

## Chapter 04

# Effects of a Psycho-Educational Intervention with Mindfulness-Based Strategies in Breast Cancer Survivors

Sara Monteiro<sup>1,4\*</sup>, Ana Torres<sup>1,4,5</sup>, Mariana Lima<sup>1</sup>, Ricardo João Teixeira<sup>1,2,3</sup> and Anabela Pereira<sup>1</sup>

<sup>1</sup>University of Aveiro, Department of Education and Psychology, Portugal

<sup>2</sup>Clínica da Ordem, Psychology Department, Portugal

<sup>3</sup>CESPU, Institute of Research and Advanced Training in Health Sciences and Technologies, Portugal

<sup>4</sup>CINTESIS, Center for Health Technology and Services Research, Portugal

<sup>5</sup>Health School of North of Portuguese Red Cross (ESENorteCVP), Portugal

**\*Corresponding Author:** Sara Monteiro, University of Aveiro, Department of Education and Psychology, Portugal, Email: smonteiro@ua.pt

First Published **August 13, 2018**

Copyright: © 2018 Sara Monteiro, et al

*This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source.*

## Abstract

The emerging technological advances in recent decades abreast of scientific progress in cancer context resulted in the implementation of therapies tailored to each patient and the exponential increase in the number of survivors. Group psychoeducational interventions (PEI) have been shown to be beneficial for survivors of breast cancer, and mindfulness-based interventions (MBI) identified as useful in treating this population. This study arises in this context, with the aim of evaluating the impact of a PEI program with the integration of MBI in a group of breast cancer survivors, and to analyze the effects on quality of life (QoL), psychopathology, coping strategies and self-concept. The study was carried out in central Portugal, where 21 women were recruited: 10 were proposed for PEI and 11 constituted the control group. Participants completed the European Organization for Research and Treatment-QOL questionnaire and breast cancer specific module (EORTC QLQ-C30 and QLQ-BR23), the Hospital Anxiety and Depression Scale (HADS), the Cancer Coping Questionnaire (CCQ), and the Clinical Self-Concept Inventory (CSCI), at the beginning and end of the intervention. Survivors who had no intervention showed deterioration of self-efficacy, mastery of self and the worst results in emotional function domain of QoL. The intervention group showed improvements in self-efficacy. This work has been useful, since it was found that the implementation of such PEI with MBI, leads to positive effects on breast cancer survivors.

## Introduction

Currently, cancer is one of the most common diseases in the world and the one with the most prevalent growth prospects in the future. The course of the neoplastic disease is experienced as a complex and discrepant process between different individuals, varying according the prognosis, the applied therapy and the intensity of the psychological and physical manifestations perceived [1]. Breast cancer survivors have been assigned differently, with little agreement on the definition of this concept [2]. Some authors argue that a cancer survivor should be considered as that since the diagnosis [3], while

others state that the patient should live a few years disease-free [2] and others assumes that a survivor is one, from the moment of the cancer remission [4]. In this study, we included survivors who no longer present signs of disease, who are still in treatment (but in a remission phase) or who have already finished treatments and are not in a relapse phase. We have therefore pointed out in this study that a cancer survivor is a disease-free stage cancer patient since we believe that these survivors exhibit survival characteristics different from those, which are understood in a broader concept.

## Psychological Morbidity in Patients with Breast Cancer

According to Takahashi and colleagues [5], anxiety and depression are the psychopathological symptoms predominantly evidenced by patients with cancer. Avelar and colleagues [6], who sought to evaluate these symptoms in women with breast cancer before and after surgery, found that the levels of both were significantly associated with and maintained after the intervention. In this way, the women who showed a greater degree of anxiety were similarly the most depressed, with consequences in their physical, emotional and functional well-being. More recently, So and colleagues [7] examined the presence of anxiety and depression symptoms in a group of women with breast cancer who underwent radiotherapy and chemotherapy. The authors found significant differences accordingly to the applied therapy, since a high prevalence of psychological symptoms was found in patients specifically receiveing chemotherapy. Moreover, psychological morbidity, associated with depression and anxiety, is also clearly associated with the process of therapeutic adherence and decreased quality of life (QoL) [8]. Regarding the variation throughout the stages of the oncological process, studies seem to indicate that patients experience higher levels of emotional distress after the diagnosis and during treatment, followed by a gradual decrease of symptoms over time [9]. Taking into account these conclusions, it is worth noting the development of emotional stress [10], difficulties in cognitive functioning, appetite and sleep [11] by certain survivors.

## Quality of Life in Patients with Breast Cancer

Two modes of emotional response to breast cancer emerge in the scientific literature. Some patients experience an unbalanced emotional response and make a negative attribution of the disease, facing it as a trauma. This moment of crisis in the oncological process implies a worsening of the emotional adjustment [12]. However, some survivors consider the disease as a psychosocial transformation that can lead to personal growth, and a restructuring in the way they look at the world [13]. This positive attribution invokes the recognition that a chronic disease can be lived, or not, in a positive way, allowing a reflection on QoL [14]. Although it is a recent concept, the proposal of designation defended by Pais-Ribeiro [15] is based on the idea that QoL comes from a well-being that is manifested by the satisfaction, or not, of all dimensions of life, essential for the person.

Breast cancer constantly involves aggressive procedures, invariably causing interference in QoL. A recent study indicates that the performance of a mastectomy has a great negative impact on the survivor QoL [15]. Pais-Ribeiro and Santos [16], when evaluating women with breast cancer, in identical phases of the disease development, identified better QoL in participants submitted to lumpectomy, when compared to the mastectomized group. It is believed that body image is one of the most affected dimensions. In fact, the mastectomized woman expresses feelings of violation of her image and less physical attractiveness, femininity and, as a result, there is a reduction of resistance, high levels of stress and social isolation [17].

Several studies have shown that most breast cancer survivors present a good QoL, equivalent to women who did not have cancer [18]. However, QoL tends to improve over time, after the diagnosis [19]. Although most studies indicate a good QoL in these patients, some studies cite an absence of changes [20] or even a decrease in QoL over time [21], evidencing changes mainly at the physical level, but also at a social level, particularly a dysfunctional sexual functioning [22].

## Coping Strategies in Breast Cancer Patients

Since oncological disease usually exceeds the individual's personal resources, it is essential to use coping strategies to promote a better psychological adjustment [25]. Considering that cancer is a chronic illness, it regularly leads to the depletion of resources that the patient has and naturally affects the effectiveness of these strategies [24]. Some authors have shown that the strategies of helplessness/weakness and anxious preoccupation are recognized as negative resources that lead to worse prognosis, experience of loss and threat [25]. However, some studies establish that a fighting spirit and fatalism are the coping strategies most used by cancer survivors [26], promoting the reduction of the threat and simultaneously contributing to the adoption of an optimistic posture and, consequently, to a better prognosis [27].

## Self-Concept in Patients with Breast Cancer

Self-concept is an individual's conceptualization about how he or she thinks about himself or herself. Self-concept provides a frame of reference that affects the management of many situations and relationships with others. In relation to cancer, examples of situations that can have an effect on a person's self-concept include hospitalization, surgery, the loss of bodily function, a decline in activity tolerance, and difficulties in managing the disease [28]. Being diagnosed with a chronic illness brings forth an added component to one's identity and can cause increases in anxiety, depression, and fear. Kaiser [29], in a qualitative study with breast cancer survivors, reports being given the identity of a "survivor" can result in substantial increases in anxiety related to fear of recurrence. While one's sense of self is normally relatively stable, cancer can cause a woman to question her place in the world and to rethink who she is. Additionally, changes in the body (both appearance and functioning) and role performance resulting from a chronic illness can profoundly affect the sense people have of themselves. This impact may be long-term or delayed [30]. As individuals begin to deal with the physical and emotional impact of treatment, they may begin to understand that a new person has evolved

with new responses and uncertainties [31]. Adult cancer survivors admit that to recognize and accept the “new” self, they must grieve the loss of the “old” self, as they once knew it [32].

## Group Interventions for Breast Cancer Patients

Most studies with group interventions indicate positive results, in the adoption of health behaviors and improvement of the emotional state [33]. Group intervention programs that include psychoeducation have found benefits for cancer survivors, especially by providing information about the disease and treatments, which is assumed to be sufficient to overcome their difficulties [33]. Research has shown that patients who receive psychoeducational interventions reveal an increase in the use of coping skills, reduced stress, increased perception of self-efficacy [34,35], decreased fatigue, but also an increased vigor and a positive impact on mood [36]. In addition, even patients who are in the initial phase of chemotherapy, after an intervention of this type, tend to present improvements in QoL and an increase in the search for social support [33].

Araújo [37] evaluated the efficacy of a psychoeducational intervention in a study carried out with 13 breast cancer survivors, and found that women undergoing this intervention showed a reduction of anxiety at the second moment of evaluation, as well as an improvement of depressive symptomatology, and emotional functioning and physical aspects related to QoL. Likewise, when comparing the impact of two versions of a written psychoeducational intervention (development of a self-help manual) on cancer and the knowledge of topics related to the risk of having breast cancer, Appleton and colleagues [38], with a sample of 163 women, found a significant increase in control perception on the disease development, and a reduction of intrusive thoughts about possible risks. New evidenced suggests that the provision of adequate information in such educational programs increases patient satisfaction and reduces psychic distress [39]. The results of an analysis based on a psychoeducational support plan, in a group of participants in the initial phase of the pathology, showed that after 3 months of the intervention, patients had lower levels of mood disorders compared to the control group [40].

In Torres' research [41], 62 breast cancer survivors underwent one of two selected intervention programs: one psychoeducational intervention (PEI), and one with cognitive-behavioral therapy (CBT). The author found that the brief group interventions contributed to the reduction of long-term anxiety trait, pain retention and cognitive functionality. In general, the women in the PEI group showed improvements at the level of self-concept, up to 6 months, and an increased emotional control until 3 months. Compared with the CBT group, PEI has proven to be the most appropriate for breast cancer survivors. Another study, in an attempt to determine the effects of PEI on breast cancer adjustment levels, has shown that the results (after 6 weeks and 6 months of program implementation) indicated an increasing in the fighting strategies, but also a lowering of anxiety levels, abandonment and fatalism for the 38 participants, allowing for positive changes in cancer adjustment levels [42]. Meneses and colleagues [43] carried out a study with 256 breast cancer survivors, confirming improvements in QoL during the first year after diagnosis, and after the application of a PEI program. More specifically, a PEI group carried out by Fillion and colleagues [44] with 87 breast cancer survivors and explicitly oriented to fatigue symptoms, showed significant improvements in fatigue, emotional distress and QoL, in the post-test, when compared to the control group.

Current psychological literature has been shown an increasing of studies using mindfulness-based interventions (MBI; Baer, [45]), playing an important role on the symptomatology of individuals suffering from cancer [46]. Patients with chronic conditions provide a special challenge for psycho-oncologists, because they experience a considerable degree of stress [47], associated with difficulties in coping with the disease, fear and persistent distress [48]. Mindfulness is an ancient Buddhist practice [49] organized according to a set of techniques that aim to raise awareness of emotional distress and maladaptive behaviors [45], reducing reactivity, and leading to the reduction of expressed symptoms [50]. In this line of research, the work conducted by Leydon, Eyles, and Lewith [51] evaluated the feasibility of

a program comprised of 8 mindfulness sessions, with a sample of 30 women with metastatic cancer. The authors found that there was a significant reduction of mood symptoms. Some systematic literature reviews show the importance of MBI's in various medical populations (e.g., chronic pain, cancer and cardiac pathologies), reporting them as effective practices for increasing QoL, emotional regulation, and pain moderation [50]; but also for improvements in decreased emotional tension, mood, and increased sleep quality in cancer survivors [52]. The results that have been found, encouraged the application of stress reduction protocols (such as the Mindfulness-Based Stress Reduction program – MBSR) with mindfulness strategies used with couples, such as the study by Birnie and colleagues [53], which found a reduction of negative psychological symptoms for most participants of the study. In [54], Reibel, Greeson, Brainard, and Rosenzweig, performed an MBI with a group of patients with diverse diagnoses (cancer, depression, diabetes, among others), showing an increase in QoL, associated with improvements in vitality, lower body pain and limitations due to physical health, social functioning expansion, and decreases in anxiety and depression levels. In parallel with these data, Witek-Janusek and colleagues [55] found that early-stage breast cancer women, participating in a MBI group, showed an increase in disease coping strategies, and the same result was ascertained when an identical research proved that the survivors manifested increased openness to change and self-control, followed by personal growth [56].

In Portugal, some studies were carried out with samples of breast cancer survivors, supported by PEI (mentioned above: Araújo, [37]; Torres, [41]). However, at an international level, MBI programs (e.g., [55-58]) have been tested, with positive and sustained results. In Portugal, only recently, Lopes and colleagues [59] studied the efficacy of an MBI in a group of 48 participants (5 males), with improvements in well-being and in the capacity to deal with the disease.

The present chapter reports a study with a main objective: to evaluate the impact of a PEI program, that encompasses MBI strat-



egies, in the psychological adjustment of a breast cancer survivor's sample. More specifically, it intends to study the efficacy of the protocol applied through a pre-test and post-test evaluation, also establishing a comparison with the intervention-free control group. Thus, this work proposes to: (1) characterize a sample of breast cancer survivors, regarding socio-demographic and clinical variables; (2) adapt a PEI protocol, with the addition of MBI strategies; and (3) analyze the effects of the intervention on depressive and anxious symptomatology, QoL, coping strategies, and self-concept.

## Method

### Participants

The convenience sample used in this study consisted of 21 breast cancer survivors, in a disease-free stage, registered and accompanied in a Primary Health Care Center, located in central Portugal. Of the main sample, 10 women were assigned to the intervention group, and 11 to the control group. The sociodemographic and clinical characteristics of the intervention and control groups (IG and CG) can be seen in Tables 1 and 2. Continuous variables, such as age ( $U = 50.50$ ,  $z = -.318$ ,  $p = .756$ ), number of years since diagnosis ( $U = 43.00$ ,  $z = .856$ ,  $p = .426$ ), number of radiotherapy sessions ( $U = 10.50$ ,  $z = -.326$ ,  $p = .181$ ), and number of chemotherapy sessions ( $U = 11.00$ ,  $z = -1.566$ ,  $p = .181$ ) are equivalent for both groups (cf. Table 1).

**Table 1:** Sociodemographic and clinical characteristics (continuous variables).

Variables	Intervention group (IG) n = 10			Control group (CG) n = 11			U
	M	Mdn	SD	M	Mdn	SD	
Age	57.50	57	10.52	59.09	64	11.31	50.5
Years since diagnosis	6	5	3.94	9	6	6.41	43
Radiotherapy sessions	25.67	29	13.50	22	22	15.25	10.5
Chemotherapy sessions	4.57	6	3.20	6.83	6.50	.98	11

Note. M-mean; Mdn, median; SD-standard deviation; U-Mann-Whitney test

It was also found that for categorical variables, there is a replication of the aforementioned results. Marital status,  $\chi^2$  (4, N = 21) = 3.96,  $p = .57$ , literacy,  $\chi^2$  (4, N = 21) = 3.56,  $p = .58$ , professional activity,  $\chi^2$  (4, N = 21) = 4.44,  $p = .40$ , means of disease detection  $\chi^2$  (3, N = 21) = 3.45,  $p = .39$ , type of surgery,  $\chi^2$  (2, N = 21) = 2.20,  $p = .44$ , and the type of treatment, are similar in both groups (cf. Table 2).

**Table 2:** Sociodemographic and clinical characteristics (categorical variables).

Variables	Intervention group (IG)		Control group (CG)		$\chi^2$
	n = 10		n = 11		
	N	%	N	%	
<b>Marital status</b>					
Married	5	50	7	63.6	3.96
Divorced	1	10	2	18.3	
With a partner	2	20	1	9.1	
Single	-	-	1	9.1	
Widow	2	20	-	-	
<b>Literacy</b>					
1-4 years of school	3	30	1	9.1	3.56
5-6 years of school	-	-	2	18.2	
7-9 years of school	2	20	3	27.3	
High school	3	30	2	18.2	
College	2	20	2	20	
<b>Professional activity</b>					
Specialists in intellectual and scientific activities	3	30	3	27.3	4.44
Middle level technicians and professions	2	20	5	45.5	
Administrative staff	3	30	2	18.2	
Personal, security and safety personnel and sellers	2	20	-	-	
Unskilled workers	-	-	1	9.1	
<b>Means of detection</b>					
Self-examination	1	10	4	36.4	3.45
Routine exam	1	10	1	9.1	
Medical screening exams	8	80	5	45.5	
Screening by the PLAC	-	-	1	9.1	
<b>Type of surgery</b>					
Mastectomy	7	70	9	81.8	2.20
Tumorectomy	-	-	1	9.1	
Quadrantectomy	3	30	1	9.1	
<b>Type of treatment</b>					
Radiotherapy	6	60	4	36.4	1.17
Chemotherapy	7	70	6	54.5	.53
Hormone therapy	4	40	3	27.3	.38
Axillary emptying	7	70	5	45.5	1.28
Immunotherapy	2	20	1	9.1	.50

Note. N-sample size; %-percentage;  $\chi^2$ -Chi-square test; PLAC-Portuguese League Against Cancer

## Procedure and Data Analysis

In order to carry out this research, it was necessary to request authorization for the development of the study and sample recruitment. After the approval from the Health Administration and the Ethics Committee for Health, the study started. A first telephone call was made between the family doctor and the breast cancer survivors, for the purpose of attending an initial individual interview with the researchers at the Health Center. After informed consent procedures, participants were asked to respond to a set of sociodemographic and clinical issues, described in the initial questionnaire that contained variables also controlled in the present study. The degree of motivation of the participants for encompass in the intervention group was also evaluated and registered. The inclusion criteria (being over 18 years of age, having a diagnose of breast cancer and have received treatment, and showing disease-free evidences at the time of the evaluation), as well as the exlusion criteria (age below 18 years, unfitness to participate in the proposed tasks, antecedents of psychiatric disorders - precedent to illness, dependence on psychoactive substances, have a diagnosis of organic brain disorders, and incompatibility with one or more group members) were verified. At the end, the assessment tools for the first phase (pre-test) were distributed and completed. The PEI program used in this study refers to an adapted protocol, initially developed by Araújo [37] and later by Torres, Araújo, Pereira, and Monteiro [60]. The intervention program applied was subject to some modifications, fundamentally aiming at the complementarity of new data investigated until then with the existing information. More specifically, MBI strategies were integrated into the 8 consecutive weekly sessions that originally constitute the program. Each session usually lasted approximately 1.5 hours and was led by two therapists (therapist and co-therapist). All information presented during the sessions was provided to participants at the end, as well as other ancillary materials.

The statistical data analysis was performed using the Statistical Package for Social Sciences, version 19.0 (SPSS Inc., Chicago, IL).

Data were subject to descriptive and inferential analysis. Analyses were performed using non-parametric statistics, taking into account the characteristics of the sample and the hypotheses to be tested. Chi-Square tests ( $\chi^2$ ) were used to evaluate the differences between categorical variable, and Mann-Whitney's  $U$  to evaluate differences between the continuous and psychosocial variables, at the beginning of the investigation. The Wilcoxon test was used for paired samples ( $T$ ), in order to compare the results obtained at the pre-test and at the post-test (for both groups), with the objective to assess the effects of the interventions on the psychosocial variables under study. The Kruskal-Wallis (H) test was used to compare the results obtained at the post-test, for both groups. The effect size ( $r$ ) was used for means comparison, and was calculated through the value of  $t$  in the following formula,  $r = \sqrt{t^2 / (t^2 + df)}$ , and for the remaining tests we used the value of  $z$  in the formula,  $r = z / \sqrt{N}$  [61]. The degree of statistical significance was  $p < .05$ .

## Measures

*Sociodemographic and clinical characterization questionnaire.* Allowed to collect the following data: age, literacy, professional status, date of cancer diagnosis, form of detection, and types of treatment performed and / or still undergoing.

*Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, [62]; Portuguese version by Pais-Ribeiro et al., [63]).* This is a 14-item measure designed to assess anxiety and depression symptoms (both subscales with 7 items) in medical patients, with emphasis on reducing the impact of physical illness on the total score. Responses to each item can be quantified on a Likert scale, ranging from 0 to 3. The scoring of each subscale can range from 0 to 21 and the higher the score, the higher the levels of anxiety and depressive symptoms. The original study [62] indicates good psychometric characteristics, evidencing high correlations with other measures of anxiety ( $r = .74$ ) and depression ( $r = .70$ ). In the Portuguese version, Cronbach's alphas were .76 for the anxiety subscale, and .81 for the depression subscale [63].

*European Organization for Research and Treatment-QOL questionnaire and breast cancer specific module* (EORTC QLQ-C30 and QLQ-BR23; Aaronson et al., [64]; Portuguese version by Pais-Ribeiro, Pinto, & Santos, [65]). The QLC-30 is used to evaluate the health-related QoL of individuals with cancer, it is a self-response questionnaire with 30 items, with multi and unique items scales. It consists of 5 functional scales (physical, emotional, cognitive, social, and role functioning), 3 symptom scales (fatigue, pain, nausea, and vomiting), and a global rating scale (health and QoL). The single items evaluate additional symptoms usually reported by cancer patients (dyspnea, loss of appetite, sleep disturbances, constipation, and diarrhea), and the perceived financial impact on the disease and treatment. The items are rated on a scale of 1 ('not at all') to 4 ('very much') points, with the exception of the overall rating scale (health and QoL) that is evaluated on a scale of 1 ('very poor') to 7 ('excellent'). A high score on the overall rating scale represents better functioning and QoL, while a high score on the symptoms scale represents a high level of symptomatology. The overall QoL scale has adequate internal reliability and predictive validity, with Chronbach's alpha coefficient above .70, with exception of role function function scale. In the Portuguese validation study, the questionnaire presented good psychometric characteristics, with a Cronbach's alpha for the global assessment scale of .88 and values ranging from .57 to .87 for the remaining scales. The QLQ-BR23 is a breast-specific module that comprises of 23 questions to assess body image, sexual functioning, sexual enjoyment, and future perspective (4 functional scales), systemic therapy side effects, breast symptoms, arm symptoms, and upset by hair loss (4 symptom scales) [12]. Higher scores on the last two scales suggest a higher level of symptomatology [65].

*Cancer Coping Questionnaire* (CCQ; [55,66]). This is an easy and rapid self-response questionnaire that allows evaluating strategies taught in adjuvant psychological interventions and other behavioral interventions for cancer patients. It consists of 21 items divided into two subscales (individual subscale and interpersonal subscale).

The items are answered on a scale of 1 ('not at all') to 4 ('very often'), with the highest scores corresponding to a greater number of coping strategies used. In the original study the instrument had an adequate internal consistency, obtaining a Chronbach alpha of .87 for the individual subscale and .82 for the interpersonal subscale. In the test-retest validity it was obtained a score of .90 ( $n = 25$ ,  $p < .001$ ) for the individual subscale, and of .84 ( $n = 19$ ,  $p < .001$ ) for the interpersonal subscale [66]. In the validation study for the Portuguese population the instrument showed good internal consistency as well (Chronbach alpha of .80) and test-retest fidelity (Spearman correlations of .59 with  $p < .001$  in the individual subscale, and .65 with  $p < .001$  in the interpersonal subscale) [67].

*Clinical Self-Concept Inventory* (CSCI; [68]). This instrument aims to evaluate self-concept and is composed by 20 items evaluated on a Likert scale of response from 1 ('desagree') to 5 ('strongly agree'). Negative questions are reverse punctuated (items 3, 12 and 18). The instrument evaluates 4 factors: acceptance/social rejection, self-efficacy, psychological maturity, and impulsivity-activity. The total score is obtained by the sum of all items, and higher scores correspond to a better self-concept. In the original study, good internal consistency (.80) and good temporal stability (.84) were observed.

## Results

### Psychosocial Characterization of the Sub-Samples in the Pre-Test

There were no significant pre-test differences for coping, psychopathological symptomatology and self-concept (Table 3).

**Table 3:** Group differences for coping level, psychopathological symptomatology and self-concept in the pre-test.

Variables	Intervention group (IG) n = 10	Control group (CG) n = 11	U
	M, Mdn, SD	M, Mdn, SD	
Coping			
CCQ individual	33.10; 9.50; 5.62	35.18; 12.36; 7.12	40.00
CCQ interpersonal	15.22; 8.16; 4.79	15.18; 9.44; 7.42	32.50
Symptomatology			
HADS anxiety	6.50; 12.55; 3.40	5.36; 9.77; 2.29	41.50
HADS depression	5.10; 12.65; 3.10	3.36; 9.50; 1.80	38.50
Self-concept (total)	64.80; 11; 7.08	63.90; 11; 3.36	55
Acceptance / social rejection	18.40; 10.85; 2.50	18.36; 11.14; 1.96	53.50
Self-efficacy	19.40; 10.95; 2.71	19.09; 11.05; 1.30	54.50
Psychological maturity	15.80; 11.95; 2.78	15.72; 10.14; 1.55	49.50
Impulsivity / activity	11.20; 11.95; 1.93	10.72; 10.14; 1.27	15.50

Note. M-mean; Mdn-median; SD-Standard deviation; U-Mann-Whitney test

Regarding QoL variables; only differences in body image (U = 25.50; z = - 2.25; p < .05) can be highlighted (Table 4).

**Table 4:** QoL group differences in the pre-test.

Variables	Intervention group (IG)	Control group (CG)	U
	n = 10	n = 11	
	M; Mdn; SD	M; Mdn; SD	
QLQ C30 BR23			
General health status; QoL	60; 10.75; 16.10	60.6; 11.23; 23.59	52.50
Physical function	74; 8.80; 17.34	84.84; 13; 9.47	33
Role function	68.33; 8.80; 32.82	87.87; 13; 15.07	35
Emotional function	68.33; 8.95; 23.17	82.57; 12.8; 16.42	34.50
Cognitive function	73.33; 9.60; 29.60	89.39; 12.27; 11.23	41
Social function	78.33; 9.00; 27.27	95.45; 12.82; 10.77	35
Fatigue	31.11; 12.35; 26.60	18.18; 9.77; 15.13	49.50
Nausea and vomiting	8.33; 11.55; 26.35	0; 10.50; .00	41.50
Pain	33.33; 13.05; 27.21	16.66; 9.14; 14.90	34.50
Dyspnea	16.66; 12.15; 23.57	3.03; 9.95; 10.05	37.50
Insomnia	46.66; 13.15; 35.83	24.24; 9.05; 21.55	33.50
Loss of appetite	23.33; 13.30; 31.62	3.03; 8.91; 10.05	32
Constipation	30; 12.15; 42.88	9.09; 9.95; 15.56	43.50
Diarrhea	0; 10; 0	0; 11; 0	55
Financial difficulties	26.66; 13.60; 26.29	6.06; 8.64; 20.10	29
Body image	65; 8.94; 31.62	92.42; 11.77; 13.66	25.50*
Sexual function	66.66; 8.94; 22.04	77.27; 11.77; 26.11	35.50
Sexual satisfaction	42.85; 6.57; 25.19	50; 7.50; 18.25	18
Future perspectives	36.66; 8.45; 39.90	69.69; 13.32; 34.81	29.50
Side effects of therapy	23.80; 13.45; 15.22	12.98; 8.77; 8.54	30.50
Breast symptoms	22.50; 12.30; 18.44	15.15; 9.82; 16.16	42
Arm symptoms	33.33; 13.10; 22.22	19.19; 9.09; 15.78	34
Uncomfortable hair fall	26.66; 3.90; 27.88	33.33; 4.25; 47.14	4.50

Note. M=mean; Mdn=median; SD=standard deviation; U=Mann-Whitney test; \*p<.05



## Evaluation of the Efficacy of the Intervention in the Pre- and Post-Test

The results obtained in terms of psychosocial adjustment with the intervention group, contrasted with the control group in the pre- and post-test, were compared in order to ascertain the main hypothesis of this study (cf. Table 5). Data indicate that the control group worsened in one QoL domain, i.e., there was a decrease from the pre-test (Mdn = 18.2) to the post-test (Mdn = 12.14) of the emotional function,  $T = -2.23$ ,  $p = .03$ ,  $r = -.67$ . The data also showed a deterioration of the self-efficacy subscale, for the control group, from the pre-test (Mdn = 11.05) to the post-test (Mdn = 9.77),  $T = -2.81$ ,  $p < .002$ ,  $r = -.84$ . In contrast, it was found from the results obtained that the intervention group presented a significant increase in the self-efficacy subscale at the pre-test level (Mdn = 10.95), when compared to the post-test (Mdn = 12.35),  $T = -.26$ ,  $p < .004$ ,  $r = -.08$ . For the individual and interpersonal coping subscales, no significant results were found that point to changes between the pre- and post-test. And the same conclusion was drawn, for the anxious and depressive symptomatology.

**Table 5:** Differences in the level of psychosocial variables between pre-test and post-test in the control and experimental groups.

Variables	Intervention group (IG)		T	Control group (CG)		T
	n = 10			n = 11		
	Pre-test	Post-test		Pre-test	Post-test	
	Mdn	Mdn		Mdn	Mdn	
Coping						
CCQ individual	9.50	11.05	-.84	12.36	10.95	-1.20
CCQ interpersonal	8.16	8.83	-.10	9.44	11.05	-.16
Symptomatology						
HADS anxiety	12.55	12.85	-1.13	9.77	9.32	-.28
HADS depression	12.65	11.30	-.47	9.50	10.73	-1.49
QLQ C30 BR23						
General health status, QoL	10.75	10.55	-.26	11.23	11.41	-.42
Physical function	8.80	8.80	-.10	13,9	13	-.94
Role function	8.80	8.90	-.69	13	2.91	.00
Emotional function	8.95	9.75	-.63	12.14	12.8	-2.23*
Cognitive function	9.60	9.10	-.36	12.27	12.73	-.2
Social funtion	9.00	8.65	-.17	12.82	13.14	-1.00
Fatigue	12.35	12.90	-.56	9.77	9.27	-.71
Nausea and vomiting	11.55	11.30	-1.73	10.50	10.73	-1.73
Pain	13.05	11.40	-.17	9.14	10.64	-1.73
Dyspnea	12.15	12.10	-1.73	9.95	10	-1.00
Insomnia	13.15	12.40	-.81	9.05	9.73	-.57
Loss of appetite	13.30	11.65	-1.6	8.91	10.41	-1.00
Constipation	12.15	11.05	-1.6	9.95	10.95	-1.41
Diarrhea	10	11.05	-1.00	11	10.95	-1.00
Financial difficulties	13.60	12.45	-.37	8.64	9.68	-1.73
Body image	8.94	8.75	-.16	11.77	13.05	.000
Sexual function	8.94	9.75	-.14	11.77	12.14	-.36
Sexual satisfaction	6.57	7.50	-.81	7.50	7.50	-.00
Future perspectives	8.45	9.20	-2.11	13.32	12.64	-.18
Side effects of therapy	13.45	12.15	-.42	8.77	9.95	-.45
Breast symptoms	12.30	12.40	-.35	9.82	9.73	-.74
Arm symptoms	13.10	11.85	-.31	9.09	10.23	-2.12
Uncomfortable hair fall	3.90	3.50	-.44	4.25	--	--
Self-concept (total)	11	12.30	-1.36	11	9.82	-.31
Acceptance / social rejection	10.85	11.55	-.30	11.14	10.50	-1.34
Self-efficacy	10.95	12.35	-.267*	11.05	9.77	-2.81*
Psychological maturity	11.95	13.70	-.119	10.14	8.55	-1.90
Impulsivity / activity	11.95	14.25	-.73	10.14	8.05	-1.70

Note. T-Wilcoxon test; Mdn-median; \*p<.05.

## Differences between the Intervention Group and the Control Group in the Post-Test

When analyzing the results obtained by the subsamples, the results of the post-test were statistically significant in some QoL and self-concept domains. For the social function subscale (QoL domain), we verified a significant main effect of the,  $\chi^2(1, N = 21) = 4.35, p = .04, r = .94$ . It was observed that the control group showed better scores (Mdn = 13.14), compared to the intervention group (Mdn = 8.65) (see Table 6).

**Table 6:** Group differences in the post-test at QoL levels.

Variables	Intervention group (IG)	Control group (CG)	H
	n = 10	n = 11	
	Post-test M; Mdn; SD	Post-test M; Mdn; SD	
Quality of Life - QLQ C30 BR23			
General health status	58.33; 10.55; 20.41	60.12; 11.41; 17.62	.102
Physical function	72.66; 8.80; 14.25	81.21; 13; 11.85	2.45
Role function	73.33; 8.90; 22.49	87.8; 2.91; 15.07	2.47
Emotional function	64.16; 9.75; 22.92	71.96; 12.14; 21.49	.78
Cognitive function	75; 9.10; 14.16	83.33; 12.73; 14.90	2.05
Social function	80; 8.65; 21.94	96.96; 13.14; 10.05	4.35*
Fatigue	35.55; 12.90; 23.82	22.22; 9.27; 17.21	1.87
Nausea and vomiting	13.34; 11.30; 31.22	4.54; 10.73; 7.78	.07
Pain	31.66; 11.40; 27.72	25.75; 10.64; 20.22	.08
Dyspnea	6.66; 12.10; 14.05	0; 10; 0	2.31
Insomnia	40; 12.40; 40.97	21.21; 9.73; 26.96	1.11
Loss of appetite	10; 11.65; 26.10	6.06; 10.41; 13.48	.38
Constipation	13.33; 11.05; 23.30	15.15; 10.95; 17.40	.24
Diarrhea	3.33; 11.05; 10.54	3.03; 10.95; 10.05	.005
Financial difficulties	30; 12.45; 33.14	15.15; 9.68; 22.91	1.27
Body image	78.33; 8.75; 21.58	92.42; 13.05; 13.15	2.85
Sexual function	66.66; 9.75; 26.05	77.27; 12.14; 21.47	.89
Sexual satisfaction	54.16; 7.50; 30.53	55.55; 7.50; 17.21	0; 1
Future perspectives	60; 9.20; 21.08	72.72; 12.64; 32.72	1;86
Side effects of therapy	20; 12.15; 16.91	12.12; 9.95; 11.53	.68
Breast symptoms	25.83; 12.40; 19.02	16.66; 9.73; 13.94	.68
Arm symptoms	35.55; 11.85; 27.11	27.27; 10.23; 20.70	.36
Uncomfortable hair fall	16.66; 3.50; 27.88	--	.63

Note. M-mean; Mdn-median; SD-standard deviation; H-Kruskal Wallis test; \* $p < .05$

Cocerning self-concept, we also verified a significant group effect, for the subscale of psychological maturity  $\chi^2(1, N = 21) = 3.73, p = .05, r = .81$ , and for the impulsivity/activity subscale  $\chi^2(1, N = 21) = 5.51, p = .01, r = 1.20$ . In this context, for psychological maturity, the intervention group reported higher scores (Mdn = 13.70) than the control group (Mdn = 8.55). The same result was found for the impulsivity/activity subscale (Mdn = 14.25 and Mdn = 8.05, respectively for the experimental and control groups) (cf. Table 7).

**Table 7:** Group differences in post-test at coping levels, psychopathological symptomatology and self-concept.

Variables	Intervention group (IG)	Control group (CG)	H
	n = 10	n = 11	
	Post-test M; Mdn; SD	Post-test M; Mdn; SD	
Coping			
CCQ individual	32; 11.05; 6.39	32.18; 10.95; 5.17	.001
CCQ interpersonal	15.11; 8.83; 6.13	17.30; 11.05; 6.16	.74
Symptomatology			
HADS anxiety	7.50; 12.85; 4.70	5.63; 9.32; 2.80	1.37
HADS depression	5; 11.30; 2.98	4.90; 10.73; 3.30	.046
Self-concept (total)	69.70; 12.30; 8.62	64.72; 9.82; 4.19	.84
Acceptance / social rejection	18; 11.55; 3.65	17.18; 10.50; 2.18	.15
Self-efficacy	24.30; 12.35; 2.86	23; 9.77; 2.09	.91
Psychological maturity	15.80; 13.70; 2.25	14.54; 8.55; 1.50	3.73*
Impulsivity / activity	11.60; 14.25; 1.57	10; 8.05; 1.09	5.51*

Note. M-mean; Mdn-median; SD-standard deviation; H-Kruskal Wallis test; \*p< .05

## Discussion

It is known that individual or group psychological interventions can facilitate the patient’s adaptation to cancer, alleviating the possible associated side effects and consequences [33]. Recent psychological literature has pointed out that procedures based on stress reduction approaches, such as MBSR, may be useful in the treatment of cancer

survivors [46]. From a theoretical point of view, the studies that points to this issue show positive effects on the increase in QoL, decrease in pain, anxiety and depressive symptoms and, in addition, show an improvement in social functioning of the patients [50,52,69,70]. Thus, the interest demonstrated by the use of third generation therapies, particularly mindfulness, enabled the opportunity to develop a pilot work that would simultaneously potentiate the complementarity of these strategies with the PEI.

Following our main goal of assessing the effectiveness of the intervention program, we can observe that there was a positive effect in one of the indicators of emotional adjustment studied, namely in self-concept, by improving the self-efficacy factor in the intervention group, compared to the control group that presented a deterioration of the emotional function (QoL domain) but also in self-efficacy (self-concept domain). Through the comparison of the control and experimental groups in the post-test, we verified the effect of the group on the controlled psychosocial variables. The results obtained lead us to conclude, as well as in Torres's [67] study, that the intervention program seems to be the most appropriate for breast cancer survivors due to the therapeutic effects evidenced, especially at the level of self-concept.

The results concerning the increase in self-concept, specifically of the self-efficacy of the participants in the intervention group, from the pre to the post-test, are in accordance with the results found by Torres [67], whose PEI group presented similar improvements in relation to this indicator. For authors such as Amorim [1], positive self-concept is related to the seek for social support and adequate adaptation to the disease, being that the improvement of self-concept is considered an important result since it is associated with an appropriate psychosocial adjustment in Portuguese women with breast cancer. The results of the intervention suggest more therapeutic effects with the group that participated in the program, and these conclusions can be explained by the fact that it includes a specific session on the impact of

the disease and the treatment on self-esteem, structured with practical indications on the way simultaneously recover the aspects of each survivor's experience. However, it should be noted that studies evaluating the effectiveness of group interventions has not found improvements in self-concept in such a large way. Some authors concluded that this result is expected after an intervention program of this kind (e.g., Spiegel et al., [71]), pointing out as a potential advantage, of the group intervention, the promotion of self-concept and self-esteem, in order for the participants to verify that they can help each other.

Although self-concept has been shown to be an important factor to consider in promoting emotional adjustment in breast cancer survivors [72], the control group showed worse results in the self-efficacy domain. According to Munstedt, Manthey, Sachsse, and Vahrson [73], self-concept and self-confidence diminish as a result of the impact of oncological disease. In this line, Aureliano [74] argues that cancer profoundly affects the sense of identity, self-esteem and self-concept of the survivors. Also in relation to the results obtained with the control group, some studies have also found a deterioration of the QoL of breast cancer survivors over time [21]. These data provide preliminary support for the potential benefits of psychological intervention programs in this population and the indication of the program developed in this work, which may respond to the needs evidenced by the patients, many times neglected by health professionals.

In general, there were no significant clear benefits of intervention at the level of psychopathological symptoms. The results obtained do not, therefore, meet the evidences determined by the majority of the studies carried out that indicate improvements in anxiety and depression among intervention groups [36,37,42]. However, similarly to these results, other authors also did not found alterations in psychological variables in survivors, when using group psychopedagogical intervention [75]. There are some certainties that cancer can influence the increase of coping strategies because of the apprehension about the future and the psychological and physical disability normally felt by patients [25,42,76].

Concerning the limitations, the main one is the reduced size of the sample, which may have impeded the generalization of results (external validity) and the achievement of statistically significant results. Therefore, future studies with larger samples are suggested, representative of the studied population. Another aspect that may have conditioned this research was the fact that it was not a study with a completely random plan, accumulating the probability of self-selection. Thus, the control group did not prove to be heterogeneous limiting the generalization of the results. In future investigations, we warn of the importance of taking into account this type of methodology with greater scientific rigor. The fact that the participants included in the study had prior knowledge of some central research objectives, may have also conditioned the results given that the responses may have been influenced by the attempt to meet the expectations, or even to meet what they considered to be more socially acceptable. The sample was still characterized as having a good psychological functioning before the application of the program, which allows little variation in respect to emotional psychological suffering. When comparing the means of breast cancer survivors it was found, for example, that they clearly had a significant lower level of depressive symptoms, when compared with the norm. The same result was evidenced in relation to self-concept, since the sample included in this investigation showed significantly higher results when compared with the normative data of the Portuguese population. Therefore, in future studies, cut-off values can be defined for the selection and inclusion of cancer survivors in researches of efficacy, thus guaranteeing some emotional commitment, with the possibility of improvement with intervention. Although the limitations of the results, and of the experimental design itself, are not totally rigorous, the applied intervention protocol establishes a baseline for the expansion of later studies with greater methodological rigor. On the other hand, the present research revealed an evolution in relation to the current state of the art, mainly because in Portugal no therapeutic group studies are known that complement, in the same intervention, mindfulness-based strategies and psychoeducation in breast cancer survivors.

In addition to all the indications given for future studies, it could also be extremely pertinent to investigate whether the personality traits of breast cancer survivors influence the way of approaching techniques such as meditation and mindfulness, and even what personality characteristics will be predicted to be more appropriate to the used strategies. It could also be pertinent to include more moments of evaluation, with a longer time after the end of the intervention. Additionally, and knowing that changes in the immune system impact on the regression or progression of cancer [57], more studies are needed in order to analyze the effects on the immune function of cancer patients over a mindfulness program (for a review, see Silva & Teixeira, [69]). Ultimately, as Brown [77] suggests, consideration should be given to assessing participants' level of knowledge, in addition to measuring the effectiveness of psychological variables in group interventions, and to analyze the differences between types of breast cancer and the impact of psychological interventions at this level.

Considering our results, this study established the pertinence of intervening with breast cancer patients, since the results obtained by the group that was not subjected to any intervention, demonstrated a worse psychosocial adjustment in two domains. This study also contributed to the confirmation of the importance of evaluating the efficacy of group interventions in breast cancer survivors, and to increase the knowledge in the field of Psycho-Oncology. Thus, this study fills an investigation gap that has been mentioned, which concerns research in the field of cancer survival and psychosocial rehabilitation of breast cancer patients.

## References

1. Amorim C. Doença oncológica da mama: Vivências de mulheres mastectomizadas [Oncologic breast disease: Experiences of mastectomized women]. Doctoral thesis (unpublished), Instituto de Ciências Biológicas Abel Salazar, Porto, Portugal. 2007.



2. Findley PA. Global considerations. In: M Feuerstein, editor. *Handbook of cancer survivorship*. Bethesda: Springer. 2007.
3. Breaden K. Cancer and beyond: The question of survivorship? *Journal of Advanced Nursing*. 1997; 26: 978-984.
4. Feuerstein M. Defining cancer survivorship. *Journal of Cancer Survivorship*. 2007; 1: 5-7.
5. Takahashi T, Hondo M, Nishimura K, Kitani A, Yamano T, et al. Evaluation of quality of life and psychological response in cancer patients treated with radiotherapy. *Radiation Medicine*. 2008; 26: 396-401.
6. Avelar A, Derchain S, Camargo C, Lourenço L, Sarian L, et al. Qualidade de vida, ansiedade e depressão em mulheres com cancro de mama antes e após a cirurgia [Quality of life, anxiety and depression in women with breast cancer before and after surgery]. *Revista de Ciências Médicas*. 2006; 15: 11-20.
7. So W, Marsh G, Ling WM, Leung FY, Lo J, et al. Anxiety, depression and quality of life among Chinese breast cancer patients during adjuvant therapy. *European Journal of Oncology Nursing*. 2010; 14: 17-22.
8. Miovic M, Block S. Psychiatric disorders in advanced cancer. *American Cancer Society*. 2007; 110: 1665-1676.
9. Trevino LE, Carvajal MM. El cáncer como enfermedad multideterminada [Cancer as a multidetermined disease]. 2004. Retrieved from: <http://www.psicom.uson.mx/maestria/HTML/11-1-1.htm>.
10. Sivesind DM, Rohaly-Davis JA. *Coping with cancer: Patient issues*. Pittsburgh: Oncology Nursing Press. 1998.
11. Sprah L, Sostaric M. Psychosocial coping strategies in cancer patients. *Radiology and Oncology*. 2004; 38: 35-42.

12. Patrão I. O ciclo psico-oncológico no cancro da mama: Estudo do impacto psicossocial do diagnóstico e dos tratamentos [The psycho-oncological cycle in breast cancer: A study of the psychosocial impact of diagnosis and treatment]. Doctoral dissertation (unpublished). Instituto Superior de Psicologia Aplicada, Lisboa, Portugal. 2007.
13. Cordova M, Cunningham C, Carlson C, Andrykowaki M. Posttraumatic growth following breast cancer: A controlled comparison study. *Health Psychology*. 2001; 20: 176-185.
14. Michael Y, Berkman L, Colditz G, Holmes M, Kawachi I. Social networks and health-related quality of life in breast cancer survivors: A prospective study. *Journal of Psychosomatic Research*. 2002; 52: 285-293.
15. Pais-Ribeiro J. Qualidade de vida e doença oncológica [Quality of life and oncological disease]. In M. R. Dias, & E. Durá (Coord.), *Territórios da psicologia oncológica [Territories of oncological psychology]*. Lisboa, Portugal: Climepsi. 2001; 75-98.
16. Pais-Ribeiro J, Santos T. Impact of radical mastectomy versus tumorectomy of the quality of life early breast cancer. Oral communication presented at the XXVII International Congress of Psychology, Stockholm, Sweden. 2000.
17. Rowland J, Desmond K, Meyerowitz B, Belin T, Wyatt G, et al. Role of breast reconstructive surgery in physical and emotional outcomes among breast cancer survivors. *Journal of the National Cancer Institute*. 2000; 92: 1422-1429.
18. Ashing-Giwa K, Ganz PA, Petersen L. Quality of life of African-American and white long term breast carcinoma survivors. *Cancer*. 1999; 85: 418-426.
19. Carver CS, Smith RG, Petronis VM, Antoni MH. Quality of life among long-term survivors of breast cancer: Different

- types of antecedents predict different classes of outcomes. *Psycho-Oncology*. 2006; 15: 749-758.
20. Ganz PA, Guadagnoli E, Landrum MB, Lash TL, Rakowski W, et al. Breast cancer in older women: Quality of life and psychosocial adjustment in the 15 months after diagnosis. *Journal of Clinical Oncology*. 2003; 21: 4027-4033.
  21. Holzner B, Kemmler G, Kopp M, Moschen R, Schweigkofler H, et al. Quality of life in breast cancer patients - not enough attention for long-term survivors? *Psychosomatics*. 2001; 42: 117-123.
  22. Moreira H, Silva S, Canavarro C. Qualidade de vida e ajustamento psicossocial da mulher com cancro da mama: Do diagnóstico à sobrevivência [Quality of life and psychosocial adjustment of women with breast cancer: From diagnosis to survival]. *Psicologia, Saúde & Doenças*. 2008; 9: 165-184.
  23. Patrão I, Leal I. Abordagem do impacto psicossocial no adoecer de cancro da mama [Psychosocial impact approach in the sicken from cancer]. *Psicologia, Saúde & Doenças*. 2004; 5: 53-73.
  24. Rowland JH. Intrapersonal resources: Coping. In: JC Holland, JH Rowland, editors. *Handbook of psychooncology: Psychological care of patient with cancer*. Oxford: Oxford University Press. 1989; 44-57.
  25. Vos P, Garssen B, Visser A, Duivenvoorden H, Haes H. Early stage breast cancer: Explaining level of psychosocial adjustment using structural equation modeling. *Journal of Behavioral Medicine*. 2004; 27: 557-580.
  26. Classen C, Koopman C, Angell K, Spiegel D. Coping styles associated with psychological adjustment to advanced breast cancer. *Health Psychology*. 1996; 15: 434-437.

27. Varela M, Leal I. Estratégias de coping em mulheres com cancro da mama [Coping strategies in women with breast cancer]. *Análise Psicológica*. 2007; 3: 479-488.
28. Potter P, Perry A. Self-concept. In: P Potter, A Perry, editors. *Fundamentals of nursing*, 6<sup>th</sup> edn. St. Louis: Mosby. 2005; 500-521.
29. Kaiser K. The meaning of the survivor identity for women with breast cancer. *Social Science & Medicine Journal*. 2008; 67: 79-87.
30. Moore C, Hobbie W. Late effects of cancer treatment. In: CH Yarbrow, MH Frogge, M Goodman, SL Groenwald, C Skosey, editors. *Cancer nursing: Principles and practices*, 5<sup>th</sup> edn. Burlington: Jones & Bartlett Learning. 2000.
31. Shell J, Kusch S. Psychosocial issues, outcomes, and quality of life. In: S Otto, editor. *Oncology nursing*, 4<sup>th</sup> edn. St. Louis: Mosby. 2001; 948-972.
32. Nessims S, Ellis J. *Cancervive: The challenge of life after cancer*. Boston: Houghton Mifflin. 1991.
33. Souza J, Araújo T. Eficácia terapêutica de intervenção em grupo psicoeducacional: Um estudo exploratório em oncologia [Therapeutic efficacy of group psychoeducational intervention: An exploratory study in oncology]. *Estudos de Psicologia*. 2010; 27: 187-196.
34. Baum A, Andersen BL. *Psychosocial interventions for cancer*. Washington: American Psychological Association. 2001.
35. Trask PC, Paterson AG, Griffith KA, Riba MB, Schwartz JL. Cognitive-behavioral intervention for distress in patients with melanoma: Comparison with standard medical care and impact on quality of life. *Cancer*. 2003; 98: 854-864.
36. Broesen E, Ross L, Frederiksen K, Thomsen B, Dahlstrom K, et al. Psychoeducational intervention for patients with cuta-

- neous malignant melanoma: A replication study. *Journal of Clinical Oncology*. 2005; 23: 1270-1277.
37. Araújo F. Intervenção psico-educativa em sobreviventes de cancro da mama [Psycho-educational intervention in breast cancer survivors]. Master's thesis (unpublished), Universidade de Aveiro, Aveiro, Portugal. 2011.
  38. Appleton S, Watson M, Rush R, Garcia-Minaur S, Porteous M, et al. A randomized controlled trial of a psychoeducational intervention for women at increased risk of breast cancer. *British Journal of Cancer*. 2014; 90: 41-47.
  39. Okamura H, Fukui S, Nagasaka Y, Koike M, Uchitomi Y. Psychoeducational intervention for patients with primary breast cancer and patient satisfaction with information: An exploratory analysis. *Breast Cancer Research and Treatment*. 2003; 80: 331-338.
  40. Bultz B, Specia M, Brasher P, Geggie P, Page S. A randomized controlled of a brief psychoeducational support group for partners of early stage breast cancer patients. *Psycho-Oncology*. 2000; 9: 303-313.
  41. Torres A. A terapia de grupo na doença oncológica [Group therapy in oncological disease]. Doctoral thesis (unpublished). Universidade de Aveiro, Aveiro, Portugal. 2014.
  42. Dastan N, Buzlu S. Psychoeducation intervention to improve adjustment to cancer among Turkish atage I-II breast cancer patients: A randomized controlled trial. *Asian Pacific Journal of Cancer Prevention*. 2012; 13: 5313-5318.
  43. Meneses KD, McNees P, Loerzel VW, Su X, Zhang Y, et al. Transition from treatment to survivorship: Effects of a psychoeducational intervention on quality of life in breast cancer survivors. *Oncology Nursing Forum*. 2007; 34: 1007-1016.

44. Fillion L, Gagnon P, Leblond F, Gélinas C, Savard J, et al. A brief intervention for fatigue management in breast cancer survivors. *Cancer Nursing*. 2008; 31: 145-159.
45. Baer RA. Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*. 2003; 10: 125-143.
46. Matchim Y, Armer JM. Measuring the psychological impact of mindfulness meditation on health among patients with cancer: A literature review. *Oncology Nursing Forum*. 2007; 34: 1059-1066.
47. Grossman P, Niemann L, Schmidt S, Walach H. Mindfulness-based stress reduction and health benefits: A meta-analysis. *Journal of Psychosomatic Research*. 2004; 57: 35-43.
48. Zabora J, Brintzenhofe Szoc K, Curbow B, Hooker C, Piantadosi S. The prevalence of psychological distress by cancer site. *Psycho-Oncology*. 2001; 10: 19-28.
49. Kabat-Zinn J. *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York: Dell Publishing. 1990.
50. Shigaki CL, Glass B, Schopp LH. Mindfulness-based stress reduction in medical settings. *Journal of Clinical Psychology in Medical Settings*. 2006; 13: 209-216.
51. Leydon G, Eyles C, Lewith G. A mixed methods feasibility study of mindfulness meditation for fatigue in women with metastatic breast cancer. *European Journal of Integrative Medicine*. 2012; 4: 429-435.
52. Smith JE, Richardson J, Hoffman C, Pilkington K. Mindfulness based-stress reduction as supportive therapy in cancer care: Systematic review. *Journal of Advanced Nursing*. 2005; 52: 315-327.

53. Birnie K, Garland S, Carlson L. Psychological benefits for cancer patients and their partners participating in mindfulness-based stress reduction (MBSR). *Psycho-Oncology*. 2010; 19: 1004-1009.
54. Reibel DK, Greeson JM, Brainard GC, Rosenzweig S. Mindfulness based stress reduction and health-related quality of life in a heterogeneous patient population. *General Hospital Psychiatry*. 2001; 23: 183-192.
55. Witek-Janusek L, Albuquerque K, Chroniak K, Chroniak C, Durazo-Arvizu R, et al. Effect of mindfulness based stress reduction on immune function, quality of life and coping in women newly diagnosed with early stage breast cancer. *Brain, Behavior, and Immunity*. 2008; 22: 969-981.
56. Mackenzie M, Carlson L, Munoz M, Speca M. A qualitative study of self-perceived effects of Mindfulness-based Stress Reduction (MBSR) in a psychosocial oncology setting. *Stress and Health*. 2007; 23: 59-69.
57. Carlson L, Speca M, Patel K, Goodey E. Mindfulness-based stress reduction in relation to quality of life, mood, symptoms of stress, and immune parameters in breast and prostate cancer outpatients. *Psychosomatic Medicine*. 2003; 65: 571-581.
58. Carlson LE. Mindfulness-based interventions for coping with cancer. *Annals of the New York Academy of Sciences*. 2016; 1373: 5-12.
59. Lopes J, Almeida L, Pimentel F, Shannon D. Mindfulness-based intervention in cancer recovery in a Portuguese population – Preliminary results. Poster presented at the International Conference on Psycho-Oncology of the Portuguese League against Cancer, Coimbra, Portugal. 2014.

60. Torres A, Araújo F, Pereira A, Monteiro S. InMAMAGroup: Programa de intervenção de grupo para mulheres com cancro da mama - Manual técnico e prático [InMAMAGroup: Group intervention program for women with breast cancer - Technical and practical manual]. Lisboa: CEGOC. 2015.
61. Field AP. Discovering statistics using SPSS. Los Angeles: SAGE Publications. 2009.
62. Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*. 1983; 67: 361-370.
63. Pais-Ribeiro J, Silva I, Ferreira T, Martins A, Meneses R, et al. Validation study of a Portuguese version of the Hospital Anxiety and Depression Scale. *Psychology, Health & Medicine*. 2007; 12: 225-237.
64. Aaronson N, Ahmedzai S, Bergman B, Bullinger M, Cull A, et al. The European Organization for Research and Treatment of Cancer QLQ-C30: A quality of life-instrument for use in international clinical trials in oncology. *Journal of the National Cancer Institute*. 1993; 85: 365-375.
65. Pais-Ribeiro J, Pinto C, Santos C. Validation study of the Portuguese version of the QLC-C30-V.3. *Psicologia, Saúde & Doenças*. 2008; 9: 89-102.
66. Moorey S, Frampton M, Greer S. The cancer coping questionnaire: A self- rating scale for measuring the impact of adjuvant psychological therapy on coping behavior. *Psycho-Oncology*. 2003; 12: 331-344.
67. Torres A, Pereira A, Monteiro S. Estudo de validade da versão portuguesa do Questionário de Formas de Lidar com o Cancro [Portuguese validation study of the Cancer Coping Questionnaire]. *RIDEP*. 2014; 38: 199-217.



68. Vaz-Serra A. O Inventário Clínico de Auto-Conceito [The Clinical Inventory of Self-Concept]. *Psiquiatria Clínica*. 1986; 7: 67-84.
69. Silva E, Teixeira RJ. Mindfulness em psico-oncologia [Mindfulness in psycho-oncology]. In: E Albuquerque, AS Cabral, L Monteiro, editors. *Temas fundamentais em psico-oncologia [Fundamental themes in psycho-oncology]*. Lisboa: Lidel. 2015; 371-379.
70. Teixeira RJ, Pereira MG. Promoção da saúde na doença oncológica: Intervenção de redução do stress baseada no mindfulness [Health promotion in oncologic disease: Mindfulness-based stress reduction intervention]. *Psicologica*. 2009; 50: 253-275.
71. Spiegel D, Morrow GR, Classen C, Raubertas R, Stott B, et al. Group psychotherapy for recently diagnosed breast cancer patients: A multicenter feasibility study. *Psycho-Oncology*. 1999; 8: 482-493.
72. Scheier MF, Helgeson VS, Schulz R, Colvin S, Berga S, et al. Interventions to enhance physical and psychological functioning among younger women who are ending nonhormonal adjuvant treatment for early-stage breast cancer. *Journal of Clinical Oncology*. 2005; 23: 4298-4311.
73. Munstedt K, Manthey N, Sachsse S, Vahrson H. Changes in self-concept and body image during alopecia induced cancer chemotherapy. *Support Care Cancer*. 1997; 5: 139-143.
74. Aureliano WA. Corpo, saúde e trabalho: (Re)pensando os usos do corpo e os papéis femininos na experiência do câncer de mama [Body, health and work: (Re)thinking about the uses of the body and the female roles in the experience of breast cancer]. *Prática & Trabalho*. 2007; 26: 105-123.

75. Jones SA, Kroenke K, Krebs EE, Theobald DE, Wu J, et al. Longitudinal comparison of three depression measures in adult cancer patients. *Journal of Pain and Symptom Management*. 2013; 45: 71-82.
76. Petticrew M, Bell R, Hunter D. Influence of psychological coping on survival and recurrent in people with cancer: Systematic review. *British Medical Journal*. 2002; 9: 1-10.
77. Brown NW. Psychoeducational groups. In: SA Wheelan, editor. *The handbook of group research and practice*. Thousand Oaks: Sage Publications. 2005; 511-529.