interventions

Resumo

O estudo do cancro da mama e dos tratamentos associados tem sofrido inúmeros avanços nas últimas décadas; no entanto, o cancro da mama ainda é uma doença que causa diversas mudanças na vida das mulheres e que, portanto, tem diversos efeitos no seu estado psicológico a diferentes níveis, nomeadamente na sua qualidade de vida e no seu bem-estar.

Como tal, decidiu-se realizar uma revisão sistemática da literatura para perceber como se encontra o estado da arte neste momento relativamente a este tema. Os objetivos desta revisão são, então: (a) sintetizar o conhecimento atual acerca de como a qualidade de vida, o suporte social, a espiritualidade, o afeto positivo, o afeto negativo e o coping resiliente se comportam durante a experiência do cancro em mulheres com cancro da mama; e, (b) sintetizar as intervenções psicológicas que se dirigem a estas dimensões e os seus resultados.

Como método de pesquisa recorreu-se à base de dados *B-On* com a seguinte frase booleana: ((“breast cancer”[TI]) AND (“quality of life or health-related quality of life”) AND (“spirituality or religion or faith”) AND (“positive affect or negative affect or positive emotions or negative emotions”) AND (“resilience or resilient coping”) AND (“chemotherapy”)). A data de publicação considerada foi de 2011 a 2021. No total, obtiveram-se 126 artigos, dos quais apenas ficaram 27: 22 estudos quantitativos e qualitativos e 5 estudos intervencionais.

As principais conclusões retiradas foram: muitos estudos abordam estas características psicossociais em mulheres com cancro da mama; o cancro da mama e os seus tratamentos trazem diversos efeitos secundários às mulheres e têm um grande impacto psicológico, nomeadamente na sua qualidade de vida, no seu afeto positivo e negativo, na sua espiritualidade, no seu suporte social, na sua resiliência e na sua capacidade de *coping*; o suporte social e a espiritualidade têm um papel importante na qualidade de vida e no bem-estar destas mulheres; e, estas variáveis psicossociais estão maioritariamente correlacionadas umas com as outras e como tal influenciam-se umas às outras.

Além disso, verificou-se que algumas intervenções psicológicas (e.g., baseadas no *mindfulness*, espirituais e baseadas na psicologia positiva) foram desenvolvidas e

administradas nesta população, visando estas dimensões psicossociais e conseguiram bons resultados na sua melhoria.

Palavras-chave: cancro da mama, qualidade de vida, intervenções psicológicas

Introduction

Breast cancer (BC) was estimated to be the most prevalent cancer in women in 2019 (American Cancer Society, 2019). In Portugal, it is estimated that in 2020 appeared approximately 7 000 new cases of breast cancer in women (European Commission, n.d.). By 2030 it is estimated that the prevalence of different types of cancer will increase to more than 22.1 million because of the aging of the population (American Cancer Society, 2019). In addition, BC is also the leading cause of cancer mortality (Sung et al., 2021).

The first reactions when faced with a diagnosis of BC are diverse since the woman is confronted with a life-threatening illness, doubts about the treatments, and changes in the daily routine, letting her in a very vulnerable position (Almeida et al., 2012; Silva et al., 2011). Many women react to the diagnosis with shock, disbelief, and anger, which can be translated into symptoms like anxiety, depressive humour, fear, irritability, sleep disturbances, and others (Chintamani et al., 2011; Ramos, 2021). Nevertheless, these emotional states and symptoms, most of the time, are adaptive and reactive to external stimuli (Ramos, 2021).

BC is, therefore, one of the scariest cancers to women (Elshehtawy et al., 2014) since it includes a lot of psychological consequences associated with the fear of breast's amputation (partial or total), which is a body part largely linked to the notions of sensuality, sexuality, and maternity (Adachi et al., 2007; Sebastián et al., 2007; Silva, 2008).

Therefore, in patients with BC, all these factors mentioned (diagnosis and treatments), plus other factors important in the cancer trajectory, such as the genetic risk, the evolution of the disease, and the changes on the daily living can impact the quality of life (QoL) of these women (Hewitt et al., 2004; Lôbo et al., 2014; Risteska-Dimitrovska et al., 2015; Shimozuma, 2002).

There are many definitions of QoL, a construct that is considered multidimensional, and that includes concepts like well-being, life satisfaction, health status, happiness, and so forth (Pais-Ribeiro, 2004; Stickel & Goerling, 2018).

QoL was defined by World Health Organization QoL Group (WHOQOL Group, 1993) as:

an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, and their relationship to salient features of their environment. (p. 153)

QoL when associated with an illness or with health perceptions is normally named as "Health-Related QoL (HR-QoL)" (Ballatori & Roila, 2003; Binotto et al., 2020) and it represents the individual's physical, psychological, social, and spiritual responses to the illness's effects, and also the subjective evaluation that individuals make of the health care provided to them (Pinto & Ribeiro, 2006).

According to Faivre and Needleman (1992), spirituality can be considered an immaterial reality, which allows an inner path for a person to discover the meaning of his/her being. Furthermore, spirituality can be considered as a psychosocial dimension that allows the organization and management of an individual's life, life goals, values, and purposes (Vilhena et al., 2014).

As such, spirituality is considered an important dimension of QoL (Pinto & Ribeiro, 2006), since spirituality also influences an individual's assessment of their QoL (Brady et al., 1999). Some examples of spiritual practices are meditation, prayers, and contemplation (Kumar & Parashar, 2015). Frequently, individuals report that spirituality gives them a sense of comfort, hope and help in their lives (Choumanova et al., 2006).

On the one hand, coping was defined by Lazarus and Folkman (1984, p. 141) as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person". On the other hand, resilience can be defined as the capacity to manage, live through, and adapt to the unexpected, and as having the tools to deal with frustrations and tolerate them (Margarim et al., 2018).

As such, focusing on resilient coping, it allows the evaluation of resilience as a coping strategy (Ribeiro & Morais, 2010) and that is the capacity of facing adversity

through adaptive cognitive and behavioural strategies (Sinclair & Wallston, 2004). According to Ristevska-Dimitrovska et al. (2015), psychological resilience is the individual ability to protect mental health from adversity, for example, a cancer diagnosis and following treatments.

Affect is a component of subjective well-being, which is defined as a wide category of phenomena that involves emotional responses, domain satisfactions, and global appraisals of satisfaction with life (Diener et al., 1999). Subjective well-being is divided into a cognitive dimension, that is life satisfaction, which corresponds to the evaluation individuals do about their satisfaction with life; and, into an emotional dimension, which is positive and negative affect, that refers to the affect an individual manifests in each moment and the prevalence in duration and intensity of negative and positive emotions (Galinha & Pais-Ribeiro, 2005).

Positive affect corresponds to the extent that the individual manifests enthusiasm with life and feels interested, active and excited (Galinha & Pais-Ribeiro, 2005; Galinha et al., 2014; Schroevers et al., 2011). Negative affect refers to the extent a person feels unwell or distressed (Galinha & Pais-Ribeiro, 2005), and it includes concepts such as anxiety, sadness, and anger (Galinha et al., 2014; Louro et al., 2015; Schroevers et al., 2011).

Social well-being is another life dimension that can be affected by the experience of cancer (Sena & Neves, 2019), due to the side effects of treatments, especially fatigue and alopecia that become worries and barriers to women and their social life (Ganz et al., 2002). However, social support plays an important role in the QoL of these patients (Ganz et al., 2002).

Finfgeld-Connett (2005, p. 5) defined social support as an “advocative interpersonal process that is centred on the reciprocal exchange of information and is context specific”, which improves mental health. Perceived social support refers to the individual’s perception of the availability of external assistance (Leung et al., 2014).

Social support is based on a multidimensional supportive network that includes not only the quantity of social bonds, but also the quality of these relationships that provide support (Yan et al., 2016). As such, good family harmony and frequent interactions with family and friends are two important dimensions of social support, that help the patients in coping with the illness and recovering from BC, increasing their mental health, QoL and subjective well-being (Manning-Walsh, 2005; Vilhena et al., 2014; Yan et al., 2016).

All these dimensions mentioned can be affected by the trajectory of BC, that involves how women handle the experiences of diagnosis, the treatments associated and the transition to survivorship (Knobf, 2015). As such, individuals with cancer may have psychological or psychiatric conditions previous to cancer diagnosis and treatment and that may influence their ability to cope with the illness, while others may develop psychological distress after diagnosis or during the treatments (Riba et al., 2019).

Therefore, comprehensive oncology care concerns the coping skills and the existential and psycho-spiritual well-being of the individuals, valuing the importance of psychological interventions that meet the needs of the patients and their families according to the different phases of illness and treatments (Strada & Sourkes, 2015). Typically, the most used psychological interventions are the ones based on psychodynamic, supportive-expressive, cognitive-behavioural, dignity therapy and meaning-centered approaches (Garduño-Ortega et al., 2021; Riba et al., 2019; Strada & Sourkes, 2015).

Thus, it becomes evident the necessity of evaluating these different psychosocial aspects in cancer patients, to better comprehend their psychological state and to choose the intervention that best attends their needs.

The present systematized review aims to synthesize the current knowledge about how these psychosocial dimensions, such as QoL, social support, resilient coping, spirituality, positive and negative affect behave during the experience of BC and their treatments, especially chemotherapy (CT).

Method

This systematized review follows the guidelines proposed in the guide *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA; Liberati, 2009). Systematized literature review is a research method that uses the literature about a particular topic of interest to integrate a larger set of information and to allow a more complete understanding of that topic (Mendes et al., 2008; Sampaio & Mancini, 2007).

In order to attend all the components identified, it was created the following research question: What do we know about the QoL, spirituality, social support, resilient coping, positive affect, and negative affect of women with BC during the trajectory of the illness (diagnosis, treatments and survivorship) and about the psychological interventions in these areas?

With this review it is intended to comprehend how these psychosocial dimensions have been studied, according to the phase of the cancer's process considered and the psychological interventions that have been used aiming for those dimensions.

Initially, eligibility inclusion and exclusion criteria were defined in order to guide the search and the selection of primary studies and to increase the precision of the results, according to the research question and objectives. The inclusion criteria were: full-text publications of the last 10 years in Portuguese, English or Spanish; studies that analysed at least one of the variables defined, and; studies that had as participants women aged 18 years or more and that had a diagnosis of BC (whether they were in treatment or already in survivorship).

Studies that did not meet these criteria were excluded, as well as those that were literature reviews or that included palliative or metastatic patients. This last criterion of excluding studies that included palliative or metastatic patients was also used as a criterion to select the participants for the empiric study, which is presented in the following chapter. This criterion was chosen because literature demonstrates that metastatic cancer patients and recurrent cancer patients have a worse QoL than primary cancer patients because of symptoms severity and physical function (Siddiqi et al., 2009). Furthermore, the diagnosis of metastatic and recurrent disease frequently has a more devastating effect psychologically and emotionally than the original one (Sumner, 2011). Thus, it was decided that in order to reduce the heterogeneity of the reviewed articles and of the empirical study's sample, such cases would not be considered.

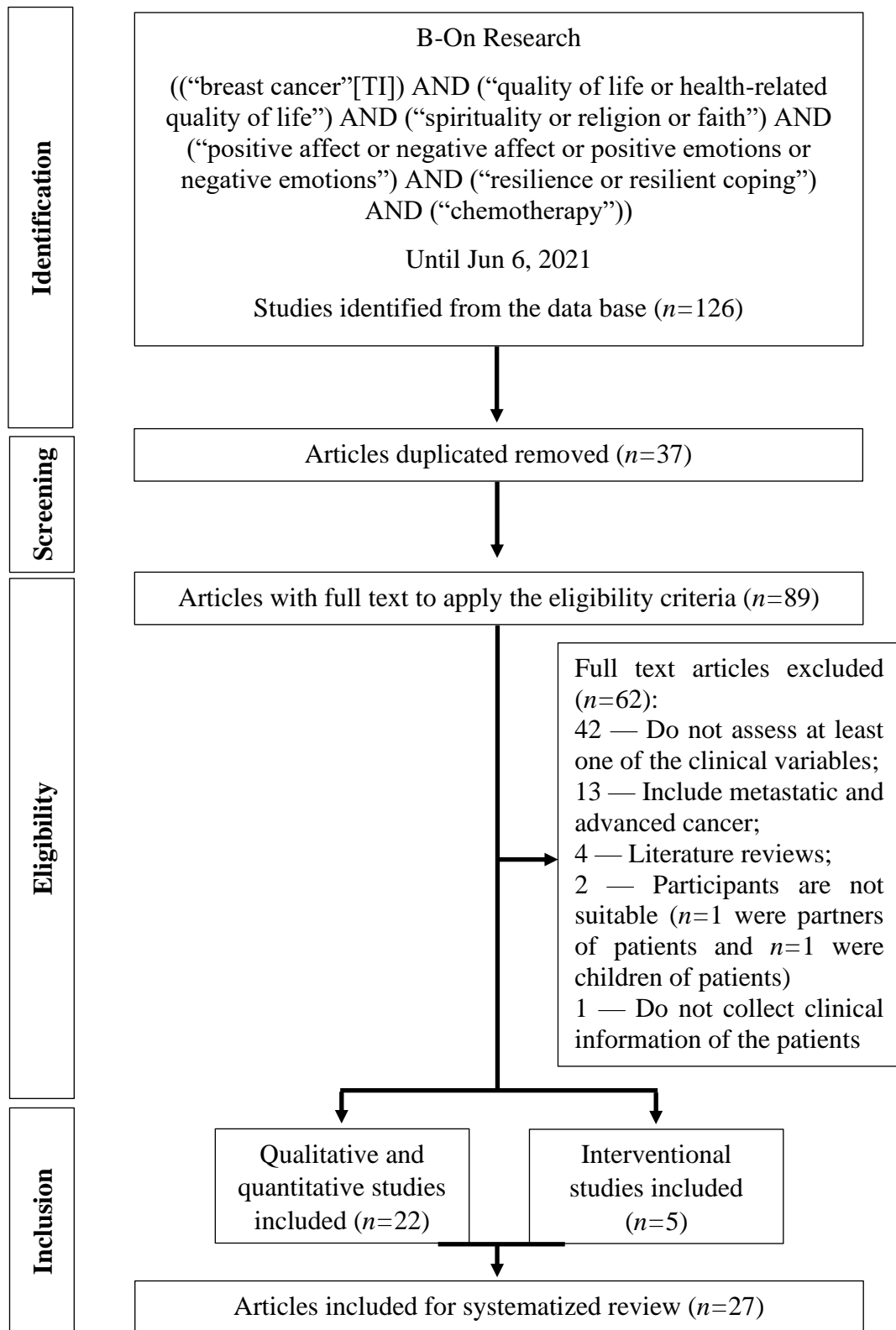
As a research method the electronic database B-On (*Biblioteca do Conhecimento Online*) was consulted. The research procedure was as follows: it was selected the advanced search, and it was used the following Boolean expression ((“breast cancer”[TI]) AND (“quality of life or health-related quality of life”) AND (“spirituality or religion or faith”) AND (“positive affect or negative affect or positive emotions or negative emotions”) AND (“resilience or resilient coping”) AND (“chemotherapy”)). Only for the descriptor “breast cancer” was selected an optional field for “Title” (TI). For all the others searching descriptors, it was not selected an optional field.

Furthermore, the options “full text” and “peer reviewed” were selected and it was removed the selection of “apply equivalent subjects”. The date of publication considered was from 2011 to 2021. From this search resulted 126 articles.

The following flow chart describes these phases of studies selection (cf. Figure 1):

Figure 1

Flow chart with the phases of studies selection



In order to avoid duplicate results, the publications were verified, which led to the exclusion of 37 duplicate articles. Afterwards, the articles were read in their entirety, considering the eligibility criteria defined. As such, 62 articles were excluded. In total, 27 articles were selected from this analysis.

The main reasons for exclusion were for: not assessing at least one of the clinical variables; to be a literature review; to include metastatic or advanced cancer; and having as participants the significant others (e.g., partners, children) of women with BC to analyse their experiences.

Results

Qualitative and Quantitative studies

In this section is presented a summary of the qualitative and quantitative articles analysed. In table 1, can be found the articles identified by authors, year and country, their type of study, their objectives, their participants, their measures used and their main results.

Table 1

Summary of the Qualitative and Quantitative Articles Analysed

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Hu et al. (2021), China	Qualitative, cross-sectional study. To explore stress and the coping strategies of Chinese breast cancer (BC) survivors.	63 female survivors with a diagnosis of BC and who had completed treatment (surgery, chemotherapy [CT], and radiotherapy [RT]), being in stable condition and without receiving CT or RT during the time of participation.	Semi-structured interview: 1. Coping strategies; 2. Spirituality; 3. Social support (SS); [4. Stress]; [5. Expectations].	The coping strategies used in the course of the illness by the participants were divided into: measures taken by the participants themselves and measures from the outside, such as family, friends, society, and others. The measures taken by the participants themselves were: improve cognition about the disease; face treatment positively; develop hobbies (i.e., traveling, listening to music, planting); and, have beliefs (improving mood through faith). The measures from the outside world included family support, mutual care among the patients and neighbourhood and social care. The lives of these women changed after the diagnosis, mainly in terms of family and social life. Participants referred the importance of the support given by relatives, friends, and neighbours, since it allowed them to relieve stress, reduce self-abasement, relax, and move forward with treatment and recovery.
Srivastava et al. (2021), India	Quantitative, cross-sectional study. To investigate the potential mediating role	100 women diagnosed with BC and receiving treatment (the study did not	1. Perceived SS: Social Support Questionnaire (SSQ); 2. Affective experiences:	Perceived SS had a mean score of 54.70, which corresponds to a moderate level of SS. Positive experiences on SPANE had a mean score of 17.96 (<i>SD</i> = 5.72) and negative experiences had a mean score of 15.36 (<i>SD</i> = 5.71). Both scores correspond to a relatively low level of both positive and negative affective experiences.

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Momenifar et al. (2020), Iran	<p>of affective experiences in the relationship between perceived SS and life satisfaction among BC patients in India.</p> <p>Qualitative, descriptive and cross-sectional study.</p> <p>To investigate the spiritual experiences of BC patients.</p>	<p>specify the type of treatment).</p> <p>20 women diagnosed with BC for at least one year and with history of at least one of the common treatments (surgery, CT, RT or a combination).</p>	<p>Scale of Positive and Negative Experiences (SPANE);</p> <p>[3. Life satisfaction: (Satisfaction With Life Scale].</p> <p>Semi-structured interview:</p> <ol style="list-style-type: none"> 1. Spirituality; 2. SS; 3. Coping. 	<p>Co-relational results indicate that perceived SS was positively associated with positive affect and life satisfaction, while it was inversely related to negative affect.</p> <p>Affect was also associated with life satisfaction.</p> <p>Results showed that the mediation of affective experiences in the relationship between perceived SS and life satisfaction was significant. Positive emotional experiences fully mediated the relationship between perceived SS and life satisfaction, while negative emotional experiences partially mediated this relationship.</p> <p>After the diagnosis, the participants turned more to God to seek faith and to be thankful. As such, BC increased the participants' faith in God and led to spiritual growth.</p> <p>Spiritual beliefs and practices allowed a sense of hope, comfort, and peace.</p> <p>The more spiritual support the patients received from family and friends, the more helpful and powerful they became to deal with the illness, especially in the treatment stage because of its negative consequences.</p> <p>Participants referred that the perception of support from family and friends was their main need in the face of cancer.</p> <p>Support from spouses and children of the patients had a soothing effect on them and brought them security and hope.</p> <p>According to the participants, one of the most important ways to cope with the illness is by accepting it.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Eid et al. (2020), Saudi Arabia	Quantitative, cross-sectional study. To investigate the correlations of religiosity and psychological resilience with mental health among cancer patients and to examine whether religiosity and psychological resilience can predict mental health.	329 female patients with BC, during the trajectory of BC (some were in treatment, others had already completed it).	1. Religiosity: Islamic Religiosity Scale; 2. Psychological resilience: 14-Item Resilience Scale; 3. Coping; [4. Anxiety and Depression: Hospital Anxiety and Depression Scale (HADS)].	The results showed a positive statistically significant correlation between religiosity and psychological resilience and a negative statistically significant correlation of religiosity and psychological resilience with symptoms of mental health. One of the several factors that promotes resilience is religion. There are no statistically significant differences in both religiosity and psychological resilience due to the duration of cancer or due to the stage of cancer treatment. Mental health correlated with religiosity and psychological resilience. As such, religiosity and psychological resilience play a role in coping with the stress caused by cancer, by relieving its negative effects.
Medeiros et al. (2019), Brazil	Qualitative, descriptive and cross-sectional study. To analyse the perception of women with BC on the	20 women with BC submitted to adjuvant or neoadjuvant CT.	1. Spirituality; [2. Perception and experiences].	The phenomenological data analysis demonstrated that the perception of women about the experience of CT is about change of the physical body and of their identity and it considers existential aspects. Three categories emerged from the experience of BC: alopecia, fatigue, and spirituality. Spirituality has an important role because the experience of BC triggered the search for meaning of being and of life, and made women think more about transcendence.

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Huang et al. (2019), China	experience of undergoing CT. Quantitative, cross-sectional study. To explore the level of psychological resilience of postoperative women with BC, and study the factors contributing to psychological resilience.	208 women diagnosed with BC who had surgery and who received at least two cycles of CT or other adjuvant therapies.	1. Psychological resilience: Connor-Davidson Resilience Scale (CD-RISC); 2. SS: Social Support Rate Scale (SSRS); 3. Quality of Life (QoL); [4. Self-efficacy: General Self-Efficacy Scale]; [5. Family hardiness: Family Hardiness Index].	The psychological resilience of BC women after surgery is relatively low, since the mean score was 65.18, including three dimensions: tenacity, strength, and optimism. The mean score for SS was 32.17 ($SD = 4.78$), which corresponds to a medium level of SS. The results show that clinical stage of BC, cycles of adjuvant therapy and physical exercise status significantly affected the level of psychological resilience (women with less than three cycles had higher psychological resilience scores than those with three to five cycles or more). The level of psychological resilience was positively correlated with total SSRS and the dimensions of SSRS. Cycles of adjuvant therapy contributed negatively to psychological resilience, while subjective SS contributed positively. SS, self-efficacy and family hardiness affect psychological resilience positively, which promotes disease rehabilitation and QoL.
Padilla-Ruiz et al. (2019), Spain	Quantitative, descriptive, and cross-sectional study.	59 female survivors of BC who were currently free of cancer.	1. Resilience: CD-RISC	The median resilience score was 77 ($IQR: 70-80$), which is a relatively high score. The group of patients who had survived for 6 or more years since the diagnosis had a higher score for total resilience ($Mdn = 90; IQR: 76-92$) than those diagnosed more recently ($Mdn = 74; IQR: 65.7-83.7$).

Author, year, country	Type of study and objectives	Participants	Measures	Main results
	To describe the clinical and sociodemographic factors that correlate with greater resilience in survivors of BC.			<p>The group with no formal qualifications or only primary studies had a lower mean score (<i>Mdn</i> = 72; <i>IQR</i>: 64-84), comparatively to the group with higher levels of education (<i>Mdn</i> = 79; <i>IQR</i>: 74-89.7).</p> <p>No significant association was found between the patients' age and any of the five CD-RISC factors or the total score. Marital status and employment situation revealed no significant differences among the CD-RISC scores obtained.</p> <p>Of the clinical variables, only the administration of CT was significantly associated with the score obtained on the CD-RISC scale. The women who did not receive CT had a median score of 22.5 (<i>IQR</i>: 20-26.2) for factor 1 (persistence-tenacity-self-efficacy) compared to the score of 27 (<i>IQR</i>: 23.5-29) obtained by those who received CT. For factor 2 (control under pressure), the group with no CT had lower scores (<i>Mdn</i> = 18.5; <i>IQR</i>: 14-20.5), when compared to the scores obtained by the patients given CT (<i>Mdn</i> = 21; <i>IQR</i>: 16-24.5). For the total level of resilience, the median scores for without CT and with CT were 71 (<i>IQR</i>: 63-69) and 79 (<i>IQR</i>: 72-89), respectively.</p>
Lisica et al. (2019), Bosnia and Herzegovina	Quantitative, cross-sectional study. To examine the relationship of protective factors (self-	100 women diagnosed with BC, during active treatment (65% had received CT, RT and full	1. Proactive coping: Scale of Proactive Coping; [2. Self-esteem: Rosenberg's	The mean of proactive coping was 52.11, which corresponds to a moderate level. Optimism, relating to others, new possibilities, personal strength, appreciation of life and total score of PTG were positively associated with proactive coping. Pessimism was negatively associated with proactive coping.

Author, year, country	Type of study and objectives	Participants	Measures	Main results
	esteem, optimism, proactive coping), and a measure of psychological resistance in women with BC.	or partial mastectomy).	Scale of Self-esteem]; [3. Optimism: Optimism and Pessimism Scale]; [4. Post-Traumatic Growth (PTG): PTG Inventory (PTGI)].	Women who proactively faced the problem also felt a greater emotional connection and a sense of closeness with other people. Proactive confrontation involves the behaviour of people who in difficult situations seek help and support from others and focus on the opportunities that allow growth.
Mishra and Saranath (2019), India	Quantitative, cross-sectional study. To investigate the association between demographic features and perceived social support during the adjustment of patients to BC.	393 women with early-stage BC who were submitted to surgery and received different forms of adjuvant treatment (CT and RT).	1. Perceived SS: Multidimensional Scale of Perceived Social Support (MSPSS); [2. Adjustment to cancer: Mental Adjustment to Cancer Scale].	The mean total for SS was 46.13 ($SD = 6.11$), which corresponds to a relatively low score. This scale is divided into family, friends and significant others SS and the subscale with the highest score was friends' SS. Perceived SS was associated with the adjustment to cancer, specifically the dimensions fighting spirit and fatalism. SS from significant others was predictive of a patient's fighting spirit and fatalism mental adjustment, while support from friends was predictive of helplessness/hopelessness. As such, SS has been found to significantly decrease the distress caused by cancer diagnosis and its treatments and increase the mental adjustment and the well-being of the patients.
Flannery et al. (2019), USA	Qualitative, descriptive and cross-sectional study.	47 African American women with BC diagnosed	Semi-structured interview: 1. SS; 2. Spirituality.	SS was received in the context of the stability of the extended family network and it was often about "distributing the weight of the diagnosis".

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Felder et al. (2019), USA	<p>To understand the meaning of social support among African American women diagnosed with BC.</p> <p>Note: This article is a subsample of a larger mixed study.</p> <p>Qualitative, descriptive and cross-sectional study.</p> <p>To explore how African American women with BC conceptualized and experienced support along</p>	<p>within the past 4 years.</p> <p>16 female patients who had a BC diagnosis and who had received RT or CT.</p>	<p>Semi-structured interview:</p> <ol style="list-style-type: none"> 1. SS; 2. Spirituality 	<p>Moreover, SS was not only tangible, but also emotional and spiritual support from community networks in which there was cultural understanding of connectivity and mutuality. Spiritual support brought peace and comfort to these women. For women with BC, the context of religion or shared spiritual paradigm provides them an extended network of trust.</p> <p>From the study emerged three core themes: when support meets patients' expectations; when reality exceeds expectations (related to the healthcare professionals); and, when support given was not what was desired.</p> <p>About the first theme, women had clear conceptualizations of what role each person around them should have. As such, when each person gave support that was expected from the participants, then the support was perceived as positive and helpful. The support given by family and friends came as a lack of questioning about treatment decisions, with unquestioning acceptance and inherent support, and as instrumental support, for example, with transportation to the clinical sessions, assistance with daily activities and others.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Izydorczyk et al. (2018), Poland	<p>their BC journey.</p> <p>Quantitative, longitudinal study.</p> <p>To determine the relationship between body image and resilience in women after a mastectomy.</p>	<p>120 women diagnosed with BC and who had completed mastectomy (two subgroups: group 1 - up to 2 years after a mastectomy; and group 2 - over 2 years since the mastectomy).</p>	<p>1. Psychological resilience and negative emotions: Psychological Resilience Scale (SPP-25);</p> <p>[2. Body image: Body-self Questionnaire and Body Attitude Test].</p>	<p>Spiritual support was also mentioned by the participants as integral to most of the experiences, through their personal connection with God, the presence of clergy and others. The participants in general expressed that they had received overwhelmingly positive support from their families, friends, clergy, and healthcare providers.</p> <p>Women up to 2 years after mastectomy (group 1) scored 73.33 ($SD = 13.073$) on general psychological resilience, while women over 2 years after mastectomy (group 2) scored 67.89 ($SD = 14.488$). Both groups had an average score, but group 1 was at the upper threshold of the average score, while group 2 was at the lower threshold of the average score.</p> <p>As such, mastectomized women differ on the level of psychological resilience, depending on the time passed since the mastectomy.</p> <p>The results show that psychological resilience is a significant protecting factor for the body image that prevents the excessive development of negative self-esteem in mastectomized women. Women become less capable of tolerating negative emotions as time passes after a mastectomy.</p>
Mushtaq and Naz (2017), Pakistan	<p>Quantitative, longitudinal study.</p> <p>To explore the relationship</p>	<p>100 women with BC were assessed 15 days before surgery and 1</p>	<p>1. Resilience: Hiew's State-Trait Resilience Checklist;</p>	<p>Scores were higher on resilience on post-surgery ($M = 97.17$; $SD = 11.43$) comparatively to pre-surgery ($M = 58.51$; $SD = 8.20$).</p> <p>Scores on body image satisfaction and resilience in women with lumpectomy were higher than in women with mastectomy.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Main results
	among body shape satisfaction, distress, and resilience in women with breast surgery and to explore the predictors of resilience in women with breast surgery.	month after the surgery, with comparison between lumpectomy and mastectomy.	[2. Body Image perception and satisfaction: Body Image State Scale]; [3. Distress: Depression, Anxiety and Stress Scale].	Resilience was significantly and positively correlated with body image satisfaction and negatively correlated with distress.
Dumrongpan apakorn and Liamputtong (2017), Thailand	Qualitative, cross-sectional study. To comprehend the meanings of BC and the experiences of SS among women living with BC in Northeastern Thailand.	18 women with BC (16 were in active treatment; 2 were not).	Semi-structured interview: 1. SS; 2. Coping; 3. Spirituality; [4. Meanings and experiences].	When diagnosed with BC, women perceived this illness as a life-threatening one. Many women with BC managed to deal with the illness and the treatments largely thanks to the SS they received. All women in the study reported good SS, especially from their husbands, children, and parents. For these women, available support from their families, friends, neighbours, spiritual, and health care professionals were essential for them to cope with their illnesses. Women reported that spirituality had an important role in terms of emotional support. SS could enhance the effectiveness of the treatments since it helped women to maintain positive perspectives about their health conditions, to better deal with BC and to maintain their well-being.

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Sharif & Khanekhab (2017), Malaysia	Quantitative, cross-sectional study. To investigate the mediating role of coping strategies in the relationship between external locus of control and QoL among BC patients.	130 Malaysian women diagnosed with BC, after surgery (12 participants with only surgery; 118 adjuvant treatments).	1. Coping strategies: Brief-COPE; 2. QoL: Functional Assessment of Cancer Therapy–Breast (FACT-B); [3. External locus of control (LoC): 9-Item LoC Scale].	Active emotional coping (e.g., search for SS, positive reinterpretation, acceptance, and humour) was the subscale of Brief-COPE that had the highest mean score with 29.669 ($SD = 6.110$), and avoidant emotional coping (e.g., lack of affective involvement, denial, turning to drugs and alcohol) had the lowest with 16.734 ($SD = 4.467$). On FACT-B, the QoL total mean score was 108.540 ($SD = 19.957$); the BC subscale had the lowest score with 25.129 ($SD = 6.838$; range: 0-40); and the functional well-being subscale had the highest with 22.298 ($SD = 5.936$; range: 0-28). It was confirmed a positive relationship between active-emotional coping and QoL and a negative relationship between avoidant-emotional coping and QoL. The results showed that the level of engagement of coping strategy has a significant relationship with cancer patients' QoL. Patients who use active emotional coping, which involves more engagement, experience higher QoL than those who use avoidant coping strategies that is more of a passive coping strategy. The use of more active emotional coping strategies, such as searching for SS, positive reinterpretation, acceptance, and humour help women to experience a better HR-QoL.
Wu et al. (2016), China	Quantitative, cross-sectional, and descriptive study.	213 mainland Chinese women newly diagnosed with BC who were	1. Psychological resilience: CD-RISC; 2. Social support: SSRS;	The average score for psychological resilience was 60.97, which corresponds to a particularly low resilience level. The mean score for SS was 43.61 ($SD = 6.24$), which corresponds to a moderate level.

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Torres et al. (2016), USA	To evaluate the level of resilience and identify predictors of resilience among mainland Chinese women newly diagnosed with BC. Mixed, cross-sectional study. To gain an in-depth understanding of African American BC survivors' experiences, barriers, and facilitators in accessing BC treatment and challenges in	submitted to surgery. 32 African American women with BC who completed treatment for BC within the last 10 years.	3. Coping strategies: Medical Coping Modes Questionnaire. Qualitative approach—semi-structured interview: 1. Coping; 2. SS; 3. QoL; 4. Spirituality; [5. Experiences]; [6. Psychosocial well-being]. [Quantitative approach—survey:	Resilience was positively associated with educational level, family income, time span after diagnosis, SS, and some coping strategies, such as confrontation, avoidance, and hope. While it was negatively associated with age and the coping strategy of acceptance-resignation. Participants who received conservative surgery had higher scores of resilience than those that had a mastectomy. Hope, educational level, avoidance, confrontation, and age are predictors of resilience. According to these women with BC, fear transcended throughout all the phases: when they received the diagnosis; fear of stigmatization; during the treatments because of the side effects; fear or recurrence; and others. The coping mechanisms reported by the participants were: faith; support networks; positive attitudes; and acts of empowerment. Faith in God was an important coping mechanism essential to all women in the study and a critical facilitator during the experience, since it provided them with acceptance and reassurance. Support networks consisted of family, friends, and co-workers and it provided emotional and spiritual support needed to overcome the challenges. As such, support networks encouraged these women to get checked before the diagnosis,

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Goldblatt et al. (2016), Israel	<p>Qualitative, cross-sectional study.</p> <p>To explore types and intensity of negative and positive emotional expression related to the BC experience by younger and older Arab BC survivors.</p>	<p>20 younger (aged 32-50) and 20 older (aged 51-75) female BC survivors, currently free of disease.</p>	<p>Semi-structured interview:</p> <ol style="list-style-type: none"> 1. Emotional expressions; 2. Negative and positive emotions; 3. Spirituality 	<p>assisted them with the side effects of the treatments and provided supportive work environments to help them maintain their normal lives.</p> <p>Women referred the importance of a positive attitude and laughter to help them maintain a strong mentality throughout the treatment.</p> <p>QoL concerns were associated with loss of their femininity because of surgery and because of the side effects of treatments, which brought some challenges in terms of self-consciousness and sexual attractiveness. However, participants also reported that it was important for their QoL to continue living their normal lives, by working and everything.</p> <p>Three emotional expression modalities emerged: succinct vs. comprehensive accounts; expression of emotions vs. avoidance of emotions; and patterns of expression of positive emotions and a sense of personal growth.</p> <p>Younger women provided more detailed reports about their illness experiences than older women. Older women’s reports were succinct, action-focused and included more emotion-avoiding expressions than younger women.</p> <p>A quantitative analysis of the participants’ emotional expressions revealed that the older women used considerably less emotional expressions, whether negative or positive. Younger participants expressed more negative than positive emotions, while the older group expressed more positive than negative emotions.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Wells et al. (2014), USA	<p>Qualitative, cross-sectional study.</p> <p>To examine the main coping facilitators used by African American women as they transition across the cancer continuum.</p> <p>Note: The results are drawn from</p>	<p>20 African American women with BC, during the trajectory of BC (diagnosis, treatment and survivorship).</p>	<p>Semi-structured interview:</p> <ol style="list-style-type: none"> 1. Coping; 2. SS; 3. Spirituality; 4. Negative emotions 	<p>Neither the mean of emotional expressions nor the number of emotions were related to background variables, level of education, years since diagnosis, family status, employment, or religion. However, participants who had been submitted to CT expressed a higher number of negative emotions compared to women who had not been submitted to CT.</p> <p>Both groups mentioned praying to God for help. However, older women made references to God and to God’s will more frequently than younger women. It seemed that the need for spiritual support and the reliance on God signified possibly distressful emotions that women preferred not to mention.</p> <p>The study found that survivors had different experiences and needs at each stage of the course of the cancer trajectory. Each survivor described a moment of transition during the cancer experience from negativity to resilience. At diagnosis, strength and resilience stemmed from one main source – spirituality. Participants showed an underlying spiritual reflection and devotion to faith and prayer, which helped them to make meaning and to transition successfully to the stages of treatment and of survivorship.</p> <p>Emotions increased at diagnosis, with a need for emotional and instrumental support. Participants described negative emotions as feeling anger, fear, devastation, upset and hopelessness. Also at diagnosis, women reported a heightened sense of spirituality that helped them through the uncertainty and lack of control. There seemed to be a relationship between negative emotions and spiritual strength.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Silva et al. (2012), Portugal	<p>data collected during a larger mixed method project.</p> <p>Quantitative, longitudinal study.</p> <p>To examine the role of coping strategies and Post-Traumatic Growth (PTG) on the psychological adjustment to BC trajectory.</p>	50 women with BC were assessed at the time of surgery (T1), during adjuvant treatment (T2) and six months after the end of treatment (T3).	<ol style="list-style-type: none"> 1. Coping strategies: Brief-COPE; 2. Psychological QoL: World Health Organization Quality of Life-Bref; 3. SS; [4. PTG: PTGI]; [5. Anxiety and Depression: HADS]. 	<p>During the cancer treatment, survivors needed their family, friends, and co-workers the most to provide concrete support and advocacy. In this phase, it was reported an increased need for emotional and instrumental support by family, friends, and co-workers.</p> <p>At T1, women frequently used cognitive coping, since the mean score for it was 16.6 (range: 0-24) and in terms of seeking SS, women showed a moderate mean score of 8.0 (range: 0-12). Regarding QoL, at the three moments considered, women showed moderate levels of QoL with little variation (T1: 69.7; T2: 69.2; T3: 70.2).</p> <p>Coping played an important role in the experience of BC patients, both in terms of their psychological adjustment and PTG. Women who engaged more in cognitive strategies either by planning their actions, accepting life-circumstances, attempting to reframe BC in a more positive light or having a humorous approach, revealed higher PTG during the treatment phase. Almost one year after diagnosis, they also revealed lower levels of depression and anxiety and better psychological QoL.</p> <p>Efforts to seek SS before surgery were not associated with psychological adjustment in T1. However, these efforts were significantly associated with higher levels of PTG during the period of adjuvant treatments.</p> <p>The use of coping strategies before surgery, such as SS and cognitive coping, indirectly influenced the level of psychological QoL at the survival phase via PTG.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Sherman et al. (2012), USA	Qualitative, descriptive and cross-sectional study. To develop a substantive theory of the process of BC survivorship.	15 women diagnosed with early-stage BC, who had completed treatment.	Semi-structured interview: 1. Coping 2. SS; 3. Spirituality [4. Perceptions and experiences].	<p>Participants described their active role in healing the self as they had to integrate their experience on many levels during and after BC treatment. This active role of healing included remaining on high alert and maintaining a sense of self and coping, that involved denial, taking control, having a healthier lifestyle, protecting themselves, coping with physical and sexual changes, managing side effects of treatment, and adjusting to BC.</p> <p>Beyond physical and emotional self-healing, spiritual healing involved hope, faith, and prayer so women could “make it through”.</p> <p>BC trajectory included a shared experience with others, including family, friends, women in the BC community, other women, health professionals and co-workers. According to the participants, positive support was perceived when there was an active presence of others, by offering supportive and loving gestures, acceptance, validation, demonstrations of strength and the message “we are in this together”. In these cases, patients expressed a recommitment to the relationships.</p> <p>However, negative support was perceived when others were unhelpful, expressed unwanted concern, abandoned them physically or emotionally, ignored their fears and concerns, remained silent, stigmatized them or were so emotionally needy themselves that the participant needed to shift her energy from her own healing to offer reassurance to others. With this negative support, women reconsidered the value of the relationship and decided to let go of it.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Main results
Lopez-Class et al. (2011), USA	Qualitative, cross-sectional study. To examine social, cultural and health care system factors that impact the QoL and survivorship experiences of Latina immigrant BC survivors.	28 female BC survivors within 10 years of their BC diagnosis (19 completed in-depth interviews and nine participated in the focus groups).	Semi-structured interview: 1. QoL; 2. SS; 3. Spirituality; [4. Experiences].	Many women reported the importance of spirituality, in which they relied on as a source of strength and comfort in dealing with their diagnosis. However, some also reported that the diagnosis made them question their faith. Women's BC experiences appeared to be shaped by cultural beliefs and experiences as immigrants, such as shame about the diagnosis, feelings of isolation and the importance of family support. Women dealt with BC with self-reliance and by working during and after treatments in order to be distracted from the illness. Women felt less social because they did not want to answer questions about the illness and because their bodies had changed after the surgery. However, some women also reported an improvement on the support they received from others after the diagnosis. Family support was a significant factor in determining these women's QoL.

Note. BC = breast cancer; CT = chemotherapy; RT = radiotherapy; SS = Social Support; SSQ = Social Support Questionnaire; SPANE = Scale of Positive and Negative Experiences; HADS = Hospital Anxiety and Depression Scale; CD-RISC = Connor-Davidson Resilience Scale; SSRS = Social Support Rate Scale; QoL = quality of life; PTG = Post-Traumatic Growth; PTGI = Post-Traumatic Growth Inventory; MSPSS = Multidimensional Scale of Perceived Social Support; SPP-25 = Psychological Resilience Scale; FACT-B = Functional Assessment of Cancer Therapy–Breast; LoC = Locus of Control; HR-QoL = Health-Related Quality of Life.

By analysing Table 1, it can be verified that the publication date of the articles varies between 2011 and 2021, inclusive. Most of the studies included in this review were conducted in Asia ($n=11$), more specifically in China ($n=3$), India ($n=2$), Iran ($n=1$), Israel ($n=1$), Malaysia ($n=1$), Pakistan ($n=1$), Saudi Arabia ($n=1$) and Thailand ($n=1$). The rest of the studies were made in the USA ($n=6$), in Europe ($n=4$), and in Brazil ($n=1$). In terms of the type of study, there were found 11 quantitative studies, 10 qualitative studies and 1 mixed study.

Regarding the main objective of the studies, most of them were directed to the analysis of the experiences of female BC patients since the diagnosis, which included the assessment of some of this project's variables. As such, the most mentioned variable in the studies was social support ($n=13$), followed by spirituality ($n=12$), then coping ($n=11$), resilience ($n=6$), QoL ($n=5$) and affect/emotions ($n=4$).

Furthermore, most of the studies reviewed are cross-sectional ($n = 19$), and just three of them are longitudinal (Izydorczyk et al., 2018; Mushtaq & Naz, 2017; Silva et al., 2012). In terms of the sample, in all the studies participants were women with BC. However, when it comes to sample size, the variation is bigger, with the study by Sherman et al. (2012) having the smallest sample with 15 women and the study by Mishra and Saranath (2019) having the largest sample with 393 women.

Spirituality

The qualitative studies of Lopez-Class et al. (2011), Medeiros et al. (2019) and Momenifar et al. (2020) demonstrate that BC made the participants turn more to spirituality, by seeking faith in God and leading to spiritual growth. The experience of BC triggered existential aspects in these women, that made them search for the meaning of being and of life (Medeiros et al., 2019). However, Lopez-Class et al. (2011), in their study, concluded that some participants reported that the diagnosis of BC made them also question their faith.

According to most of the studies analysed (e.g., Hu et al., 2021; Torres et al., 2016; Wells et al., 2014), spirituality was reported as being one of the most important coping strategies used by these women. Women in the study of Hu et al. (2021) reported that having spiritual beliefs and faith made them improve their mood daily. Wells et al. (2014) refer that at the time of the diagnosis, strength and resilience stemmed from one source—spirituality. As such, through spiritual reflection, devotion to faith and prayers,

women reported feeling better so they could “make it through” and transition through all the phases of BC (diagnosis, treatments, and survivorship) (Sherman et al., 2012; Wells et al., 2014).

Spirituality as a coping strategy for these women diagnosed with BC was described as being a source of: strength (Lopez-Class et al., 2011; Wells et al., 2014); comfort (Flannery et al., 2019; Lopez-Class et al., 2011); hope (Momenifar et al., 2020; Sherman et al., 2012); peace (Flannery et al., 2019; Momenifar et al., 2020); meaning (Medeiros et al., 2019); reassurance (Torres et al., 2016); emotional support (Dumrongpanapakorn & Liamputtong, 2017); and acceptance (Torres et al., 2016). Furthermore, women also mentioned that spiritual support had an important role in their cancer’s experience, since it also brought them an improvement on their social networks with shared spiritual experiences, a sense of trust, and the presence of clergy and other (Felder et al., 2019; Flannery et al., 2019).

Goldblatt et al. (2016), in their qualitative study, explored the negative and positive emotional expressions related to the BC experience of younger and older women and they concluded that both groups mentioned turning to God for help. However, the group of older women made references to God and to God’s will more frequently than the younger women’s group, something that was interpreted by the authors as a possible substitute to the mention of distressing emotions (Goldblatt et al., 2016).

Resilience

Huang et al. (2019) and Wu et al. (2016) conducted quantitative-based cross-sectional studies and evaluated resilience using the same instrument—Connor-Davidson Resilience Scale (CD-RISC). Their conclusions are similar, since in both studies women revealed a moderate level of resilience after surgery, with a score of 60.97 in the Wu and colleagues’ study (2016) and a score of 65.18 in Huang and colleagues’ study (2019). Padilla-Ruiz et al. (2019) also used CD-RISC to assess resilience in women who were at the time of the study free of cancer (in survivorship) and concluded that the mean score was relatively high with a score of 77.

Three of the studies assessed resilience after surgery. Mushtaq and Naz (2017), with a longitudinal study, determined that the scores were higher on resilience in post-surgery, than in pre-surgery and that the type of surgery was also related to the level of resilience, since women with lumpectomy showed a higher level of resilience than women

with mastectomy. Wu et al. (2016) reached the same last conclusion, as women in their study that had a conservative surgery (i.e., lumpectomy) had higher scores of resilience than those who had a mastectomy. Izydorczyk et al. (2018) also conducted a longitudinal study, but only considered women who had done a mastectomy and verified that the level of resilience of BC women was at an average level but varied with the time passed since the surgery. That is, women who had a mastectomy within the previous 2 years showed better psychological resilience than those who had a mastectomy more than 2 years ago (Izydorczyk et al., 2018).

Other two studies considered the implementation of adjuvant treatments. Huang et al. (2019) concluded that women with less than three cycles of adjuvant therapy (e.g., CT, radiotherapy, etc.) had higher psychological resilience scores than those with three to five cycles or more. As such, the number of cycles of adjuvant therapy seemed to contribute negatively to psychological resilience. Padilla-Ruiz et al. (2019) revealed that the administration of CT was significantly associated with the score of resilience, since in total resilience and in its factors (persistence–tenacity–self-efficacy and control under pressure) women who had receive CT demonstrated a higher level of resilience than those who had not.

These studies concluded that resilience was positively correlated with: body image satisfaction (Mushtaq & Naz, 2017); social support (Huang et al., 2019; Wu et al., 2016); some coping strategies, such as confrontation and avoidance (Wu et al., 2016); and self-efficacy (Huang et al., 2019). In contrast, some concluded that resilience was negatively correlated with distress (Mushtaq & Naz, 2017).

Coping

Coping was described as having an important role in self-healing and in psychological adjustment, since women with BC had to integrate their experiences on many levels during the trajectory of the illness (Sherman et al., 2012; Silva et al., 2012).

The studies included in this review that assess coping can be divided into: (a) those that have a quantitative approach ($n=3$), by resorting to Brief-COPE ($n=2$) and to the Scale of Proactive Coping ($n=1$); and, (b) those that have a qualitative approach ($n=6$), by using a semi-structured interview.

Women with BC, in the Lisica and colleagues' study (2019), scored 52.11 on the Scale of Proactive Coping, which corresponds to a moderate level of proactive coping.

Sharif and Khanekharab (2017) used Brief-COPE and their results reveal that the coping strategies most used by women with BC are active-emotional coping strategies (e.g., search of social support, positive reinterpretation, acceptance, and humour), followed by problem-focused coping strategies (e.g., planning, refraining from competitive activities, and seeking instrumental support) and the least used are avoidant-emotional coping strategies (e.g., lack of affective involvement, denial, and turning to drugs and alcohol). Silva et al. (2012) also with Brief-COPE concluded that women frequently used cognitive coping, since the mean score for it was of 16.6 (range: 0-24).

Silva et al. (2012) concluded that women who engaged more in cognitive strategies, such as action planning, life and circumstances acceptance, BC positive reframing and humour revealed better psychological QoL, since they were able to find positive changes in their personal resources and skills. Lisica et al. (2019) comprehended that optimism, relating to others, new possibilities, personal strength, and appreciation of life were positively associated with proactive coping, while pessimism was negatively associated with proactive coping.

The qualitative studies about coping mechanisms had similar results among them, regarding the following aspects: faith (Hu et al., 2021; Torres et al., 2016; Wells et al., 2014); spirituality (Dumrongpanakorn & Liamputtong, 2017; Sherman et al., 2012; Wells et al., 2014); social support (Dumrongpanakorn & Liamputtong, 2017; Hu et al., 2021; Sherman et al., 2012; Torres et al., 2016; Wells et al., 2014); continuing work and doing their daily activities (Lopez-Class et al., 2011; Torres et al., 2016); and having positive attitudes (Hu et al., 2021; Torres et al., 2016).

Other strategies mentioned were: having hobbies (i.e., traveling, listening to music) (Hu et al., 2021); acts of empowerment (Torres et al., 2016); and acceptance (Momenifar et al., 2020).

Social Support

Social support was mainly referred as an important need to face and to deal with cancer (Dumrongpanapakorn & Liamputtong, 2017; Momenifar et al., 2020), since it was found to significantly decrease the distress caused by cancer diagnosis and increase mental adjustment and well-being of the patients (Mishra & Saranath, 2019). Women in the study of Lopez-Class et al. (2011) reported that, despite feeling less social, they noticed an improvement on the support they received from others after the diagnosis.

Huang et al. (2019) and Wu et al. (2016) evaluated social support using the Social Support Rate Scale and concluded both that their participants had a moderate level of social support, with a score of 32.17 (± 4.78) and of 43.61 (± 6.24), respectively. Mishra and Saranath (2019), by using the Multidimensional Scale of Perceived Social Support (MSPSS), concluded that their participants had a medium level of perceived social support, with a mean score of 46.13 (± 6.11). MSPSS is divided into three subscales, which are family, friends, and significant others and in this study the subscale that had the highest score was the one related to friends' social support (Mishra & Saranath, 2019).

Also, Srivastava et al. (2021) assessed social support, but by using another scale—Social Support Questionnaire—and determined that the participants obtained a mean score of 54.70 (± 9.54), which also corresponds to a moderate level. Silva et al. (2012) assessed seeking social support as a coping strategy and concluded that women demonstrated a moderate level, with a score of 8.0 (range: 0-12). Felder et al. (2019) carried out a qualitative study, by using a semi-structured interview, and concluded that, in general, their participants revealed that they had received extremely positive support from the people surrounding them.

Women described that the social support they received came from: their families, mostly partners, children and parents (Dumrongpanapakorn & Liamputtong, 2017; Hu et al., 2021; Torres et al., 2016; Sherman et al., 2012; Wells et al., 2014); their friends (Dumrongpanapakorn & Liamputtong, 2017; Torres et al., 2016; Sherman et al., 2012; Wells et al., 2014); mutual care among patients (Hu et al., 2021; Sherman et al., 2012); their neighborhood (Dumrongpanapakorn & Liamputtong, 2017; Hu et al., 2021); co-workers (Torres et al., 2016; Sherman et al., 2012; Wells et al., 2014); spiritual entities (i.e., clergy) (Dumrongpanapakorn & Liamputtong, 2017; Felder et al., 2019; Flannery et al., 2019; Torres et al., 2016); and health care professionals (Dumrongpanapakorn & Liamputtong, 2017; Sherman et al., 2012).

Most of the studies reported that women with BC reported that their social networks allowed them to: have security (Momenifar et al., 2020); have hope (Momenifar et al., 2020); relieve stress (Hu et al., 2021); relax (Hu et al., 2021); move forward (Dumrongpanapakorn & Liamputtong, 2017; Hu et al., 2021); have emotional support (Flannery et al., 2019; Torres et al., 2016); and instrumental support, with assistance with the side effects and with transportation to the treatment sessions (Felder et al., 2019; Torres et al., 2016).

Another interesting conclusion was one of the Sherman and colleagues' study (2012), that reported that women evaluated social support as positive or negative. Positive support was perceived when there was an active presence of others, with the offer of supportive and loving gestures, acceptance, validation, and demonstrations of strength; while negative support was perceived when others were unhelpful, expressed unwanted concern, abandoned them, ignored their fears and concerns, stigmatized them or were emotionally needy (Sherman et al., 2012).

Felder and colleagues' study (2019) displayed similar results, since women reported that they had clear conceptualizations of what role each person should have, and when they gave the support that was expected, then the support was perceived as positive and helpful. Furthermore, positive support for these women included lack of questioning about treatment decisions, accompanied with unquestioning acceptance and inherent support (Felder et al., 2019).

Emotions/Affect

Four of the studies analysed emotions and/or affective experiences. Only one of the studies assessed affect by using a quantitative approach, which was the study of Srivastava et al. (2021). These authors used the Scale of Positive and Negative Experiences and concluded that women with BC had relatively low scores in both positive and negative affective experiences subscales, with scores of 17.96 (± 5.72) and of 15.36 (± 5.71), respectively.

On the other hand, Wells et al. (2014) by using a semi-structured interview, stated that emotions increased at diagnosis according to their participants. Furthermore, women with BC described that the most common negative emotions they experienced were anger, fear, devastation, and hopelessness (Wells et al., 2014).

Izydorczyk et al. (2018) assessed psychological resilience in their study by using the Psychological Resilience Scale and concluded, based on a subscale of this scale that is associated with coping with negative emotions, that women become less capable of tolerating negative emotions as time passes after a mastectomy.

Goldblatt et al. (2016) conducted a qualitative study in which they explored types and intensity of negative and positive emotional expressions on younger and older women diagnosed with BC. The authors concluded that: (a) the group of older women had reports that included more emotion-avoiding expressions than the group of younger women; (b)

older women used considerably less emotional expressions, whether negative or positive, than younger women; and (c) younger women expressed more negative emotions than positive, while older women expressed more positive emotions than negative.

Furthermore, it was not found a relationship between the score of emotional expressions or the number of emotions and the background variables, such as level of education, years since diagnosis, family status, employment, and religion (Goldblatt et al., 2016). However, women who had been submitted to CT expressed a higher number of negative emotions, when compared to those who had not been submitted to CT (Goldblatt et al., 2016)

QoL

Regarding the studies in this review that analysed QoL, two of them are quantitative (Sharif & Khanekharab, 2017; Silva et al., 2012) and other two are qualitative (Lopez-Class et al., 2011; Torres et al., 2016).

Silva et al. (2012), in their longitudinal study, used WHOQOL-Bref as a psychometric instrument to evaluate QoL and concluded that women at the time of the breast surgery, during adjuvant treatment and after the end of treatment had a moderate level of psychological QoL, with little variance among the three moments. However, the higher variance from 69.2 to 70.2 occurred from T2 (treatment phase) to T3 (survival phase), which may suggest that, almost one year after the diagnosis, women demonstrate better psychological QoL than they did at the time of the surgery or during adjuvant treatments such as radiotherapy (RT) or CT (Silva et al., 2012).

Sharif and Khanekharab (2017) used the Functional Assessment of Cancer Therapy–Breast (FACT-B) and reached the same conclusion, that women demonstrated a moderate level of QoL (108.540 ± 19.957) after surgery and during adjuvant treatments. The BC subscale had the lowest score with 25.129 (± 6.838 ; range: 0-40) and the functional well-being subscale had the highest with 22.298 (± 5.936 ; range: 0-28) (Sharif & Khanekharab, 2017).

Torres et al. (2016) conducted a mixed study in order to understand the experiences of BC survivors, and for that QoL was described by the participants based on a qualitative approach, with the use of a semi-structured interview about their BC experiences. Also, Lopez-Class et al. (2011) directed a qualitative study to examine the factors that impact the QoL of BC survivors. Women revealed that their concerns

regarding QoL were associated with the loss of their femininity because of surgery and of treatments' side effects, which brought them some challenges in terms of self-consciousness and sexual attractiveness (Torres et al., 2016). This is in line with what is reported in the other article, since women said feeling less social because they did not want to answer questions about the cancer and because their bodies had changed after the treatments (Lopez-Class et al., 2011).

Nevertheless, women, of both studies, stated that it was important for them and for their QoL to continue living their normal lives, by continuing working and doing their daily activities, since it allowed them some distraction from the illness (Lopez-Class et al., 2011; Torres et al., 2016). It was also reported by BC women that other factors that impacted their QoL positively were spirituality and social support (Huang et al., 2019; Lopez-Class et al., 2011).

Relationships between variables

By analysing the studies reviewed, it was possible to understand that there seems to exist associations between some of the different variables analysed.

For example, Wells et al. (2014) came to the conclusion that resilience of women with BC stemmed mainly from spirituality. Furthermore, Eid et al. (2020), in their quantitative study, determined that the results showed a positive statically significant correlation between religiosity and psychological resilience. As such, one of the factors that promotes resilience is religion (Eid et al., 2020).

Regarding affect and spirituality, it seems that there exists a correlation between negative emotions and spiritual strength, since women appeared to turn to spirituality to decrease negative emotions (Wells et al., 2014). In accordance with this, Goldblatt et al. (2016) came to the conclusion that women relied on God and spirituality to diminish distressful emotions.

Spiritual support was also frequently mentioned as a form of social support, that derived from family and significant others that shared the same spiritual beliefs and from the clergy (Felder et al., 2019; Flannery et al., 2019; Momenifar et al., 2020; Torres et al., 2016).

Concerning social support, two studies included in this review verified a positive correlation between resilience and social support (Huang et al., 2019; Wu et al., 2016).

Additionally, it was found that perceived social support was positively correlated with positive affect and negatively correlated with negative affect (Srivastava et al., 2021).

Social support and spirituality were frequently mentioned as coping mechanisms used by women with BC. Spirituality was frequently mentioned as having beliefs and faith, which helped women deal with the challenges and the experience (Dumrongpanapakorn & Liamputtong, 2017; Hu et al., 2021; Medeiros et al., 2019; Momenifar et al., 2020; Torres et al., 2016).

Social support was mentioned as a main need after the diagnosis by different studies (Dumrongpanapakorn & Liamputtong, 2017; Hu et al., 2021; Momenifar et al., 2020; Silva et al., 2012; Torres et al., 2016), since it brought them different kinds of support, from emotional to instrumental. Also, in relation to coping, it was documented that resilience was positively correlated to some coping strategies, such as confrontation and avoidance (Wu et al., 2016).

Finally, regarding QoL: resilience promotes QoL (Huang et al., 2019); cognitive coping strategies indirectly influenced the level of psychological QoL (Silva et al., 2012); it was confirmed a positive relationship between active-emotional coping and QoL and a negative relationship between avoidant-emotional coping and QoL (Sharif & Khanekharab, 2017); and social support was a significant factor in determining the QoL of women with BC (Lopez-Class et al., 2011; Sharif & Khanekharab, 2017; Silva et al., 2012).

Interventional studies

In this section, a summary of the interventional articles from this literature review can be found in Table 2. In Table 3 is presented a summary of the interventions mentioned in the studies.

Table 2*Summary of the Interventional Studies*

Author, year, country	Type of study and objectives	Participants	Measures	Procedure and main results
Ashing and George (2020), USA	Experimental study. To evaluate the effectiveness of a telephonic psycho-educational intervention trial on improving emotional well-being (EWB) in a sample of African American breast cancer (BC) survivors.	40 women diagnosed with BC within the last 6 years were assigned to the intervention ($n = 20$) or to the control group ($n = 20$).	1. Emotional Well-Being (EWB): EWB subscale of Functional Assessment of Cancer Therapy–General (FACT-G; measure of Health-Related Quality of Life)	Participants were evaluated at baseline and 4-6 months after the intervention of eight sessions. Intervention included: problem-solving strategies, communication skills, stress management, and spirituality. For the intervention group, significant improvements were observed for emotions related to sadness, coping, and nervousness. “Worry about dying” and “the cancer condition will get worse” showed positive changes although not statistically significant. Hopefulness was not significantly affected by the intervention, since 90% of the participants experienced no score change from pre- to post-intervention. For the intervention group, the mean and median score changes for the EWB subscale were 5.87 ($SD = 17.09$) and 12.00 (range = -12.00 to 62.00), respectively. For the control group, the mean and median score changes were -0.90 and -2.5, respectively. The change in the EWB subscale total score for the intervention group was statistically significant ($Z = -3.051, p = .002$).
Pat-Horenczyk	Experimental study.	94 BC survivors,	1. Coping strategies: Cognitive Emotional	An eight-session group intervention was delivered to 49 women who completed questionnaires at baseline and at 6

Author, year, country	Type of study and objectives	Participants	Measures	Procedure and main results
et al. (2015), Israel	To investigate the impact of a resilience-building intervention on coping and Post-Traumatic Growth (PTG) in BC survivors.	who had completed adjuvant therapy at least three months earlier: 49 women participated in the intervention and 45 were included in the control group.	Regulation Scale (CERQ); [2. Post-Traumatic Stress (PTS) symptoms: PTS Diagnostic Scale]; [3. PTG: PTG Inventory]	months follow-up. A control group of 45 women only completed the questionnaires. At baseline, the intervention group reported higher levels of posttraumatic symptoms and lower levels of positive CERQ. There were obtained significant results for positive cognitive emotion regulation. 75% of the women reported constructive PTG with an increase in positive coping and/or a decrease in negative coping alongside an increase in PTG.
Cerezo et al. (2014), Spain	Experimental study. To assess the effects of a psychological group intervention based on positive psychology in women with BC.	175 women diagnosed with BC were assigned either to an experimental group (to receive the intervention; $n = 87$) or to a waitlist group (did not	1. Resilience: Connor-Davidson Resilience Scale (CD-RISC); 2. Affective component of well-being: Affectivity Scale; [3. Cognitive component of personal well-being (WB) and happiness:	14-Session intervention was based on improving psychological strengths and enhancing positive psychology-based styles of coping. Strength-related outcomes, self-esteem, WB, and happiness were assessed before and after the intervention and it was made a comparison with the waitlist group. The experimental group showed an increase on cognitive WB, positive affect (PA), total affect (TA), emotional clarity, emotional repair, optimism, resilience and self-esteem and a decrease on negative affect (NA) and on emotional attention from pre-test to post-test. Furthermore, the experimental group showed higher scores on WB (cognitive WB, and PA, NA, and TA), emotional

Author, year, country	Type of study and objectives	Participants	Measures	Procedure and main results
Henderson et al. (2013), USA	Experimental study. To test the relative effectiveness of a Mindfulness-Based Stress Reduction (MBSR) programme compared with a Nutrition Education	163 women with BC newly diagnosed who were undergoing radiotherapy or had already finished it, distributed between the MBSR intervention group ($n = 53$) and two	<p>Satisfaction With Life Scale (SWLS)];</p> <p>[4. Emotional Intelligence: Trait-Meta Mood Scale-24];</p> <p>[5. Optimism: Life Orientation Test-Revised];</p> <p>[6. Self-esteem: Self-Esteem Scale].</p> <p>1. Quality of Life (QoL): Functional Assessment of Cancer Therapy-Breast (FACT-B);</p> <p>2. Spirituality and Coping: Deal with Illness Questionnaire;</p> <p>3. Coping: Mini-Mental Adjustment to Cancer Scale;</p> <p>4. Subjective social support: Revised University of California Loneliness Scale;</p>	<p>intelligence (emotional attention, emotional clarity, and emotional repair), optimism, resilience, and self-esteem on post-test, in comparison with the group that did not receive the psychological intervention (pre-test 2).</p> <p>Data from women completing an 8-week MBSR group programme were compared to women receiving attention control NEP and UC. Assessed at baseline for recruitment and at follow-up, which was at 4 months, 1 and 2 years after completion of the intervention.</p> <p>The largest improvements in the MBSR intervention group seemed to occurred at 4 months, immediately after the completion of the programme. At 12 months, only the following were significant: active behavioural coping, active cognitive coping, spirituality, and meaningfulness. At 24 months, significant improvement remained for three factors: active cognitive coping, sense of meaningfulness and anxious preoccupation.</p> <p>Relatively to the MBSR group, the findings include: better stress management (measure of coping); improved emotional control, meaningfulness of life; improved QoL related to.</p>

Author, year, country	Type of study and objectives	Participants	Measures	Procedure and main results
	Intervention (NEP) and Usual Care (UC) in women with early-stage BC.	control groups: 1) NEP ($n = 52$) and 2) UC ($n = 58$).	5. Resilience to stress and adversity: Sense of Coherence Scale; [Other variables and instruments not pertinent for this study (i.e., anxiety, depression, etc.)]	spirituality; better QoL through an increase of emotional and social-family well-being; greater coping abilities; and, decreased feelings of helplessness and need for avoidance
Fallah et al. (2011), Iran	Experimental study. To determine the effectiveness of spiritual group intervention on the increase of hope, life satisfaction, and happiness in women surviving from BC.	60 women diagnosed with early-stage BC assigned to the intervention ($n = 30$) or to the control group ($n = 30$).	1. Spirituality: Spiritual Experience Questionnaire; [2. Hope: Snyder's Hope Scale]; [3. Satisfaction with Life: SWLS]; [4. Happiness: Oxford Happiness Questionnaire]; [5. Non-psychosis mental disorders: General Health Questionnaire-28]	Women were assessed before and after Islamic perspective psycho-spiritual intervention. The scores of the four variables (hope, happiness, life satisfaction, and spirituality) increased from pre-test to post-test (after intervention). Spiritual intervention was effective in increasing hope, happiness and life satisfaction in women surviving from BC ($p < 0.05$). Spirituality can reduce negative emotions like anxiety, depression, and anger, while it increases positive emotions.

Note. EWB = Emotional Well-Being; FACT-G = Functional Assessment of Cancer Therapy-General; BC = Breast Cancer; PTG = Post-Traumatic Growth; CERQ = Cognitive Emotional Regulation Scale; PTS = Post-Traumatic Stress; CD-RISC = Connor-Davidson Resilience Scale; WB =

Well-Being; SWLS = Satisfaction With Life Scale; PA = Positive Affect; TA = Total Affect; NA = Negative Affect; MBSR = Mindfulness-Based Stress Reduction; NEP = Nutrition Education Intervention; UC = Usual Care; FACT-B = Functional Assessment of Cancer Therapy–Breast; QoL = Quality of Life.

Table 3

Summary of the Interventions

Author, year	Study design	Sessions	Type and model of intervention	Form of administration	Intervention professional	Topics and techniques
Ashing and George (2020), USA	Experimental study.	Eight biweekly 30- to 40-minute sessions for 4 weeks.	Individual. Psychoeducational.	Telephonic.	Two clinical research assistants with at least a bachelor’s degree in the social sciences (psychology, social work) with the supervision of professionally trained interventionists.	Topics: basic breast cancer information; managing medical and physical issues, follow-up care, and cancer resources; coping skills and problem-solving training; balancing emotions and stress management; family and social concerns; sexual health concerns; financial issues and employment concerns.
Pat-Horenczyk et al. (2015), Israel	Experimental study.	Eight weekly sessions of 1.5 hours for	Group of 12 women on average. Did not specify.	In person.	Did not specify.	Techniques: psychoeducation. Topics: physical, cognitive, meaning, emotion and interpersonal regulation and coping.

Author, year	Study design	Sessions	Type and model of intervention	Form of administration	Intervention professional	Topics and techniques
		2 months.				Techniques: Relaxation training, experiential exercises, and psychoeducation. Topics: provide positive psychology-related coping strategies; and, enhance psychological strengths.
Cerezo et al. (2014), Spain	Experimental study.	14 two-hour session, per week for 3 months and a half.	Group of 10 to 15 women. Positive Psychology.	In person.	Two trained psychologists.	Techniques: psychoeducation, mindfulness-based exercises, mutual support exercises, introducing emotional communication skills and assertiveness, cognitive restructuring, role-playing, humour-enhancement, and gratitude techniques.
Henderson et al. (2013), USA	Experimental study.	Eight weekly 2.5- to 3.5-hour sessions for 2 months. Plus three 2-hour sessions as	Groups of 25 to 30 women. Mindfulness.	In person.	Mental health clinicians with either masters' or doctorate degrees and a psychiatrist with Mindfulness-Based Stress Reduction training.	Topics: did not specify. Techniques: cognitive-behavioral therapy, group support, experiential focus and educational orientation.

Author, year	Study design	Sessions	Type and model of intervention	Form of administration	Intervention professional	Topics and techniques
Fallah et al. (2011), Iran	Experimental study.	follow-up. Eight weekly sessions of 1.5 hours for 2 months.	Groups of 25 women. Did not specify.	In person.	Did not specify.	Topics: prayer, trust in God, patience, repentance, forgiveness, gratitude, and altruistic services. Techniques: focused meditation, role playing, educational orientation, problem solving, and gratitude techniques.

By analysing Table 2, it can be verified that the publication date of the articles analysed varies between 2011 and 2020, inclusive. Most of the studies included in this review were conducted in the USA ($n=2$) and the rest of the studies took place in Iran ($n=1$), in Israel ($n=1$), and in Spain ($n=1$). All the studies had as main objective to evaluate the efficacy of a particular intervention in women with BC. The interventions are based on different models, namely: mindfulness ($n=1$), psychoeducational ($n=1$), psycho-spiritual ($n=1$), positive psychology ($n=1$) and existential/psychoeducational ($n=1$). In terms of the sample, in all the studies the participants are women with BC. However, when it comes to sample size the variation is bigger, with the study by Ashing and George (2020) having the smallest sample with 40 women and the study by Cerezo et al. (2014) having the largest sample with 175 women.

In Table 3, it is possible to confirm that the interventions used are different, namely they: (a) have different numbers of sessions; (b) have different durations; (c) have different types of intervention (i.e., individual, group); (d) have different forms of administration (i.e., in person, telephonic); (e) are given by different professionals; (f) address different topics; and, (g) use different techniques and tasks. Furthermore, in some of the studies (e.g., Fallah et al., 2011; Pat-Horenczyk et al., 2015) there was some information that was not specified.

Regarding the main focus of the interventional studies, two studies tested the effectiveness of an intervention on spirituality: Henderson et al. (2013), by applying a Mindfulness-Based Stress Reduction (MBSR) programme and using as an assessment instrument the Deal with Illness Questionnaire; and, Fallah et al. (2011), with the application of a psycho-spiritual group intervention and the assessment of spirituality with the Spiritual Experience Questionnaire. Both studies documented an improvement on spirituality from pre-intervention to post-intervention. Furthermore, Henderson et al. (2013) assessed women at three follow-up moments (i.e., 4 months, 12 months, and 24 months) and verified that 12 months after the completion of the programme the improvement on spirituality was still noticeable.

Affect was assessed in women with BC after two interventions, namely: a telephonic psychoeducational intervention trial (Ashing & George, 2020); and a positive psychology-based group intervention (Cerezo et al., 2014). On both studies, women showed improvements in terms of affect: Ashing and George (2020) verified that the change in the emotional well-being subscale of Functional Assessment of Cancer

Therapy-General (FACT-G) was statically significant, with the emotions related to sadness, coping and nervousness having significant improvements; women of the Cerezo and colleagues' study (2014) showed higher scores on positive and total affect and lowest scores on negative affect from pre-test to post-test. Neither study has follow-up data.

Cerezo et al. (2014) and Henderson et al. (2013) applied a positive psychology-based group intervention and a MBSR programme, respectively, and assessed resilience. Both studies showed an improvement on resilience after the interventions, and, in Henderson and colleagues (2013) study, that improvement was still visible 24 months after the end of the programme.

Coping was assessed by Henderson et al. (2013) and Pat-Horenczyk et al. (2015), that evaluated the effectiveness/impact of a MBSR group programme and of a resilience-building group intervention, respectively. Active cognitive coping and active behavioural coping showed improvements (Henderson et al., 2013) and 75% of the women reported an increase in positive coping and/or a decrease in negative coping after intervention (Pat-Horenczyk et al., 2015).

Social support and QoL were assessed in the same study (Henderson et al., 2013). It was verified an improvement on QoL related to spirituality and to emotional and social-family well-being (Henderson et al., 2013). However, regarding social support, although the study mentions it in the measures' section and refers using the Revised University of California Loneliness Scale, there were not presented any results regarding it.

Discussion

In order to synthetize the current knowledge about how these psychosocial dimensions behave during the experience of BC, it was conducted a systematized review on the experiences of women diagnosed with BC, concerning their spirituality, resilience, coping, positive and negative affect, social support, and QoL.

As it was possible to verify, these articles are very divergent concerning the study design, the sample size, the variables assessed and the psychometric instruments used, which can make it difficult to compare results and understand whether there is uniformity in the conclusions or not. In particular, most of these studies are cross-sectional and the longitudinal ones are scarce (Izydorzyc et al., 2018; Mushtaq & Naz, 2017; Silva et al., 2012). Therefore, in these cross-sectional studies the influence of time is not considered since the sample is not analysed in a continuum, which makes them less valid for

examining cause-and-effect relationships, allowing only the establishment of associations, contrary to longitudinal studies (Caruana et al., 2015; Sedgwick, 2014).

Regarding spirituality, it was verified that women frequently turned to religion, faith, and spirituality after the diagnosis and through treatments as coping strategies (Hu et al., 2021; Lopez-Class et al., 2011; Medeiros et al., 2019; Momenifar et al., 2020; Torres et al., 2016; Wells et al., 2014). According to Benson et al. (2020) and Saniah and Zaniat (2010), religious coping was the coping strategy most used by women with BC.

This is in line with what Kumar and Parashar (2015) and Ribeiro et al. (2019) refer to. According to Kumar and Parashar (2015), a cancer diagnosis and its experience makes a person be exposed to the possibility of dying, which increases anxiety and fear of death. Thus, as a human tendency, when hope starts to diminish, they begin to rely on spirituality (Kumar & Parashar, 2015), through rituals and prayers, in order to increase their spiritual well-being and to achieve the cure of the illness and the improvement of the symptoms caused by treatments (Ribeiro et al., 2019). Spirituality is considered one of the most powerful coping mechanisms that provides confidence, peace of mind and a sense of harmony to the patients and lessens the fears related to the future (Elsheshtawy et al., 2014; Kreitler, 2019).

Furthermore, in the articles reviewed it was interesting to see that spirituality was considered an important dimension in different countries with different cultures (e.g., USA, Iran, Brazil, China), and with different basic value dimensions in terms of individualism and collectivism. Normally, collectivism is more structured on the basis of collectivity and, therefore, is more associated, for example, with religious groups; while individualism promotes more the autonomy of the individuals outside of the society's groups (Ferreira et al., 2002). As such, it was noteworthy that both individualistic countries (i.e., USA, Brazil) and collectivistic countries (i.e., Iran, China) give great importance to spirituality. Furthermore, spirituality seems to be a form of meaning that transcends personal circumstances, social situation, and culture and that allows the individuals to persist through the life challenges (Eckersley, 2007). Thus, spirituality cannot be seen as only a particular religion or belief system that is part of an ethnic identity, but rather as an important dimension of human life beyond culture (Ortiz et al., 2000).

The studies analysed demonstrated that resilience in women with BC varied depending on the phase of BC women were going through. Some studies reported

moderate levels of resilience before breast surgery (Mushtaq & Naz, 2017) and after breast surgery (Huang et al., 2019; Wu et al., 2016). Mushtaq and Naz (2017) determined that, from pre-surgery to post-surgery, the level of resilience increased and Izydorczyk et al. (2018) reported a variation on resilience depending on the time passed since surgery.

Additionally, Mushtaq and Naz (2017) and Wu et al. (2016) concluded that women who had a conservative surgery showed higher resilience than women who had a mastectomy. However, the authors do not mention the differences in diagnosis of these women, and usually the diagnosis (i.e., disease's stage) influences the decision about the surgery to be performed.

Normally, conservative surgery is more used in early stages (I and II), even though it has been also used in locally advanced cancers after neoadjuvant chemotherapy (Alves & Bártolo, 2020). On the contrary, mastectomy is typically used in locally advanced invasive cancers (stage IV) or in cancers which tumour proportion versus breast volume ratio does not allow conservative surgery (Alves & Bártolo, 2020). As such, before the surgery there were already differences between these women, namely regarding the stage of the disease and its severity. Nevertheless, there is a study that is congruent with this, which is the study of Huang and colleagues (2019), that concluded that the stage of the disease is negatively correlated with the resilience of BC women.

Regarding adjuvant treatments, Huang et al. (2019) concluded that the highest the number of adjuvant therapy cycles, the lower the women's resilience was. However, the cycles of adjuvant therapy vary depending on the cancer's stage and type of therapy (Fernandes & Cortes, 2020). As such, a question arises as to whether the women in this study had different stages of illness and were therefore assigned different numbers of cycles or whether they had the same number of cycles assigned but were recruited for interview at different times (some at the end of three cycles, some between three and five cycles, and some at the end of five cycles), since the authors only refer that women recruited had to have at least two cycles of chemotherapy or other adjuvant therapies.

Still, Padilla-Ruiz et al. (2019) analysed the resilience of BC survivors and concluded that women who had been submitted to CT showed a higher level of resilience than those who had not. These last results are consistent with one of the conclusions of Rodrigues and Polidori's study (2012), which documented that CT contributes to the improvement of resilience, since it promotes the use of protective factors that the

individuals have, known as facilitators of resilience development, such as faith, trust, optimism, and social support.

Furthermore, in survivorship, it was reported a relatively high score of resilience (Padilla-Ruiz et al., 2019), which was also verified in the study of Genz et al. (2016) with 42.85% of the survivors showing a high level of resilience, against 8.03% that had a low level of resilience, and in the study of Gómez-Molinero et al. (2019), in which the mean score of resilience was of 143.18 (range: 126-150 for high resilience).

Regarding the factors that seem to be positively correlated to resilience, the following factors documented on the articles reviewed were also verified in other studies: body image satisfaction (Mushtaq & Naz, 2017), which was confirmed by Ristevska-Dimitrovska et al. (2015); and social support (Huang et al., 2019; Wu et al., 2016), corroborated by Nira et al. (2020). Distress was found to be negatively correlated with resilience (Mushtaq & Naz, 2017), which is in line with the study of Matzka et al. (2016).

In the articles analysed regarding coping, it was found that women with BC have a moderate level of proactive coping (Lisica et al., 2019) and that the coping strategies most used by them are active-emotional coping strategies (e.g., social support seeking, positive reinterpretation, acceptance, humour, etc.), followed by problem-focused strategies (e.g., planning, seeking instrumental support, etc.) while the least used are avoidant-emotional coping strategies (e.g., lack of affective involvement, denial and turning to drugs and alcohol, etc.) (Sharif & Khanekharab, 2017). This is in line with what Benson et al. (2020) reported, which is that women normally use various coping strategies, but the use of active coping strategies has a higher frequency among them. Kang et al. (2020), in their study, determined similarly that women used effective coping strategies at a moderate level, which indicates a moderate degree of environmental adjustment.

One study also assessed the coping strategies used by BC women and concluded that approach-oriented coping strategies, which includes emotional coping and problem-focused coping, were frequently used (Kraemer et al., 2011). On the contrary, avoidant coping was rarely used by women (Kraemer et al., 2011). Also, in line with this, a qualitative study concluded that female patients with BC used as main coping strategies problem-focused ones, by making efforts to transform the current problem, developing new abilities, and following what the medical team advised them to do (Rodrigues & Polidori, 2012).

Moreover, in the literature, it is referred that the most frequently adopted coping strategies are religious coping, acceptance, humour, social support seeking, self-distraction, continuing to work and doing their daily activities, and positive reframing (Benson et al., 2020; Cowley et al., 2000; Elsheshtawy et al., 2014; Gallagher-Squires et al., 2020; Momenifar et al., 2020). Such strategies were mentioned as well in the studies analysed in this review, namely Dumrongpanakorn and Liamputtong (2017), Hu et al. (2021), Sherman et al. (2012), Torres et al. (2016) and Wells et al. (2014).

Additionally, most of these strategies were positively correlated with QoL, not only in the articles analysed (Lisica et al., 2019; Silva et al., 2012), but also in other literature (Kreitler & Kreitler, 2006; Silva et al., 2011).

Social support is also mentioned as an important coping strategy for women with BC (Dumrongpanakorn & Liamputtong, 2017; Momenifar et al., 2020; Vargas et al., 2020). Most of the studies analysed reported that women with BC had a moderate level of social support (Huang et al., 2019; Mishra & Saranath, 2019; Silva et al., 2012; Srivastava et al., 2021; Wu et al., 2016). This result was also verified in the study of Kiaei et al. (2021), in which their participants similarly showed moderate levels of social support.

However, other studies that assessed social support of female patients with BC documented that their participants showed high levels of social support (Kang et al., 2020; Manning-Walsh, 2005; Zamanian et al., 2021). It is important to notice that in the studies of Huang et al. (2019), Silva et al. (2012), Srivastava et al. (2021), and Wu et al. (2016) women were evaluated during cancer treatments, while in the study of Kang et al. (2020), Manning-Walsh (2005), Mishra and Saranath (2019) and Zamanian et al. (2021) they had already completed the treatments and were in the survivorship phase.

It may be possible that this is related to a finding taken from another study, which is that women reported receiving support at the beginning of the diagnosis and treatments, but then they noticed a withdraw from their friends, because they did not know how to support them or because they could not relate to each other enough to maintain the relationship (Ginter & Braun, 2017). Another study showed that during the initial phase of adjuvant treatment there was an increase in disruption of social interactions, that at the end of the treatment started to decrease (Buick et al., 2000).

There seems to be a consensus that social support received by these women comes from family, friends, co-workers, religious affiliations, other patients, and health

professionals (e.g., Adam & Koranteng, 2020; Flannery et al., 2019; Ginter & Braun, 2017; Hu et al., 2021; Sherman et al., 2012; Torres et al., 2016; Vargas et al., 2020; Yan et al., 2019; Zhang et al., 2017). Furthermore, some of the studies analysed mentioned that the support was mostly emotional and instrumental (Felder et al., 2019; Flannery et al., 2019; Torres et al., 2016), which was also confirmed by Adam and Koranteng (2020), Cheng et al. (2013), and Ginter and Braun (2017). The studies mentioned that emotional support was based on showing love, concern, and companionship and saying comforting and encouraging words, while instrumental support referred to help with food, home chores, hygienic tasks, and transportation to the hospital (Adam & Koranteng, 2020; Cheng et al., 2013; Ginter & Braun, 2017).

It is also important to note the study of Sherman et al. (2012), which mentions the difference between positive and negative social support. According to this study, when women felt that the support given was negative, they were forced to walk away and end the relationship (Sherman et al., 2012). These conclusions support the findings of Ginter and Braun (2017), that mentions that people who retreated or who were selfish and/or insensitive to these women made them end their relationships because they were felt as toxic and as demanding of too much of their energy.

Regarding positive and negative affect, the studies that assessed it are not numerous, but research shows that women reported low levels of both positive and negative affective experiences during BC treatment (Srivastava et al., 2021).

In terms of affect and emotions on the diagnosis phase, there seems to be an agreement about the emotions experienced by BC women since many studies reported feelings of fear, sadness, despair, uncertainty, anger, hopelessness, helplessness (Costa et al., 2020; Mattias et al., 2018; Otani et al., 2015; Toriy et al., 2013; Wells et al., 2014).

An interesting study by Paris et al. (2014) assessed the positive and negative affect of women in BC treatment, of women in BC survivorship and of healthy women, through Positive and Negative Affect Schedule. These authors concluded that in the three groups the scores of positive affect were high, while the scores of negative affect were low, with the group of women in treatment having the lowest scores and the survivors' group having the highest scores of the three for both types of affect (Paris et al., 2014). According to the authors, this suggests that despite having an illness, such as BC, that does not increase negative affect, but rather reduces positive affect while receiving treatments such as RT or CT (Paris et al., 2014).

Another noteworthy finding of the Paris and colleagues' study (2014) is that negative affect was higher in the group of survivors, than in the group of women in treatment. Another study concluded that after the end of treatments, in particular CT, there is an increase in the fear of recurrence in these women, which may lead to a decline in positive affect (Buick et al., 2000). This study also showed that negative affect increased during CT and persisted for a month even after the end of the treatment (Buick et al., 2000). Thus, it seems important to highlight that psychological interventions should focus in both of these aspects, with not only interventions that follow a psychopathology model, but also interventions that enhance positive characteristics, such as positive psychology-based interventions. For example, interventions based on the PERMA model that is the acronym for the five elements of well-being (i.e., positive emotions, engagement, relationships, meaning and achievement) according to Seligman (2011).

Contrary to what happened with affect, many articles were found on QoL. It was found that women demonstrated moderate levels of QoL, at the time of the surgery and, during and after adjuvant treatment; and, that QoL was higher almost one year after the diagnosis, when compared to the initial phase (Sharif & Khanekharab, 2017; Silva et al., 2012).

In other literature, the results found are diverse. Some studies had similar results, with women demonstrating moderate levels of QoL during treatment (Boing et al., 2018; Lôbo et al., 2014; Manning-Walsh, 2005) and during all the BC trajectory (diagnosis, treatment, survivorship) (Silva et al., 2011). Other studies showed that women had good levels of QoL right after surgery (Bezerra et al., 2013), during treatment (Al-Ghabeesh et al., 2019) and during treatment and in survivorship (Zhang et al., 2017). Bayram et al. (2014) concluded that women showed a relatively low level of QoL during CT. This may be because of some other findings that demonstrated that the QoL of women with BC was worse during treatments (Silva et al., 2011), namely during CT (Boing et al., 2018).

Additionally, there seems to exist a consensus about the major concerns regarding QoL, with many quantitative and qualitative studies referring treatments' side effects, the perception of femininity's loss and the impact on self-esteem as some of them (Bayram et al., 2014; Lôbo et al., 2014; Medeiros et al., 2019; Torres et al., 2016). As such, cancer treatments have diverse consequences on women, which may explain the tendency to have a worse QoL during this phase of the trajectory. However, these changes are

normally temporary and tend to improve when women complete their treatments (Dorval et al., 1998; Silva et al., 2011).

Regarding the variables considered in this systematized review, in literature many relationships were found among them. Firstly, there was found a positive association between spirituality and resilience in two of the studies reviewed (Eid et al., 2020; Wells et al., 2014), which is supported by other studies, such as Amaro (2013) and Silva et al. (2019). Furthermore, Silva et al. (2019) clarifies that spirituality leads to a decrease in the levels of hopelessness and to an increase of strength and adaptation, which promotes resilience in the face of adverse experiences.

There also seems to be a relationship between spirituality and negative affect, in which women seek spirituality to decrease their negative emotions (Goldblatt et al., 2016; Wells et al., 2014). Moreover, Ribeiro et al. (2019) refer that women who have better spiritual well-being experience more positive emotions. Regarding spirituality and social support, spirituality and all that it involves, such as spiritual groups and clergy, were commonly mentioned as forms of social support received by women with BC both in the articles reviewed (Felder et al., 2019; Flannery et al., 2019; Momenifar et al., 2020; Torres et al., 2016) which is consistent with other studies (Adam & Koranteng, 2020; Carvalho et al., 2016).

Furthermore, there was also found an association between social support and resilience, since women who have a higher social support, also demonstrated higher resilience to deal with cancer (Amaro, 2013; Huang et al., 2019; Wu et al., 2016; Zhang et al., 2017); and between social support and affect, as two studies reported a positive correlation between social support and positive affect and a negative correlation between social support and negative affect (Paris et al., 2014; Srivastava et al., 2021).

Regarding coping, it was found in literature that social support (e.g., Benson et al., 2020; Holland & Holahan, 2003; Hu et al., 2021; Tomita et al., 2016) and spirituality (e.g., Choumanova et al., 2006; Kreitler, 2019; Medeiros et al., 2019; Momenifar et al., 2020) are frequently mentioned as coping strategies important to BC women. Furthermore, in terms of coping, it was also observed in the articles reviewed that resilience was positively related to the use of adaptive coping strategies (Wu et al., 2016). This was also verified in another study about resilience and coping in people with cancer (Macía et al., 2019).

Finally, regarding QoL, in this literature review it was found that resilience promotes QoL (Huang et al., 2019), which is consistent with other studies that reached the same conclusion (e.g., Macía et al., 2019; Popa-Velea et al., 2017; Ristevska et al., 2015). In addition, it was also found that cognitive coping strategies indirectly influence the level of psychological QoL (Silva et al., 2012). This association was also highlighted by Popa-Velea et al. (2017) that documented that the relationship between the use of active coping and QoL was mediated by resilience.

Furthermore, it was also verified a positive relationship between active coping strategies and QoL and a negative relationship between avoidant coping strategies and QoL (Sharif & Khanekharab, 2017), which is also in line with what was concluded in other studies (Kreitler, 2019; Popa-Velea et al., 2017).

At last, from this literature review it was also concluded that social support contributed positively to the QoL of BC women (Lopez-Class et al., 2011; Sharif & Khanekharab, 2017; Silva et al., 2012). These findings are in agreement with other studies, namely Al-Ghabeesh et al. (2019), Firouzbakht et al. (2020), Manning-Walsh (2005) and Zhang et al. (2017).

Considering the articles analysed that refer to psychological interventions, five studies that evaluate the efficacy of different interventions were found, specifically interventions based on mindfulness, on psychoeducation, on psycho-spirituality, on positive psychology, and on existential psychology. However, it was possible to note that they have different numbers of sessions, have different durations, have different types of intervention and forms of administration, are given by different professionals and address different topics. Therefore, the conclusions reached may be also influenced by all these factors mentioned, which can make the comparison between interventions' efficacy and results complicated.

Regarding spirituality, it was found that both a MBSR programme (Henderson et al., 2013) and a psycho-spiritual group intervention (Fallah et al., 2011) provided an improvement on the spirituality of women with BC. In other literature examined, there was found another study that implemented a MBSR programme and that verified an improvement on spirituality right after the end of the intervention and at 6 months follow-up (Würtzen et al., 2015). Other interventions focused on spirituality in women with BC found were: a study of Ferguson et al. (2012) that applied a Memory and Attention Adaptation Training, which is a brief cognitive-behavioural approach; and, Garlick et al.

(2012), who operated a Psycho-Spiritual Integrative Therapy. In both studies it was also obtained an increase in the spiritual well-being of the women after the end of the intervention (Ferguson et al., 2012; Garlick et al., 2012).

Ashing and George (2020) and Cerezo et al. (2014) assessed the relationship between affect and a telephonic psychoeducational intervention and a positive psychology-based group intervention, respectively. Both studies confirmed their intervention's effectiveness concerning affect, since both documented an improvement on positive affect and emotions and a reduction on negative affect. Many other psychological interventions have shown improvements in the affect of women with BC, for example: Antoni et al. (2006) with a cognitive behavioural stress management group intervention; Bower et al. (2015) with a brief mindfulness-based intervention; Ochoa et al. (2010) with a positive psychology-based group intervention; and Steinhardt and Dolbier (2008) with a resilience-building intervention.

Regarding resilience, in the literature review were found two studies that assessed it before and after the intervention and that obtained developments: 1) Cerezo et al. (2014), which applied a positive psychology-based group intervention; and 2) Henderson et al. (2013), which tested a MBSR programme. Other interventions have also achieved improvements in the resilience of BC women, namely: Stress Management and Resiliency Training from Attention and Interpretation Therapy (Loprinzi et al., 2011); and psychoeducational interventions (Steinhardt & Dolbier, 2008; Wu et al., 2018).

The results from this analyses allowed the conclusion that coping was enhanced with two different interventions: a MBSR programme (Henderson et al., 2013); and a resilience-building intervention (Pat-Horenczyk et al., 2015). Other studies namely Matousek and Dobkin (2010) and Witek-Janusek et al. (2011) also applied a MBSR programme and confirmed an increase in coping effectiveness. Steinhardt and Dolbier (2008) achieved the same results but by using a resilience-building intervention.

In terms of social support, only one interventional study emerged from the literature review (Henderson et al., 2013); however, this study despite mentioning social support does not demonstrate any results regarding it. Nevertheless, other interventions that allowed improvements in the social support of women with BC were found, such as: Stress and Immunity Breast Cancer Project-based intervention (Andersen et al., 2007); and, MBSR programmes, specific for cancer patients named Mindfulness-Based Cancer Recovery (Carlson et al., 2013; Schellekens et al., 2016).

Regarding QoL, in the literature review it was found just a single study that assessed the effect of a psychological intervention on QoL (Henderson et al., 2013). However, there are many interventions whose effect on QoL has been studied, such as: a Cognitive-Behavioural Therapy for Insomnia (Savard et al., 2005); a Cognitive-Existential Intervention (Gagnon et al., 2015); a psychoeducational intervention (Meneses et al., 2007); and a MBSR programme (Carlson et al., 2013).

Lastly, it seems important to note that some interventions despite being focused on teaching or enhancing some characteristics (e.g., resilience, coping, etc.) have also seen improvements in other areas (e.g., QoL, etc.), because of the correlations among the variables. Some examples are: an intervention focused on the coping strategies of the women showing improvements in their QoL and in their spirituality (Ferguson et al., 2012); a spirituality-focused intervention showing improvements in QoL (Garlick et al., 2011); a resilience-building intervention having a positive effect in coping and in positive and negative affect of women with BC (Steinhardt & Dolbier, 2008); and, a stress and resilience-based intervention producing effects on QoL (Loprinzi et al., 2011).

Conclusions

Given the number of relevant articles identified, it can be concluded that the psychosocial correlates are widely studied in women with breast cancer. However, it is important to notice that five different variables were considered, and some were more often assessed (i.e., social support) than others (i.e., affect/emotions). The articles initially obtained were even more, however they were reduced considering the inclusion and exclusion criteria, with for example the rejection of articles that considered metastases and recurrences.

From this literature review, it was possible to conclude that: women with breast cancer have their quality of life, their positive and negative affect, their social support, their resilience and their coping capacity affected; that even with a diagnosis of breast cancer, women showed moderate levels of quality of life and of the other psychosocial features; that these psychosocial characteristics are largely correlated with each other and that are influenced by some sociodemographic and clinical variables; and, that psychosocial interventions enhanced these psychosocial characteristics of women with breast cancer, namely improved resilience, spirituality, positive affect and QoL.

Now, these conclusions can be integrated in the model of adjustment to chronic illness by Stanton et al. (2001), that refers that adjustment is normally defined considering the presence or absence of psychological symptoms, diagnosed psychological disorder, positive affect, and perceived personal growth, which is a definition that also seems to consider aspects of positive psychology with the knowledge of positive affect and growth.

As such, this adjustment to illness depends on various factors, namely (Stanton et al., 2007): personal context (e.g., personality characteristics); disease and treatment context (e.g., disease course, prognosis, etc.); environmental and interpersonal context (e.g., social support); and coping processes (e.g., emotional-focused coping, problem-focused coping, etc.). Then, these factors may or may not lead to three types of adjustment (Stanton et al., 2001): psychological adjustment, social adjustment, and physical health adjustment. Therefore, health professionals should include and address all these aspects in their clinical practice, in order to enhance general adjustment to illness and related outcomes such as QoL and well-being. Specially psychologists should try to address these issues with the patients and at the same time addressed them with the other health professionals, as members of a multidisciplinary team, for them to also pay more attention to them when they are with the patients.

In terms of limitations of this review, the following are noteworthy: most studies have a cross-sectional design, as mentioned before; the studies have participants that were at different phases of the BC's trajectory (i.e., diagnosis, treatments, survivorship); many descriptors were used which may have caused the loss of some pertinent studies that at least assessed one of the variables; it was only used one database (B-On); some studies did not control other psychological and clinical variables; and, it is difficult to generalise the results due to the variety of sample sizes, study designs and assessment instruments used and to the cultural and even sometimes religious differences.

Furthermore, it is also possible to mention some more limitations regarding the interventional studies: some of them did not specify the type of intervention given, the techniques used, and the tasks assigned, which would allow more clarity about the interventions and their results. Also, some studies do not mention who the interventionists are, which could be important to know, in order to possibly compare with other interventions, since who delivers the intervention may influence its results.

It is important to highlight that the psychosocial correlates of women with breast cancer analysed in this systematized review may be influenced by different

circumstances, such as the stage of the disease, the treatments performed, among others. Specifically, it is suggested for future reviews the analysis of these psychosocial correlates in women with breast cancer, with more detailed attention to the implications of the clinical variables on them (e.g., time of diagnosis, type of treatment, disease severity), since the BC diagnosis and its treatments can have overwhelming effects on women (Reich et al., 2008). Additionally, it could also be interesting to develop a systematized literature review considering only metastases or recurrences in women with breast cancer.

Lastly, it seems important to continue to deepen knowledge in these areas in order to better understand the experiences of women with breast cancer and the clinical and psychosocial characteristics associated with better QoL and other psychosocial correlates, and to better correspond to their needs in terms of psychological interventions.

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Article 2: Quality of life and psychosocial correlates of adjuvant vs neoadjuvant chemotherapy in women with breast cancer

Abstract

Many studies have acknowledged the psychological impact of breast cancer in women; however, it is still an area that should continue to be investigated in order to improve psychological interventions in these areas and to better meet the needs of these patients, that vary depending on the stage disease and treatment phase.

As such, an empiric study with a cross-sectional design was developed and the following objectives were outlined: (a) to analyse the quality of life of women with breast cancer who had been or were being submitted to adjuvant or neoadjuvant chemotherapy; (b) to describe the levels of positive and negative affect, resilient coping, spiritual well-being and the perception of social support of women with breast cancer submitted to chemotherapy; (c) to examine if there are differences in these psychosocial characteristics between women submitted to adjuvant chemotherapy and women submitted to neoadjuvant chemotherapy; and, (d) examine if there are associations among these psychosocial variables.

A convenience sample of 50 women with breast cancer who had been or were being submitted to adjuvant ($n = 25$) or neoadjuvant ($n = 25$) chemotherapy at the Centro Hospitalar Universitário de São João was used. The following instruments were administered in the interview: a sociodemographic and clinical questionnaire; the Portuguese version of Functional Assessment of Cancer Therapy–Breast (FACT-B); the Portuguese version of Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being–12-Item (FACIT-Sp-12); the Portuguese version of Positive and Negative Affect Schedule (PANAS); and, the Portuguese version of Brief Resilient Coping Scale (BCRS).

The results of this empiric study show that the participants demonstrate a good level of perceived social support; moderate levels of quality of life, of spiritual well-being, and of positive and negative affect; and, a relatively low level of resilient coping. No statistically significant differences were found in these psychological characteristics (i.e., quality of life, social support, spiritual well-being, positive and negative affect and resilient coping) between the two chemotherapy groups. Regarding the correlations among the variables, it was found that most of the variables are correlated with each other, especially quality of life, that correlated with all the other variables, except with faith.

Keywords: breast cancer, chemotherapy, quality of life, well-being

Resumo

Muitos estudos reconheceram o impacto psicológico do cancro da mama nas mulheres; contudo, esta é ainda uma área que deve continuar a ser investigada a fim de melhorar as intervenções psicológicas nestas áreas e de melhor satisfazer as necessidades destas doentes, as quais variam consoante os estádios da doença e as etapas do tratamento.

Como tal, foi desenvolvido um estudo empírico com um desenho transversal e foram delineados os seguintes objetivos: (a) analisar a qualidade de vida de mulheres com cancro da mama que foram ou que estão a ser submetidas a quimioterapia adjuvante ou neoadjuvante; (b) descrever os níveis de afeto positivo e negativo, de *coping* resiliente, de bem-estar espiritual e de suporte social percebido de mulheres com cancro da mama submetidas a quimioterapia; (c) examinar se há diferenças ao nível destas características psicossociais entre mulheres que passam por quimioterapia adjuvante e mulheres que passam por quimioterapia neoadjuvante; e, (d) examinar se existem associações entre estas variáveis psicossociais.

Foi utilizada uma amostra de conveniência de 50 mulheres com cancro da mama que foram ou que estavam a ser submetidas a quimioterapia adjuvante ($n = 25$) ou neoadjuvante ($n = 25$) no Centro Hospitalar Universitário de São João. Os seguintes instrumentos foram administrados: um questionário sociodemográfico e clínico; a FACT-B; a FACIT-Sp-12; a PANAS; e, a Escala Breve de *Coping* Resiliente.

Os resultados deste estudo mostram que os participantes apresentam um nível bom de suporte social percebido; níveis moderados de qualidade de vida, de bem-estar espiritual e de afeto positivo e negativo; e, um nível relativamente baixo de *coping* resiliente. Não foram encontradas diferenças estatisticamente significativas nas características psicológicas (i.e., qualidade de vida, suporte social, bem-estar espiritual, afeto positivo e negativo e *coping* resiliente) entre os dois grupos de quimioterapia. Relativamente às correlações entre as variáveis, concluiu-se que a maioria das variáveis se correlacionam entre si, especialmente a qualidade de vida que se correlacionou com todas as outras variáveis, exceto com a fé.

Palavras-chave: cancro da mama, quimioterapia, qualidade de vida, bem-estar

Introduction

Cancer patients experience many emotional, social, cognitive, and physiological challenges that consequently tend to influence their quality of life (QoL) (Hassen et al., 2019; Montarezi, 2008; Perry et al., 2007; Yoo et al., 2017). According to Rebegea et al. (2019), cancer causes crucial changes in functional capacity and social and family roles. In addition to these more common problems, in cases of breast cancer (BC), the individuals are especially susceptible to experiencing concerns and changes in their body image, femininity, and sexual functioning (Arora et al., 2001; Fingeret et al., 2013; Pritchard, 2007).

According to Kreitler (2019), medical treatments for cancer have frequently shown to be associated to deterioration on QoL. Some authors have pointed out that it is mainly chemotherapy (CT) that causes symptoms that negatively affect QoL (Chagani et al., 2016; Ganz et al., 2002).

Lee et al. (2001) listed the factors that influence the QoL of BC patients receiving CT: individual's characteristics; disease's characteristics; psychological factors, such as the development of anxiety, depression, and/or low self-esteem; and, social support, that includes not only the relatives' support, but also the emotional, informational and appraisal support from the health professionals. All these aspects, plus the various side effects caused by CT, are linked to worse QoL (e.g., Casellas-Grau et al., 2016; Medeiros et al., 2019; Perry et al., 2007; Rosenberg & Partridge, 2013), which makes having been submitted to CT a statistical predictor of poorer QoL (Casellas-Grau et al., 2016; Ganz et al., 2002).

The study of Battisti et al. (2021) demonstrated that CT had a significantly negative impact on many QoL domains, such as physical, cognitive, and social functioning, and on perceived global health, with significant symptomatology namely fatigue, nausea, and appetite loss. Hewitt et al. (2004) referred that despite being a treatment meant to improve the health of individuals, while it is administered it substantially deteriorates their QoL.

In their study, Medeiros et al. (2019) concluded that fatigue was considered the worst symptom resulting from CT, since it is the most limiting symptom, as it changes the autonomy of women when they are not as capable of carrying out their daily activities. Furthermore, this lack of autonomy may lead to a sense of personal devaluation (Medeiros et al., 2019). Another study conducted by Bayram et al. (2014), determined that the most

adversely affected part of individuals' lives during CT was their emotional well-being, which includes all the concerns, sadness, and fears associated with the treatment.

According to Danhauer et al. (2009), one of the responses to QoL issues may be coping, since it was found that different types of coping strategies have different effects on QoL, with, for example, active coping strategies being more associated to higher QoL than passive coping strategies. Coping is highly linked to positive psychological outcomes (Lazarus & Folkman, 1984); moreover, as stated by Dias and Pais-Ribeiro (2019), psychological factors, which we can consider, for example, coping and stress, can influence an individual's health, through physiological mechanisms or behavioural modification. Thus, having a higher coping capacity is related to less psychological distress, less negative religious coping, and less catastrophizing (Gaston-Johansson et al., 2013).

Furthermore, Popa-Velea et al. (2017) concluded in their study that active coping strategies appear to be correlated to a higher self-reported score of global QoL, and this correlation seems to be mediated by resilience.

In turn, resilience influences coping (Kreitler, 2019), since resilient individuals tend to use more cognitive coping strategies, such as problem-solving strategies (Molina et al., 2014). This type of strategies is therefore associated with more adaptive outcomes, such as less depression, stress, and negative affect (Smith et al., 2016).

Thus, resilience plays an important role for cancer patients, since it provides some protection against the negative impact and effects of the diagnosis and treatments (Seiler & Jenewein, 2019), and against the development of psychological symptoms such as depression and anxiety (Markovitz et al., 2015; Ristevska-Dimitrovska et al., 2015). Furthermore, a good coping system in cancer patients during CT improves resilience (Nuwa et al., 2018). As such, the negative effects of CT may be reduced using effective coping strategies (Watkins et al., 2017).

Cancer patients frequently use spirituality as a strategy to cope with the disease and with its treatments (Purnell & Andersen, 2009). According to some studies (e.g., Amaro, 2013; Paiva et al., 2013), spirituality helps in experiences of illness and its treatments by being a protection mechanism, giving balance and increasing the strength to live. Therefore, spirituality also tends to influence the QoL of cancer patients (Whitford et al., 2008), and to have a positive effect on the psychological adjustment to the disease (Purnell & Andersen, 2009). Paiva et al. (2013) also refer that spirituality and religious

practice may improve the resilience of BC women, which can diminish their vulnerability to CT.

Regarding affect, positive affect seems to have a significant positive association with all subscales of QoL (Milbury et al., 2017). Moreover, higher positive affect and lower negative affect are associated with higher levels of QoL related to physical and mental health (Hu & Gruber, 2008). Carneiro et al. (2014) in their study concluded that women with BC have a higher level of negative affect when compared with healthy women. According to Louro et al. (2015), cancer patients that are going through psychological distress demonstrate negative affect states, with anger, sadness, and worry. Paris et al. (2014) concluded that having BC or having had BC does not increase negative affect, however, it decreases positive affect, when receiving treatments such as CT or radiotherapy.

Lastly, several studies have also described an association between social support and QoL in women with breast cancer (Fong et al., 2017; Leung et al., 2014; Salakari et al., 2017). Furthermore, lower social support is associated with higher depression, stress, and negative affect (Fong et al., 2017). According to Adam and Koranteng (2020), the way patients respond to diagnosis and treatments is highly related to the social support they receive, since it is a period that causes high stress, anxiety, and sadness. Additionally, it was demonstrated that women with moderate or high levels of perceived social support showed lower levels of CT-related symptoms, such as pain, insomnia, nausea, distress, dyspnoea, and vomiting (Oh et al., 2020).

In this regard, it is possible to understand how chemotherapy can influence all these psychological variables in women with BC. As such, in order to contribute to more scientific knowledge about chemotherapy and its psychological effects in women with breast cancer, namely in respect to adjuvant and neoadjuvant CT, this present study has as main objectives: (a) to analyse the QoL of women with BC who had been or were being submitted to chemotherapy; (b) to describe the levels of positive and negative affect, resilient coping, spirituality and the perception of social support of women with BC submitted to CT; (c) to examine if there are differences in the QoL, positive and negative affect, resilient coping, spirituality, and social support of women with BC who were submitted to adjuvant CT and those who were submitted to neoadjuvant CT; and (d) to examine if there are associations among the variables (QoL, positive and negative affect, resilient coping, spirituality, and social support). For that, this project is a cross-

sectional study, based on a quantitative approach with a descriptive, exploratory, and comparative nature.

Method

Participants

The sample for this study was selected based on a non-probabilistic convenience sampling method and it included 50 women with breast cancer who had been or were being submitted to CT at the Centro de Mama of Centro Hospitalar Universitário de São João (CHUSJ; Oporto, Portugal). Of these women, 25 of them were submitted to adjuvant CT, while the other 25 were submitted to neoadjuvant CT.

The inclusion criteria for participating in the study were: (a) to be 18 years old or older; (b) to be a female; (c) to have primary breast cancer; (d) to have been or being submitted to either adjuvant or neoadjuvant CT; (e) absence of recurrence or metastasis; (f) absence of major psychiatric disorders; (g) to be able to speak, read and comprehend Portuguese. The demographic and clinical characteristics of the sample, regarding categorical variables, can be found in Table 1.

Table 1

Sociodemographic and Clinical Characteristics (Categorical Variables)

Characteristics	Adjuvant chemotherapy		Neoadjuvant chemotherapy		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Nationality						
Portuguese	25	100.0	22	88.0	47	94.0
Brazilian	0	0	2	1	2	4.0
Angolan	0	0	1	4.0	1	2.0
Marital status						
Single	1	4.0	3	12.0	4	8.0
Married	20	80.0	11	44.0	31	62.0
Non-marital partnership	2	8.0	2	8.0	4	8.0
Divorced	1	4.0	7	28.0	8	16.0
Widowed	1	4.0	2	8.0	3	6.0
Education level						
1 st -6 th years	7	28.0	8	32.0	15	30.0
7 th -11 th years	7	28.0	5	20.0	12	24.0
12 th year	4	16.0	4	16.0	8	16.0
University degree	7	28.0	8	32.0	15	30.0
Employment status						
Employed	15	60.0	16	64.0	29	62.0

Characteristics	Adjuvant chemotherapy		Neoadjuvant chemotherapy		Total	
	<i>n</i>	%	<i>n</i>	%	<i>N</i>	%
Unemployed	6	24.0	8	32.0	14	28.0
Retired	4	16.0	1	4.0	5	10.0
Family history of cancer						
Yes	21	84.0	16	64.0	37	74.0
No	4	16.0	9	36.0	13	26.0

Note. *N* = 50; *n* = 25 for each group.

As it is possible to verify, the total sample mainly comprises Portuguese women married and employed. In terms of education level, there is a little more variation, but the majority has primary school (*n* = 15) or a university degree (*n* = 15), followed by only having secondary school. Most women had a history of cancer in the family.

The adjuvant chemotherapy's group includes only Portuguese women, mainly married, with primary school and university degree being the most common and having the same frequencies. The majority is employed and has a family history of cancer. The neoadjuvant group includes mainly Portuguese women, but also two Brazilian women and one Angolan; mostly married, employed and with family history of cancer. In terms of education level, it is the same as in the previous group, with most women having primary school or a university degree.

The continuous variables of sociodemographic and clinical characteristics can be found in Table 2. In terms of age of the total sample, it can be verified that it varied between 30 and 68 years of age, with the mean being 49.58 years (*SD* = 9.294; *Mdn* = 49.50). In the adjuvant CT group, the mean was of 52.28 years of age (*SD* = 9.881; *Mdn* = 53) and in the neoadjuvant CT group was of 46.88 years (*SD* = 7.970; *Mdn* = 48). Regarding the duration of CT, the total sample had a mean of 5.18 months of CT administration (*SD* = .720; *Mdn* = 5); the adjuvant CT group had a mean of 4.96 months (*SD* = .676; *Mdn* = 5); and the neoadjuvant CT group had a mean of 5.40 months (*SD* = .707; *Mdn* = 5).

Table 2*Sociodemographic and Clinical Characteristics (Continuous Variables)*

Characteristics	Adjuvant CT		Neoadjuvant CT		Total	
	Age	Duration of CT	Age	Duration of CT	Age	Duration of CT
<i>n</i>	25	25	25	25	50	50
<i>M</i>	52.28	4.96	46.88	5.40	49.58	5.18
<i>SD</i>	9.881	.676	7.970	.707	9.294	.720
<i>Mdn</i>	53	5	48	5	49.50	5
<i>Min.</i>	32	4	30	4	30	4
<i>Max.</i>	68	6	59	7	68	7

Note. CT = Chemotherapy.

In order to verify if any differences existed in age and in time of chemotherapy of women of both CT groups, it was used a Mann-Whitney U Test. It was verified that there is a statistically significant difference in the age of the adjuvant CT group ($M = 52.28$; $DP = 9.881$; $Mdn = 53$) and of the neoadjuvant CT group ($M = 46.88$; $DP = 7.970$; $Mdn = 48$), $U = 210$, $p = .047$. In terms of time of chemotherapy, it was also found a statistically significant difference between the adjuvant CT group ($M = 4.96$; $DP = .676$; $Mdn = 5$) and the neoadjuvant CT group ($M = 5.40$; $DP = .707$; $Mdn = 5$), $U = 412$, $p = .034$.

Measures*Sociodemographic and clinical questionnaire*

Firstly, it was administered a sociodemographic and clinical questionnaire that was purposely created for this study to collect sociodemographic and clinical information about the participants. As such, it was collected sociodemographic data about age, nationality, marital status, educational level, and employment status of the women.

Regarding clinical data, it was collected information about at least three factors (if possible) to which women attributed their current psychological state, diagnosis date, type of CT received, duration of CT up to the time of the interview (in months) and family history of cancer.

In addition, four questions regarding women's perceptions of social support were included, with one question formulated by the authors ("I have felt accompanied [by family and/or friends] since I learned of the diagnosis") and three other questions ("I am satisfied with the activities I do with my friends"; "Even in the most difficult situations, if I need support I have someone I can turn to"; "I am satisfied with the way I relate to

my family”) were taken from the *Escala de Satisfação com o Suporte Social* (Social Support Satisfaction Scale) developed by Ribeiro (1999). The answer to each one of these four questions had to be rated from 1 (*I completely disagree*) to 5 (*I completely agree*) and the total score results from the sum of the items’ scores, that varies from 1 (*no perceived support*) to 20 (*maximum perceived support*).

Functional Assessment of Cancer Therapy–Breast

Then, the Portuguese version of the Functional Assessment of Cancer Therapy–Breast (FACT-B; Brady et al., 1997) was used to assess health-related QoL (HR-QoL). FACT-B comprises 37-items, 27 of which are related to general HR-QoL associated with cancer (from Functional Assessment of Cancer Therapy-General [FACT-G; Cella et al., 1993]) and that are divided in four subscales that assess Physical Well-Being (PWB); Functional Well-Being (FWB); Emotional Well-Being (EWB); and Social/Family Well-Being (SWB) plus 10 items that are about QoL in breast cancer, which make the Breast Cancer subscale (BCS).

Respondents must rate how true each statement is for the last 7 days from 0 (*not at all*) to 4 (*very much*). Each subscale score is obtained by multiplying the sum of the items’ scores by the number of items in the subscale and dividing by the number of items answered. The range of the subscales for PWB, FWB and SWB is from 0 to 28; for EWB is from 0 to 24; and, for BCS is from 0 to 40. A total FACT-B score is calculated by summing the scores of all the subscales and ranges from 0 to 148. The higher the scores, the higher the well-being and the health-related QoL.

Both the FACT-G total score and the FACT-B total score had a high alpha coefficient (internal consistency) ($\alpha = 0.90$) and the five subscales ranged from 0.63 to 0.86 in terms of alpha coefficients (Brady et al., 1997). In Portugal, FACT-G was validated by Arnold et al. (2004) with Cronbach’s alpha of 0.89 and all subscales ranging between 0.71 and 0.86. In the present study, FACT-B total score also demonstrated a high alpha coefficient of 0.92, similar to the values obtained by the authors, which corresponds to a good scale consistency.

Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being–12-Item

Spiritual well-being was assessed by using the Portuguese version of Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being–12-Item (FACIT-Sp-12; Brady et al., 1999; Fitchett et al., 1996; Peterman et al., 2002). This scale is divided into two subscales: (a) Meaning/Peace, ranging from 0 to 32, contains eight items and assesses a sense of meaning, peace, and purpose in life; and (b) Faith, ranging from 0 to 16, comprises four items and considers comfort and strength associated with faith. FACIT-Sp-12 is a 5-point Likert-type scale and the rating and scoring is the same as for FACT-B, with the sum of the scores of all the subscales, and the scale range goes from 0 to 48. The higher the scores, the higher the spiritual well-being.

FACIT-Sp-12 was validated for Portuguese with a high Cronbach's alpha of 0.92 and the subscales ranged from 0.89 to 0.92, which corresponds to a high internal consistency (Pereira & Santos, 2011). In the present study, FACIT-Sp-12 had a Cronbach's alpha of 0.81, which still corresponds to a high level of internal consistency.

Positive and Negative Affect Schedule

The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988; Portuguese version from Galinha & Pais-Ribeiro, 2005) was administered to assess participants' level of positive affect and negative affect during the last weeks. PANAS comprises 20 items of self-administration divided into positive affect (10 items) and negative affect (10 items). Participants have to specify the extent to which they experienced each affect using a five-point Likert scale that ranges from 1 (*very slightly or not at all*) to 5 (*extremely*). The higher the scores, the more present is positive or negative affect.

Regarding internal consistency, in the original scale the Cronbach's alpha for the positive affect subscale was of 0.88 and in the Portuguese version it was of 0.86 (Galinha & Pais-Ribeiro, 2005; Watson et al., 1988); for the negative affect subscale, in the original scale, it was of 0.87 and in the Portuguese version it was of 0.89 (Galinha & Pais-Ribeiro, 2005; Watson et al., 1988). In the present study, PANAS demonstrated a Cronbach's alpha of 0.71, which was a little lower than the value obtained by the authors, but it still corresponds to a reasonable level of internal consistency.

Brief Resilient Coping Scale

The Portuguese version of the Brief Resilient Coping Scale (BRCS; Sinclair & Wallston, 2003; Portuguese version by Ribeiro & Morais, 2010) was used to evaluate the pattern of problem solving which reflects the pattern of resilient coping. BRCS is a self-response scale that includes four items to assess the ability to cope with stress in an adaptive way (Ribeiro & Morais, 2010), in which respondents have to rate from 1 (*hardly ever*) to 5 (*most of the times*). A score below 13 indicates a low level of resilience and a score higher than 17 suggests a high level of resilience (Sinclair & Wallston, 2003).

In terms of internal consistency, the Portuguese version shows a low Cronbach's alpha of 0.53, which is lower than the verified in the original scale ($\alpha = 0.68$) and lower than the values indicated by traditional psychometric standards that consider values below 0.70 as inadequate. However, the authors of the Portuguese version explain that the BRCS can have this result, since it only comprises four items and the internal consistency of a scale correlates positively with the number of items it contains (Ribeiro & Morais, 2010). In the present study, BRCS had a slightly better Cronbach's alpha ($\alpha = 0.76$), which corresponds to a reasonable level of internal consistency.

Procedure

Firstly, in order to carry out this investigation, permission was sought from the authors of the scales intended to be used (cf. Appendices A, B and C). After obtaining those authorizations, approval for the project was then requested from the Ethics Committee of CHUSJ, which was given (cf. Appendix D).

Subsequently, contact was initiated with the patients through a psychologist of Centro de Mama. The invitation to participate was made when the patients went to the service for previously scheduled appointments, treatments, or exams, so that no special travel was necessary. In person, it was given a sheet with information about the project, the objectives and procedures of the project were explained and any questions about the study were clarified.

When the women accepted to participate in the study, then it was requested a written informed consent and it was assured their confidentiality and privacy. After that, the interviews were carried out with the application of a sociodemographic and clinical questionnaire and four brief psychometric questionnaires, in the following order: FACT-B, FACIT-Sp-12, PANAS and BRCS. The administration of the instruments took an average of about 20 minutes.

After completion of the questionnaires, the participants were thanked for their collaboration, and it was explained that any questions regarding the project could be made through the email address found on the project explanation sheet provided. The data was collected from January to June 2021.

Lastly, the statistical treatment of the data was performed using the Statistical Package for Social Sciences (SPSS Inc), version 27.0.1. Data was firstly subjected to descriptive analysis. The analyses performed used non-parametric statistics, given the characteristics of the sample and the delineated objectives. Thus, afterwards, the Mann-Whitney U Test was used to assess whether the groups differed significantly on the continuous sociodemographic (i.e, age) and clinical (i.e., time of chemotherapy) variables and on the psychosocial variables. And last of all, it was used Spearman's correlation coefficient to examine the relationships among the variables.

Results

Current Psychological State of the Participants

From the total sample, only 43 women responded to this question, notably 23 from the adjuvant CT group and 20 from the neoadjuvant CT group. In relation to the responses given to this question, the Grounded Analysis was used, since the responses were very varied and so, based on the similarities between them, they were grouped into larger clusters.

This analysis resulted in the identification of 10 categories: (a) diagnosis' impact refers to the impact of the breast cancer's diagnosis; (b) treatment's side effects comprises all the side effects mentioned by women (e.g., fatigue, nausea, hair loss, etc.); (c) general well-being includes physical and psychological well-being; (d) social support comprises family and friends' support; (e) psychological symptoms incorporates answers such as "anxiety", "sadness", "psychological distress" and "fear"; (f) personal characteristics comprises answers like "optimism", "acceptance" and "will to live"; (g) health care involves answers regarding the health services, namely "trust in the healthcare professionals", "trust in medicine", "hospital monitoring" and "success in treatments so far"; (h) external factors refers to factors external to the illness; (i) excessive information denotes too much information about the cancer and its possible consequences; and, (j) spirituality comprises answers such as "faith", "belief in God" and "religion".

Thus, Table 3 contains the answers given by women about their current psychological state.

Table 3*Factors That Contributed to Women's Current Psychological State*

Characteristics	Adjuvant CT		Neoadjuvant CT		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Diagnosis' impact						
Impact of the breast cancer diagnosis.	1	2.4	5	14.3	6	7.8
Treatment's side effects						
Fatigue; Nausea; Hair loss; Etc.	5	11.9	7	20.0	12	15.6
General well-being						
Physical well-being; Psychological well-being.	2	4.8	3	8.6	5	6.5
Social support						
Family's support; Friends' support; Other ways of support;	16	38.1	8	22.9	24	31.2
Psychological symptoms						
Anxiety; Sadness; Distress; Fear; Etc.	3	7.1	3	8.6	6	7.8
Personal characteristics						
Optimism; Acceptance; Will to live; Etc.	10	23.8	3	8.6	13	16.9
Health care						
Trust in the professionals; Trust in medicine; Hospital monitoring; Success in treatments so far.	2	4.8	3	8.6	5	6.5
External factors						
External factors to the illness.	0	0	1	2.9	1	1.3
Excessive information						
Excessive information about the illness and its consequences.	0	0	1	2.9	1	1.3
Spirituality						
Faith; Belief in God; Religion.	3	7.1	1	2.9	4	5.2
Total answers	42	100.0	35	100.0	77	100.0

Note. CT = Chemotherapy.

As shown in Table 3, 77 responses were obtained in total (each woman was asked to answer three factors if possible); 42 from the group of adjuvant CT; and, 35 from the group of neoadjuvant CT.

Considering the total sample, the most common factor women mentioned was “social support” ($n = 24$), followed by “personal characteristics” ($n = 13$) and “treatments’ side effects” ($n = 12$); and, “external factors” and “excessive information” were only mentioned once.

In the adjuvant CT group, the same was verified: “social support” ($n = 16$); “personal characteristics” ($n = 10$); and, “treatments’ side effects” ($n = 5$) as the most mentioned.

In the neoadjuvant CT group, women mentioned more frequently “social support” ($n = 8$), followed by “treatment’s side effects” ($n = 7$); however, the factor most mentioned next was “diagnosis’ impact” ($n = 5$). Women in this group also mentioned “external factors” and “excessive information” one time each.

In terms of “personal characteristics”, it is noticeable a different frequency of answers, with the adjuvant group mentioning it 10 times and the neoadjuvant group only three times. “Spirituality” was most commonly mentioned by the adjuvant group ($n = 3$), then the neoadjuvant group ($n = 1$). In terms of “general well-being” and “health care”, the difference between groups is minimal, but the neoadjuvant group had more responses for both topics. At last, “psychological symptoms” registered the same frequency for both groups ($n = 3$).

Differences Between the Adjuvant Chemotherapy and the Neoadjuvant Chemotherapy Groups

Table 4 presents the results of the Mann-Whitney U Test requested to assess if existed any differences between the type of chemotherapy and the scales used and shows the median scores of the psychosocial characteristics of the study participants, regarding QoL and the other psychosocial correlates for both adjuvant and neoadjuvant CT groups and for the total sample.

Table 4*Psychosocial Characteristics of the Participants*

Variables	<i>U</i>	<i>p</i>	Adjuvant chemotherapy					Neoadjuvant chemotherapy					Total				
			<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>Min.</i>	<i>Max.</i>	<i>M</i>	<i>SD</i>	<i>Mdn</i>	<i>Min.</i>	<i>Max.</i>
Social support	298.0	.769	18.52	1.48	19	16	20	18.08	.25	18	12	20	18.30	1.90	19	12	20
Physical WB	224.5	.087	17.68	7.05	17	0	28	14.48	7.00	15	0	26	16.08	7.14	16	0	28
Social WB	291.0	.675	21.89	4.48	23	9	28	21.14	5.21	22	6	28	21.52	4.82	22	6	28
Emotional WB	244.0	.182	17.80	5.24	19	4	24	16.8	3.87	18	7	22	17.30	4.59	18.5	4	24
Functional WB	308.0	.930	15.88	5.43	15	5	26	15.76	4.91	17	5	25	15.82	5.12	16	5	26
Additional BC concerns	256.5	.276	24.56	6.12	24	15	36	22.24	6.11	23	12	33	23.40	6.16	24	12	36
Total QoL	259.5	.304	97.81	22.01	94	57	139	90.42	18.78	93	44	122	94.12	20.59	93.3	44	139
Meaning/Peace	236.5	.139	24.28	5.78	24	13	32	21.88	5.59	23	10	31	23.08	5.75	23.5	10	32
Faith	277.5	.493	11.44	3.06	12	6	16	10.72	3.70	12	3	16	11.08	3.38	12	3	16
Spiritual WB	254.0	.256	35.72	7.24	34	19	48	32.6	7.53	35	14	43	34.16	7.48	34.5	14	48
Positive affect	320.0	.884	27.48	7.92	26	16	42	27.68	8.63	31	10	40	27.58	8.20	26.5	10	42
Negative affect	358.0	.376	18.76	7.97	17	11	32	19.84	7.33	18	10	37	19.30	7.60	18	10	37
Resilient coping	303.0	.853	14.44	3.96	14	7	20	14.08	3.33	15	6	20	14.26	3.62	14	6	20

Note. WB = Well-being; BC = Breast cancer; QoL = Quality of Life.

As shown in Table 4, there were not found any significant differences in the psychosocial characteristics of women who had been or were being submitted to adjuvant chemotherapy and women who had been or were being submitted to neoadjuvant chemotherapy.

In terms of social support, both groups and the total sample show similar results, with adjuvant CT group having a mean score of 18.52 ($SD = 1.475$; $Mdn = 19$), neoadjuvant CT group of 18.08 ($SD = .253$; $Mdn = 18$), and the total sample of 18.30 ($SD = 1.898$; $Mdn = 19$). These results are good since they are quite close to the maximum value of the range for these questions about social support (range: 0-20).

Regarding the subscales of the FACT-B, it can be verified that the scores for physical and functional well-being and additional breast cancer concerns are moderately low in both groups and the scores for social well-being and emotional well-being are moderate. In the group of women who were submitted to adjuvant CT, the subscale that had the best result was the social well-being subscale ($M = 21.89$; $SD = 4.477$; $Mdn = 23$) and the one that had the worst was the functional well-being subscale ($M = 15.88$; $SD = 5.426$; $Mdn = 15$). In the neoadjuvant CT group, the subscale with the best result was also the social well-being subscale ($M = 21.14$; $SD = 5.208$; $Mdn = 22$), but the one that had the worst result was the physical well-being subscale ($M = 14.48$; $SD = 6.995$; $Mdn = 15$).

Considering the total score of FACT-B, both groups and the total sample showed moderate results of QoL. The adjuvant CT group ($M = 97.81$; $SD = 22.006$; $Mdn = 94$) showed better results in terms of mean values, than the neoadjuvant CT group ($M = 90.42$; $SD = 18.779$; $Mdn = 93$).

In FACIT-Sp-12, women of both groups showed moderate scores in the faith subscale ($M = 11.08$; $SD = 3.380$, $Mdn = 12$), in the meaning/peace subscale ($M = 23.08$; $SD = 5.753$, $Mdn = 23.50$) and in the total score of the scale ($M = 34.16$; $SD = 7.482$, $Mdn = 34.50$), with the group of adjuvant CT having the highest scores in all of them. Also, in both groups, the faith subscale had higher mean scores than the meaning/peace subscale.

Regarding positive and negative affect, the total sample demonstrated a higher mean score for positive affect ($M = 27.58$; $SD = 8.199$; $Mdn = 26.50$), than for negative affect ($M = 19.30$; $SD = 7.598$; $Mdn = 18$) and between the two groups the difference was minimal. According to the authors of the scale, the higher the score, the more prevalent is positive affect or negative affect (Galinha & Pais-Ribeiro, 2005), therefore since the

scale range is from 0 to 50, it can be concluded that women show a moderate presence of positive affect and a relatively low presence of negative affect.

Lastly, in terms of resilient coping, the mean scores in both groups and in the total sample were slightly above the cut-off point (<13) that the authors defined for low resilient individuals (Ribeiro & Morais, 2010).

Relationships Among the Sociodemographic and Psychosocial Variables

Since no statistically significant differences were found between the two CT groups, it was decided to assess the relationships among the variables for the entire group of participants. Thus, Table 5 presents the results of the Spearman correlation coefficient, executed to verify if any correlations existed between age, time of chemotherapy and the scores obtained in each subscale.

Table 5*Correlations Between Age, Time of Chemotherapy, and Psychosocial Characteristics*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	-														
2	-.142	-													
3	-.056	.096	-												
4	-.012	.043	.369**	-											
5	-.053	.018	.306*	.147	-										
6	-.110	.067	.208	.542**	.365**	-									
7	-.167	.013	.282*	.415**	.526**	.690**	-								
8	.199	-.098	.132	.485**	.244	.619**	.493**	-							
9	-.063	.015	.327*	.719**	.538**	.853**	.802**	.754**	-						
10	.131	-.108	.187	.453**	.407**	.726**	.635**	.720**	.754**	-					
11	.324*	-.224	.297*	.152	.260	.110	.106	.250	.187	.247	-				
12	.268	-.191	.297*	.391**	.455**	.555**	.499**	.650**	.629**	.851**	.679**	-			
13	-.008	.073	.199	.308*	.470**	.388**	.553**	.386**	.556**	.497**	.400**	.591**	-		
14	.104	.019	-.008	-.505**	-.216	-.698**	-.547**	-.673**	-.720**	-.613**	-.126	-.460**	-.347*	-	
15	-.049	.069	.273	.065	.293*	.464**	.410**	.267	.376**	.425**	.345*	.467**	.418**	-.325*	-

Note. 1 = Age; 2 = Time of chemotherapy; 3 = Social support; 4 = Physical well-being; 5 = Social well-being; 6 = Emotional well-being; 7 = Functional well-being; 8 = Additional breast cancer concerns; 9 = Quality of Life; 10 = Peace; 11 = Faith; 12 = Spiritual well-being; 13 = Positive affect; 14 = Negative affect; 15 = Resilient coping.

* $p < .05$. ** $p < .01$.

In terms of age, it was only found a significant correlation with faith, with the results showing a medium, positive correlation between the two variables, with higher age being associated with higher levels of faith. Regarding the time of chemotherapy, it was not found a significant correlation with any of the other variables.

Social support correlated positively with physical well-being, social well-being, functional well-being, QoL, faith and spirituality.

Physical well-being had a positive correlation with emotional well-being, functional well-being, additional BC concerns, QoL, peace, spiritual well-being and positive affect. However, it correlated negatively with negative affect. Social well-being showed a positive correlation with emotional well-being, functional well-being, QoL, peace, spiritual well-being, positive affect and resilient coping. Emotional well-being had a negative correlation with negative affect; however, it correlated positively with functional well-being, additional breast cancer concerns, QoL, peace, spiritual well-being, positive affect and resilient coping.

Functional well-being correlated positively with additional BC concerns, QoL, peace, spiritual well-being, positive affect and resilient coping; and, correlated negatively with negative affect.

Additional BC concerns had a negative correlation with negative affect and positive correlations with QoL, peace, spiritual well- and positive affect.

It was also found a positive correlation between QoL and peace, spiritual well-being, positive affect and resilient coping. However, QoL and negative affect were negatively correlated.

The Peace subscale showed a positive correlation with spiritual well-being, positive affect, and resilient coping and a negative correlation with negative affect. The Faith subscale positively correlated with spiritual well-being, positive affect, and resilient coping. Spiritual well-being showed a positive correlation with positive affect and resilient coping, and a negative correlation with negative affect.

Regarding positive affect, it was found a negative correlation with negative affect, and a positive correlation with resilient coping. Lastly, negative affect correlated negatively with resilient coping.

Discussion

This study aimed to analyse the psychological state, the QoL and the psychosocial correlates of adjuvant chemotherapy and neoadjuvant chemotherapy in women with

breast cancer, as well as examine if any differences existed in these psychosocial correlates in both chemotherapy's groups and if there were associations among the variables.

The results showed that women attributed their current good psychological state mostly to the social support they received, but also to personal characteristics, to the health care and to spirituality. However, women also mentioned some less positive factors that contributed to their psychological state, such as the diagnosis' impact, the treatments' side effects, psychological symptoms and excessive information.

These outcomes are consistent to what was found in literature, with many authors also referring the importance that social support has to women with breast cancer (Adam & Koranteng, 2020; Carvalho et al., 2016; Cheng et al., 2013; Cunha et al., 2017), especially the family's support (Mattias et al., 2018; Yan et al., 2019).

In terms of personal characteristics, there were obtained answers such as "optimism", "acceptance" and "will to live", which seems to also go along with some of the reports of breast cancer women found in other works. Carvalho et al. (2016) describes "strength" and "will to live" as standpoints frequently mentioned by women; Elshetawy et al. (2014) and Gallagher-Squires et al. (2020) mentioned that several women referred to acceptance as a state of mind; and, Cardoso et al. (2018), Rodrigues and Polidori (2012) and Silva et al. (2019) pointed out the reference to optimism, trust, courage and resilience as essential topics for these women.

Although some answers were given about spirituality, this is not in line with the literature, as spirituality is seen as a very important factor for women that provides them with hope, support, strength and balance in the face of illness (e.g., Carvalho et al., 2016; Mattias et al., 2018; Vargas et al., 2020), so it was expected that more women would name spirituality. Now, this may also depend on how patients interpreted the questions and whether they looked for more immediate and objective factors, having left spirituality somewhat aside as it is something more subjective.

Spirituality was also mentioned by some women as a good contributor to their psychological state. which is similar to what other authors found in their works (e.g., Carvalho et al., 2016; Mattias et al., 2018; Vargas et al., 2020), with women frequently turning to religion and faith to seek hope, support, strength and balance.

In terms of health care, women in this study revealed that their trust in medicine and in the health professionals and the hospital monitoring were factors that contributed positively to their psychological state. These results support the findings of Carvalho et

al. (2016), Cunha et al. (2017) and Vargas et al. (2020), which refer that the healthcare team often constitutes another form of support for women with breast cancer that offers them attitudes of care, attention, concern, and emotional involvement.

Another frequent answer given by the participants was the diagnosis' impact. Many authors discuss the effect of a diagnosis of breast cancer on women, namely they refer that the moment women know of the diagnosis they have an immediate fear of possible death and that marks the initial milestone of the psychological problems that may accompany women during the course of the cancer (Carvalho et al., 2016; Maluf et al., 2005; Mattias et al., 2018).

Something that seems important to note is the fact that most responses about the diagnosis' impact were from the neoadjuvant chemotherapy group, in which the diagnosis was usually given less time ago than in the adjuvant chemotherapy group, whose chemotherapy only initiates after breast surgery. Thus, it is possible that the breast cancer diagnosis has a major impact on the psychological state of women at an initial stage and that, then, as they progress through the cancer course, other factors take on a greater impact. Consequently, this can be a clue for the multidisciplinary health team to act according to the needs felt at each moment of the breast cancer's trajectory, for example, with greater emphasis on the impact of the diagnosis at the beginning, but also never neglecting the personal needs of each woman.

Treatments' side effects, particularly chemotherapy's side effects, are often mentioned in literature as having a major psychological impact (e.g., Beaver et al., 2016; Cunha et al., 2017; Medeiros et al., 2019; Rodrigues & Polidori, 2012), which supports the findings in this study with a high frequency of women referring to them.

Psychological symptoms were also mentioned by women in this study, with the mention of fear, anxiety and sadness, which is in line with the findings of other works that refer that women frequently feel sadness, guilt, fear, anger and uncertainty during the course of the cancer (Carvalho et al., 2016; Toriy et al., 2013).

Lastly, in terms of the answers given about the women's psychological state, it seems important to highlight that one woman, namely a health professional, answered that she had excessive information about the illness and its consequences. According to Beaver and colleagues (2016), normally women want to know more information about the cancer and the treatments; however, these authors also found that some participants did not want full information about it because they considered that that would bring them more fear and anxiety. In this case, as the woman was a health professional, she knew the

consequences of breast cancer and its treatments and the possible prognosis. However, perhaps other participants also had access to excessive information, due to the easy and sometimes unreliable access to the internet, and, as such, this is a possible topic to be addressed directly by the health team with patients, in order to find out if they have read something about the disease on the internet, what they thought of what they read, if they have doubts, if something has upset them and if they want additional information or clarification.

Regarding the psychosocial characteristics of the total sample, it was found that the participants showed good levels of perceived social support, which seems to go along with what Kang and colleagues (2020) and Silva and colleagues (2011) founded.

Women also presented moderate mean scores of social well-being, which is consistent with other studies (Al-Ghabeesh et al., 2019 [World Health Organization–Quality of Life]; Coelho et al., 2017 [European Organization for Research and Treatment of Cancer Quality of Life Questionnaire–Core 30; QLQ-C30]; Lôbo et al., 2014 [QLQ-C30]; Milbury et al., 2017 [FACT-B]; Sawada et al., 2009 [QLQ-C30]). In the emotional well-being subscale, women also had a moderate mean score, which is similar to what Al-Ghabeesh and colleagues (WHOQOL; 2019), Al-Natour and colleagues (FACT-G; 2017), Ganz and colleagues (36-Item Short Form Health Survey [SF-36]; 2003) and Manning-Walsh (FACT-B; 2005a) found. However, other studies were also found in which women had lower scores of emotional well-being and where it was even the worst scored scale (e.g., Bayram et al., 2014 [FACT-G]; Coelho et al., 2017 [QLQ-C30]; Kovac et al., 2020 [FACT-B]; Lôbo et al., 2014 [QLQ-C30]; Sawada et al., 2009 [QLQ-C30]).

In terms of physical well-being, functional well-being and additional concerns, the participants obtained moderately low scores, which is consistent to what was found in other studies (Bayram et al., 2014 [FACT-G]; Lôbo et al., 2014 [QLQ-C30]; Zhang et al., 2017 [FACT-B]). However, it was also found that some studies had higher scores of physical well-being, in which this subscale was even the one with the highest score among the others (emotional, social and functional subscales), namely: in the Al-Natour and colleagues' study (2017), with the FACT-G; in the Cheng and colleagues' study (2013) assessed with QoL-CS; in the Ganz and colleagues' study (2003), with the use of SF-36; in the Manning-Walsh (2005a), with the FACT-B; and, in the Milbury and colleagues' study (2017), also with the FACT-B.

Regarding QoL, the mean score indicates a moderate level of QoL, which was also verified in other studies. Bayram and colleagues (2014) assessed the QoL of women

who were submitted to chemotherapy, using the FACT-G, and concluded as well that women showed moderate levels of QoL ($M = 63.89$; $SD = 16.48$). Milbury and colleagues (2017) assessed Chinese women and women from the United States who were in active treatment by resorting to the FACT-B, and concluded that both groups showed moderate scores in QoL, especially the US group. Other studies, using the QLQ-C30, also determined moderate levels of QoL in women with breast cancer (e.g., Cheng et al., 2013 [China]; Rohani et al., 2015 [Iran]; Sousa et al., 2015 [Portugal]). Nevertheless, Zhang and colleagues (2017) found a moderately low level of QoL in Chinese women mainly with less than a year since the diagnosis.

The study of Hwang and colleagues (2013) seems important to mention because it assessed the QoL of breast cancer women receiving chemotherapy and of breast cancer women who did not receive chemotherapy and by using the QLQ-C30 concluded that the group of women not receiving chemotherapy had highest scores in total QoL and in all of its subscales, namely in the breast cancer, physical well-being and emotional well-being subscales the difference was statistically significant.

Another noteworthy study is the one of Silva and colleagues (2011), elaborated in Portugal, which measured, with the WHOQOL-Bref, the QoL of four groups: (a) women who received the diagnosis within a maximum of 4 months; (b) women who were receiving adjuvant or neoadjuvant chemotherapy; (c) women in survival, which means in total or partial remission; and, (d) a control group, with women with no cancer history. The authors concluded that the women receiving treatment presented the worst scores in general QoL and in all its domains, when compared with the other three groups.

In this study, participants also revealed moderate levels of meaning/peace ($M = 23.08$; $SD = 5.753$), faith ($M = 11.08$; $SD = 3.380$), and spiritual well-being ($M = 34.16$; $SD = 7.482$). In literature were found similar results, namely one study assessed spiritual well-being with FACIT-Sp-12 of women within 2 years since the breast surgery and determined moderate levels spiritual well-being ($M = 33.87$; $SD = 8.95$). In Portugal, a master's dissertation had overlapping results to this study, with breast cancer women within a year since last treatment showing mean scores of 23.30 ($SD = 5.667$) in the meaning/peace domain, of 11.42 ($SD = 2.919$) in the faith domain, and of 34.72 ($SD = 7.484$) in the total score of FACIT-Sp-12 (Costa, 2010).

Other studies, also with FACIT-Sp-12, verified higher scores: women in active treatment revealed mean scores of 25.21 ($SD = 5.12$) in the meaning/peace domain, of 15.25 ($SD = 1.94$) in the faith domain, and of 40.46 ($SD = 6.10$) in the total score (Al-

Natour et al., 2017); and, women who were scheduled to adjuvant systemic therapy revealed mean scores of 14.29 ($SD = 3.27$) in the meaning domain, of 13.06 ($SD = 4.24$) in the faith domain, of 11.35 ($SD = 5.4$) in the peace domain, and of 39.47 ($SD = 11.21$) in the total score of the scale (Gaston-Johansson et al., 2013).

Women in this study also showed a moderate level of positive affect and a relatively low level of negative affect, which is in line with what another study found with women in active treatment by using the Center for Epidemiologic Studies of Depression scale (CES-D; Milbury et al., 2017). This is a considerably good result, since higher positive affect and lower negative affect are associated with higher levels of QoL (Hu & Gruber, 2008). These results may be attributable to the social support that these women receive, since it was concluded that they demonstrated high levels of social support and that social support is positively correlated with positive affect and negatively correlated with negative affect. Furthermore, it is also possible that this is associated with the multidisciplinary health team that comprises health professionals from different areas (i.e., surgeons, radiologists, geneticists, nurses, a psychiatrist, a psychologist, and a nutritionist) in order to meet any needs women may have.

Another two studies consulted found better results: Paris and colleagues' study (2014), in Venezuela, concluded that women in treatment had a mean score in PANAS of 36.04 ($SD = 7.331$) for positive affect and of 15.07 ($SD = 5.579$) for negative affect, which was better than the results obtained in this study in both subscales; and, Carneiro and colleagues' study (2014), in Portugal, determined that elderly women with breast cancer, also in PANAS, had a mean score of 35.3 for positive affect, which is better than the results of this study. However, this last work had a worst mean score of 28.3 for negative affect when compared to the results obtained in this study (Carneiro et al., 2014).

In terms of resilient coping, participants of this study had a moderate score, only slightly above the cut-off point defined by the authors for low resilient individuals (Ribeiro & Morais, 2010). In literature, it was difficult to find studies that assessed "resilient coping" in women with breast cancer, so studies that assessed "resilience" and/or "coping" were searched. Nevertheless, in Portugal were not found studies that assessed the resilience or the coping capacity of women with breast cancer.

However, a few international studies that assessed resilience with Connor-Davidson Resilience Scale (CD-RISC) and that determined moderate scores as well were found, namely: a study that assessed the resilience of women in active adjuvant treatment (Huang et al., 2019); a study that assessed the resilience of women post-breast surgery

who were scheduled to adjuvant treatment (Wu et al., 2016); and, another study that assessed the resilience of breast cancer survivors (Fradelos et al., 2017).

Furthermore, studies that had high levels of resilience and coping were also found: Guil and colleagues' study (2020) assessed resilience of women with breast cancer and of women without breast cancer with the Resilience Scale of Wagnild and Young and determined that both groups had high scores, but the breast cancer group had higher results ($M = 144.04$; $SD = 17.45$) comparatively to the other group ($M = 135.88$; $SD = 21.69$); and, Gaston-Johansson and colleagues' study (2013) that assessed the coping capacity of women scheduled to chemotherapy, with the Coping Strategies Questionnaire and verified that women revealed a moderately high mean score ($M = 66.33$; $SD = 16.21$).

Results of resilient coping in this study can give some guidelines for clinical practice, as it indicates that the resilience and the coping capacity of these women may have to be addressed by the health team, especially mental health professionals, in order to improve these outcomes.

It is also important to mention that usually women were interviewed when they returned to the hospital for the COVID-19 test one or two days before another cycle of chemotherapy, and as such in most cases almost three weeks had passed since the last cycle and therefore the side effects were not as many as in the days immediately after the chemotherapy cycle.

This study also analysed differences between the two chemotherapy groups and found that no statistically significant differences were found in the psychosocial characteristics of women submitted to adjuvant chemotherapy and of women submitted to neoadjuvant chemotherapy. Other studies found no differences between both groups, namely: Mohlin and colleagues (2021) that assessed resilience in both groups with CD-RISC and found no statistically significant differences; and, Zdenkowski and colleagues (2019) that assessed distress and anxiety in both groups, with Distress Thermometer and 6-Item Spielberger State-Trait Anxiety Inventory respectively and found no statistically significant differences.

A similar study was conducted by Coelho and colleagues (2017), who assessed the QoL of women with breast cancer that initiated neoadjuvant or adjuvant chemotherapy, with QLQ-C30 and Quality of Life Questionnaire–Breast Cancer Module (QLQ-BR23). These authors collected data at three different steps: (a) firstly, on the day that the treatment was initiated; (b) secondly, 40 to 50 days after the first treatment session; and, (c) thirdly, 40 to 50 days after the second treatment session.

The third phase of Coelho and colleagues' study (2017) corresponds more or less to the moment chosen for collecting information from patients in the present study. However, these authors found different results, since they found that there were statistically significant differences between the two groups, at third step: in the physical function ($U = 167.5$; $p = .02$); in the personal performance ($U = 162.5$; $p = .02$); in the cognitive function ($U = 173.5$; $p = .03$); in the dyspnoea symptom ($U = 168$; $p = .02$); and, in the breast symptoms ($U = 134.5$; $p = .003$).

Nevertheless, it seems important to emphasize that, given the results obtained and the absence of significant differences in the two groups, the medical decision to opt for one or another treatment also considers the quality of life of each patient, in order to ensure the best possible quality of life with the best possible results.

Considering the correlations among variables in this study, it was found that age and faith had a significant positive correlation, which seems to go along with what Chatters and colleagues (1999) determined, which is that higher age is normally associated with higher religious involvement and that age is a positive predictor of religious involvement. Normally, in a more advanced stage of the life cycle, losses, adversities, and challenges are more frequent than in the younger stages (Afonso, 2012), since older people start to be confronted with aging and death (e.g., parents) (Fagulha, 2005). As such, according to Wink and Dillon (2002), religious involvement tends to increase since middle age onward, where people start to have more resources for personal autonomy and awareness of contextual relativism. Therefore, older people, through faith, look for new ways of coping and adaptation and new internal overcoming resources that allows them to have a positive perspective of the future (Simão & Saldanha, 2012).

In terms of perceived social support, it was found a positive correlation with physical well-being, functional well-being, and total QoL, which is congruent to what was found in other studies (Al-Ghabeesh et al., 2019; Cheng et al., 2013; Firouzbakht et al., 2020; Leung et al., 2014; Manning-Walsh, 2005b). As it was expected, perceived social support and social well-being were also correlated. Social well-being showed a positive correlation with emotional well-being, functional well-being and total QoL, which was also verified in the studies of Fong et al. (2017) and Zhang et al. (2017). These results can be even more deeply explained, since it was demonstrated that social rejection and physical pain share neural pathways and, as such, social support tends to dull the pain (Brown et al., 2003; Kross et al., 2011).

Furthermore, perceived social support was also positively correlated with faith and spiritual well-being, while social well-being was positively correlated with peace and spiritual well-being. These results are in agreement with what other works found about the importance of religiosity, faith and spiritual well-being as social support networks (e.g., Al-Natour et al., 2017; Manning-Walsh, 2005a; Vargas et al., 2020). Social well-being had also a positive correlation with positive affect, which is also with in line with what Paris et al. (2014) found.

In this study, as expected, all subscales of FACT-B and its total score are positively correlated with each other, which was also proved in Manning-Walsh's study (2005b). Spiritual well-being was also positively correlated with all FACT-B subscales and its total score, which was expected considering a more holistic conceptualization of QoL where spiritual well-being is also part of an individual's QoL (Manning-Walsh, 2005b). These findings are in agreement with those of Al-Natour et al. (2017) and Manning-Walsh (2005a).

Positive affect was also positively correlated with FACT-B total score and all its subscales, except social well-being, which is similar to what Milbury and colleagues (2017) found, though they also found a positive correlation with social well-being. Other studies found positive correlations between positive affect and QoL, namely the studies of Kessler (2002) and of You and Lu (2014). In turn, negative affect had a significant negative correlation with all FACT-B subscales, except social well-being. Another study determined negative correlations between negative affect and six subscales of QLQ-C30 and QLQ-BR23, namely physical, role, emotional, cognitive, social, functioning and pain (Lindberg et al., 2017). Yeung and colleagues (2020) also established a negative correlation between negative affect and functional well-being. Other studies found a negative correlation between negative affect and global QoL (e.g., Lindberg et al., 2017; Koller et al., 1999; You & Lu, 2014).

Resilient coping was also positively correlated with social well-being, emotional well-being, functional well-being and total QoL. It was difficult to find other studies that assessed resilient coping and that correlated it with other psychological variables; however, studies were found that proved positive correlations between: social support and resilience (Kiaei et al., 2021; Huang et al., 2019; Zhang et al., 2017); social support and coping (Tomita et al., 2016); emotional well-being and resilience (Markovitz et al., 2015; Watkins et al., 2017); functional well-being and resilience (Ristevska-Dimitrovska

et al., 2015); and, QoL and resilience (Ocampo et al., 2011; Ristevska-Dimitrovska et al., 2015; Zhang et al., 2017).

In this study, resilient coping was also positively correlated with spiritual well-being and the subscales of meaning/peace and faith and with positive affect, while it correlated negatively with negative affect. That is a lack of studies assessing resilient coping, as mentioned before, but there are studies that assessed at least resilience and/or coping and that concluded that: there is a positive correlation between coping capacity and spiritual well-being (Watkins et al., 2017); there is a positive correlation between resilience and spiritual well-being (Eid et al., 2020); and, there is a positive correlation between coping and positive affect, but no correlation between coping and negative affect (Dasch et al., 2010).

Still, considering positive and negative affect, it was found a positive correlation between positive affect and meaning/peace, faith and spiritual well-being and a negative correlation between negative affect and meaning/peace and spiritual well-being. Holt and colleagues (2011) corroborated these findings, since the authors also established a positive correlation between positive affect and spiritual well-being a negative correlation between negative affect and spiritual well-being.

Lastly, in this study, positive affect and negative affect were inversely correlated, which was also documented by Dasch and colleagues (2010) and Paris and colleagues (2014). These results may be explained by Reich and colleagues' theory (2003), which documents that during times of stress the attentional resources needed to affective differentiation are more focused in more immediate needs and demands, which, in turn, makes affective differentiation more difficult. As such, in times of stress, positive and negative affect are experienced as bipolar dimensions, given the weaker affective differentiation, and, consequently, they become inversely correlated (Reich et al., 2003).

Finalising, this present study concluded that women with breast cancer submitted to adjuvant or neoadjuvant chemotherapy demonstrate good levels of social support; moderate levels of quality of life, spiritual well-being, and positive and negative affect; and relatively low levels of resilient coping. No statistically significant differences were found in terms of psychosocial characteristics between the group of adjuvant chemotherapy and the group of neoadjuvant chemotherapy. Furthermore, it was also concluded that there are many correlations among the variables studied, namely QoL was significantly correlated with all the others psychosocial variables, except faith.

This study has also some limitations, namely: it has a cross-sectional study design, which does not allow the analysis of how the variables would behave over time; it has a small sample size which may affect the reliability of the results; it compares two groups that are given different treatments, and that may have different types of breast cancer and different prognosis, which may also have some influence over the results; it was not collected information about the cancer stage and of the chemotherapy medications administered; and, the fact that there were not found many studies conducted in Portugal that evaluate the psychosocial variables of this study specifically in women with breast cancer, as this does not allow a more assertive comparison of the results.

In addition, the data was collected when women went to the CHUSJ to make it easier for them and to avoid unreasonable journeys, which meant that most women answered the questionnaires on the day of the COVID-19 test, which is one or two days before the next chemotherapy cycle, which means that it could be almost three weeks after the last cycle, which makes the side effects already less and therefore does not allow a real evaluation of the side effects of chemotherapy. Furthermore, this study was also conducted during exceptional circumstances, which was during the COVID-19 pandemic, and, as such the results obtained may be influenced by this context.

For future reviews, it is suggested the use of a bigger sample size and more attention to the clinical variables, namely the stage of the cancer and the chemotherapeutic drugs administered, since they may also have some influence on the side effects caused and, therefore, may have different impacts on the quality of life and other psychosocial characteristics of women with breast cancer.

From this study, the main message for the multidisciplinary health teams is that there should continue to be joint work, given the relatively good results obtained and they should continue to pay attention to all the aspects mentioned in the study (i.e., QoL, social support, spiritual well-being, positive and negative affect and resilient coping). Health professionals should continue to invest more in referring patients to other professionals in the team, namely in this psychological area, to mental health professionals, when they perceive some difficulties or needs of patients.

Furthermore, given that it was concluded that at different points of the cancer course, women express different needs, it is also suggested that more screenings are done and at different moments, so that the needs can be perceived moment by moment and then met. If these psychological aspects of breast cancer women are attended, then probably a better QoL can be achieved, since it was also found that most of these features (i.e.,

positive affect, negative affect, social support, spiritual well-being and resilient coping) are associated with QoL and, therefore, have influence on it. As such, interventions should invest in the promotion of social support, resilience, spiritual well-being, adaptive coping strategies and positive affect and in the reduction of negative affect.

Finally, future studies should be carried out in order to improve knowledge in psycho-oncology, in this case especially in women with breast cancer and in Portugal, since few studies were found, so that the needs of the patients are met.

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Conclusion

This dissertation comprises firstly a systematized literature review about some psychosocial characteristics (i.e., quality of life, social support, spirituality, positive and negative affect, and resilient coping) of women with breast cancer and about psychological interventions targeting these areas; and, secondly, an empiric study where the same psychosocial characteristics were assessed in women with breast cancer who were submitted to adjuvant or neoadjuvant chemotherapy.

In the systematized review, the main results obtained were: that breast cancer and the side effects associated with its treatments have an impact on women's lives, namely on their quality of life, their positive and negative affect, their spirituality, their social support, their resilience and their coping capacity; that spirituality and social systems are generally recognised as important sources of support during the cancer continuum; that overall these psychosocial characteristics are related in some way and influence each other; and, that many psychological interventions (e.g., mindfulness-based, spiritual, positive psychology-based, etc.) bring benefits in these areas and improve them.

In the empiric study it was found that: women with breast cancer submitted to either adjuvant or neoadjuvant chemotherapy demonstrate good levels of social support, moderate levels of quality of life, spiritual well-being and positive and negative affect, and relatively low levels of resilient coping; that do not exist statistically significant differences between both chemotherapy groups in terms of these psychosocial features; and, that most of these psychosocial variables are correlated with each other, specially quality of life that correlated with all the other variables, except with faith.

Regarding clinical implications, given this study results, it is suggested that the multidisciplinary health team develops screenings in order to understand the needs of each woman after the diagnosis, so that they can be more attentive to them considering the moment of the cancer trajectory, since, for example, the diagnosis has a major impact on women in the beginning but over time this impact diminishes, as other aspects become more important. Furthermore, it seems also crucial to note the importance of addressing online health literacy issues, as there is too much information on the internet about cancer that can be frightening to women if not explained and deconstructed by health professionals.

Given the systematized review conclusions, it is also worth noting the need for psychological interventions, in order to at least maintain the moderate results and to improve the moderately low results obtained in the empiric study, specifically of

resilience and of coping capacity. As such, interventions especially directed to these areas should be developed and applied so that the patients can have a better quality of life and a better and faster recovery. Psychological interventions based on Cognitive Behavioural Therapy are primarily suggested, since it is considered a gold-standard intervention and there is evidence that justifies the continuation of its use (Hulbert-Williams et al., 2018). In addition, some other interventions, namely mindfulness-based interventions and positive psychology-based interventions are also suggested, since they also show positive results (Casellas-Grau et al., 2014; Jing et al., 2021). Furthermore, group intervention could also be a good asset, as it also produces satisfactory results (Brandão & Matos, 2015).

Finally, there is also a need for psychologists to sensitize the other members of the health team to these issues, in order to improve health outcomes in terms of quality of life and well-being of these women with breast cancer. Therefore, it is also proposed the development of a multidisciplinary intervention, that could put together different professionals (e.g., nurses, psychologists, psychiatrists, doctors, etc.) to have moments with a group of patients for discussion and clarification of needs, where all (or almost all) specialties are included to give an almost immediate response.

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APPENDIX A. Authors' authorization for FACT-B and FACIT-SP-12 use

FACIT-Sp-12 and FACT-B

2 mensagens

Shannon Romo <sromo@facit.org>
Para: Ana Sofia Cardoso dos Santos <34983@ufp.edu.pt>

27 de novembro de 2020 às 19:15

Hello Ana,

Thank you for signing the license. Here are your files.








Regards,

Shannon C Romo

Licensing and Financial Administrator

sromo@facit.org www.FACIT.org

7 anexos

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APPENDIX B. Author's authorization for PANAS use

Iolanda Costa Galinha <igalinha@autonoma.pt>
Para: Ana Sofia Cardoso dos Santos <34983@ufp.edu.pt>

27 de novembro de 2020 às 10:43




Cara Dra. Ana Sofia dos Santos.

Autorizo a utilização da PANAS e envio em anexo os artigos de validação da escala.
Desejo-lhe um excelente trabalho.

Iolanda Costa Galinha
Professora Associada em Psicologia - Universidade Autónoma de Lisboa
<https://scholar.google.com/citations?user=DPTz6wYAAAAJ&hl=en>

[Citação ocultada]

3 anexos

-  **PANAS VRP 2014.pdf**
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-  **PANAS I.pdf**
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-  **PANAS II.pdf**
43K

APPENDIX C. Author's authorization for BRCS use

José Luis Pais Ribeiro <jlpr@fpce.up.pt>
Para: Ana Sofia Cardoso dos Santos <34983@ufp.edu.pt>

26 de novembro de 2020 às 09:17

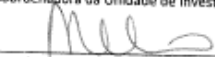
Cara Colega

Autorizamos o uso da versão da Escala de Coping Resiliente que estudámos para uso com a população portuguesa. Anexamos o questionário.

Cordialmente

José Luís Pais Ribeiro
jlpr@fpce.up.pt
mobile phone: (351) 965045590
web page: <http://sites.google.com/site/jpaisribeiro/>
ORCID: <http://orcid.org/0000-0003-2882-8056>
ResearchGate- https://www.researchgate.net/profile/Jose_Pais-Ribeiro/publications

APPENDIX D. Ethics Committee Approval

Unidade de Investigação
 Tomei conhecimento. Nada a opor. À DC.
 11 de Janeiro de 2021
 A Coordenadora da Unidade de Investigação

 (Prof.ª Doutora Ana Azevedo)



SÃO JOÃO

n.º 459/2020

DIRECÇÃO CLÍNICA
2021/1/12

PEDIDO DE AUTORIZAÇÃO

Realização de Investigação

Exmo. Senhor Presidente do Conselho de Administração
do Centro Hospitalar de São João

20 4. 5 4

Nome do Investigador Principal:

Ana Sofia Cardoso dos Santos

Título da Investigação:Quimioterapia Adjuvante vs Neoadjuvante em Mulheres com Cancro da
Mama: Correlatos Psicossociais

CONSELHO DE ADMINISTRAÇÃO - RES. 11/2021
 Presidente do Conselho de Administração

 Prof. Doutor Fernando Azevedo
 Direção Clínica | Presidente do Conselho de Administração | Vice-Presidente | Vogal Executivo | Vogal Consultivo


Pretendo realizar no(s) Serviço(s) de:



Centro da Mama

a investigação em epígrafe, solicito a V. Exa., na qualidade de Investigador/Promotor, autorização para a sua efetivação.

Para o efeito, anexo toda a documentação referida no dossier da Comissão de Ética do Centro Hospitalar de São João/ Faculdade de Medicina da Universidade do Porto respeitante à investigação, à qual enderecei pedido de apreciação e parecer.

Com os melhores cumprimentos.

O Investigador/Promotor

Porto, 09 de dezembro de 2020. 
assinatura"Centro Hospitalar São João -
Centro de Epidemiologia Hospitalar"4.11.2021




Comissão de Ética Centro Hospitalar São João/
/Faculdade de Medicina da Universidade do Porto

n.º 459 / 2020

Questionário para submissão de Investigação

Exmo. Sr. Presidente da Comissão de Ética do Centro Hospitalar de São João/
Faculdade de Medicina da Universidade do Porto,

Pretendendo realizar a investigação infracitada, solicito a V. Exa., na qualidade de Investigador, a sua apreciação e a elaboração do respetivo parecer. Para o efeito, anexo toda a documentação requerida.

IDENTIFICAÇÃO DO ESTUDO

Título da investigação: Quimioterapia Adjuvante vs Neoadjuvante em Mulheres com Cancro da Mama: Correlatos Psicossociais

Nome do investigador: Ana Sofia Cardoso dos Santos

Endereço eletrónico: 34983@ufp.edu.pt

Contacto telefónico: 960122305

Caracterização da investigação:

- Estudo retrospectivo Estudo observacional Estudo prospetivo
 Inquérito Outro. Qual? _____

Tipo de investigação:

- Com intervenção Sem intervenção

Formação do investigador em boas práticas clínicas (GCP): Sim Não

Promotor (se aplicável): _____

Nome do orientador de dissertação/tese (se aplicável): Prof. Doutora Rute Meneses

Endereço eletrónico: rmeneses@ufp.edu.pt

Local/locais onde se realiza a investigação: Centro de Mama do CHUSJ

Data prevista para início: 02 / 01 / 2021

Data prevista para o término: 31 / 05 / 2021

PROTOCOLO DO ESTUDO

Síntese dos objetivos:

Analisar os correlatos psicossociais da quimioterapia adjuvante ou neoadjuvante de mulheres com cancro da mama;
Explorar a relação entre o tipo de quimioterapia e: a qualidade de vida, o afeto e a resiliência das participantes.

Fundamentação ética (ganhos em conhecimento/ inovação; ponderação benefícios/riscos):

A quimioterapia adjuvante é o tratamento quimioterápico mais utilizado; no entanto, o uso da quimioterapia neoadjuvante tem aumentado. Com cada tratamento pode haver implicações psicológicas diferentes. Assim, pretende-se analisar de que forma o tipo de quimioterapia se relaciona com a qualidade de vida, afeto e resiliência das mulheres com cancro da mama.
Em termos de benefícios, permitirá perceber se existem diferenças entre as mulheres que realizam um tipo de quimioterapia e outro e perceber se atribuem o seu estado psicológico ao tratamento.
Não se prevê qualquer risco associado.

LISTA DE DOCUMENTOS ANEXOS

Pedido de autorização ao Presidente do Conselho de Administração do Centro Hospitalar de São João (se aplicável)

Pedido de autorização à Diretora da Faculdade de Medicina da Universidade do Porto (se aplicável)

Protocolo do estudo

Declaração do Diretor de Serviço onde decorre o estudo
(sendo um estudo na área de enfermagem deve anexar também a concordância da chefia de enfermagem)

Profissional de ligação

Informação dos orientadores

Informação ao participante

Modelo de consentimento

Instrumentos a utilizar (Inquéritos, questionários, escalas, p.ex.): FACT-B; FACIT-5p-12; PANAS; Escala Breve de Coping Resiliente

Curriculum Vitae abreviado (máx. 3 páginas)

Protocolo financeiro

Outros:

COMPROMISSO DE HONRA E DECLARAÇÃO DE INTERESSES

Declaro por minha honra que as informações prestadas neste questionário são verdadeiras. Mais declaro que, durante o estudo, serão respeitadas as recomendações constantes da Declaração de Helsínquia (1960 e respetivas emendas), e da Organização Mundial da Saúde, Convenção de Oviedo e das "Boas Práticas Clínicas" (GCP/ICH) no que se refere à experimentação que envolve seres humanos. Aceito, também, a recomendação da CES de que o recrutamento para este estudo se fará junto de doentes que não tenham participado em outro estudo, nos últimos três meses. Comprometo-me a entregar à CES o relatório final da investigação, assim que concluído.

Porto, 09 de dezembro de 2020

Nome legível: Ana Sofia Cardoso dos Santos

Ana Sofia Cardoso dos Santos
assinatura

Parecer da Comissão de Ética do Centro Hospitalar de São João/ FMUP Emitido na reunião plenária da CE de 18/12/2020

A Comissão de Ética para a Saúde
APROVA por unanimidade o parecer do
Relator, pelo que nada tem a opor à
realização deste projecto de investigação.

[Prof. Doutor Filipe Almeida]
Presidente da Comissão de Ética

Filipe Almeida