



Emotional state and psychological flexibility in breast cancer survivors



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ABSTRACT

Purpose: This study analyses the premise that less time spent carrying out valuable activities and inflexible avoidance of thoughts, feelings and memories related to the oncological process may play an important role in the emotional problems of cancer survivors.

Methods: Emotional state was evaluated, as was quality of life and psychological flexibility in a sample of 122 breast cancer survivors ($M_{age} = 52.40$; $SD_{age} = 7.26$). The analysis was carried out using a cross-sectional predictive study.

Results: Approximately half of those in the sample suffered from clinically significant emotional distress. The predictor variables selected explained a high percentage of the variability in emotional problems and quality of life (51.10–77.10%).

Conclusion: Avoidance explained a high percentage of the variance in anxiety, depression and general distress. A lower degree of participation in valuable activities contributed, more specifically, to explaining variability in depression. The quantity and availability of environmental reinforcement was closely related to quality of life. A decisive contribution towards promoting emotional well-being and quality of life can be made by nursing action aimed at diminishing those avoidance strategies related to the oncological experience which may distance patients from daily activities which are gratifying and congruent with their values.

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1. Introduction

In Europe, it is calculated that every year around 492 women out of every 100,000 are diagnosed with breast cancer. Breast cancer affects many women during the years dedicated to working and raising a family. On average, 20% of cases occur in women under 50 years of age, 37% occur between the ages of 50 and 64 and the remaining cases in women above this age (Ferlay et al., 2013). Five years after the diagnosis, more than 75% of these are still alive (Berrino et al., 2007). However, a large percentage of the survivors suffer from physical and psychological problems related to the cancer and its treatment (Aaronson et al., 2014).

The terms “cancer survivor” and “cancer survivorship” refer to

the situation and needs of patients following the diagnosis and oncological treatment. In this study, “cancer survivors” refers to those patients who, after been diagnosed as having cancer, have completed the treatment, be it surgery, chemotherapy or radiotherapy and are now disease-free. This is the definition proposed by the American Society of Clinical Oncology (2013, cited by Wronski, 2015).

Although the problems experienced by each person are different, it is common for patients, having completed treatment, to suffer from physical complaints, tiredness and a reduction in attention span and ability to concentrate. Furthermore, body image is also frequently affected. These physical repercussions, frequently permanent, can affect the ability to maintain important roles of those suffering from them (Fernández et al., 2011; Casso et al., 2004).

When faced with these problems and limitations, as well as the initial experience of receiving the diagnosis and cancer treatment, it is common for people to experience unpleasant thoughts, feelings and memories. One common reaction to these experiences,

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shaped and reinforced by the cultural context, is to try to avoid them. Although the objective of attempts to avoid/control unpleasant experiences is to alleviate the discomfort they cause, these have in fact been associated with emotional problems (Donovan-Kicken and Caughlin, 2011). Not only do such attempts not achieve the relief sought but in fact generate more discomfort, playing a role in maintaining it whilst limiting the patient's involvement in vital areas.

In cancer survivors, there exists, therefore, a possible scenario characterized by a decrease in involvement in valuable activities and a response pattern focused on the avoidance of particular thoughts, feelings and memories. This situation may be at the root of their emotional problems.

According to the psychological flexibility model (Hayes et al., 1999), psychological inflexibility is the cause of human suffering and maladapted functioning. This model suggests that suffering occurs when a person's attempts to analyse and understand his/her problems cause that person to become distanced from what is relevant to them. When people are psychologically inflexible, it follows that they find it more difficult "to detach themselves from unworkable rules, to accept what cannot be changed inside and outside their skin, to live in the present moment and attend to what is relevant, to make contact with a deeper sense of self as a locus of perspective taking, and to choose and explicate closely held life values and organize their life's actions around those values" (Hayes et al., 2012, pp.64). Psychological inflexibility is marked by six interrelated processes (experiential avoidance, cognitive fusion, attachment to conceptualized self, lack of contact with the present moment, lack of values clarity, unworkable action). Of these processes, Experiential Avoidance (EA) has received the bulk of empirical attention. Experiential avoidance is defined as the "phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioural predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them" (Hayes et al., 1996, p. 1154). By using the avoidance strategy, although emotional distress is relieved in the short term, patients also reduce the possibility of maintaining the rewarding elements of what, until then, has been their lives. Furthermore, the greater the effort made to control/avoid an experience (thoughts, emotions), the more importance it adopts, with the result that patients may become trapped by the very conditions which they are attempting to avoid, leading, contrary to their intentions, to an increase in the distress (Hayes et al., 1996). EA has been hypothesized to play an important role in the etiology, maintenance and modification of various forms of psychopathology and has been suggested as a core vulnerability factor for emotional distress (for reviews, see Chawla and Ostafin, 2007). The opposite response to Experiential Avoidance is Acceptance-Activation. Acceptance can be defined as: "actively contacting psychological experiences -directly, fully, and without needless defense - while behaving effectively" (Hayes et al., 1996, p. 1157). Contacting experiences in this way requires some kind of Activation, whether it be by confronting, despite the distress, those tasks/situations previously avoided, or by abandoning the struggle to control or suppress thoughts/emotions seen as threatening in order to focus on life situations. Activation, that is maintaining contact with experiences/conditions of life and consequently with associated sources of reward, releases the patient from the experiential avoidance trap (Jacobson et al., 2001). There is evidence to suggest that focusing treatment on reducing EA and increasing Activation can lead to improvements in emotional disorders. Acceptance and Commitment Therapy (ACT; Hayes et al., 1999) aims to reduce or eliminate experiential avoidance and increase patients' commitment to what is of value to them (Gillanders et al., 2015; Swash et al., 2017). The

coincidence of ACT goals and the difficulties faced by oncologic patients suggests that it could be an ideal treatment for the emotional difficulties of these patients (Arch and Mitchell, 2016; Hulbert-Williams et al., 2015).

According to this transdiagnostic approach, Experiential Avoidance and a reduction in Activation are two interrelated behaviour patterns involved in psychological inflexibility. Consistent with this proposition, we believe that both conditions may play a leading role in the emotional problems experienced by cancer survivors. This study analyses this premise by studying the relationships between emotional distress, in particular, anxiety and depression, and those patterns of psychological inflexibility. The ultimate objective is to enhance understanding of, and improve possible ways of dealing with, the emotional problems of breast cancer survivors.

2. Method

2.1. Design and participants

A cross-sectional predictive design was used (Ato et al., 2013). Participants recruited as cancer survivors attended the Oncology Department of the San Agustín Hospital (Avilés, Spain) or the Radiotherapy Department of the Central University Hospital of Asturias (Oviedo, Spain) for a scheduled medical review. The following inclusion criteria were established: breast cancer survivors, aged between 18 and 70 years, whose clinical situation was that of an oncological disease-free stage. Confirmed by up-to-date medical report. Exclusion criteria: physical and/or cognitive deterioration which might hinder understanding and completing of measuring instruments.

The final sample was made up of 122 women, aged between 34 and 67 years of age ($M = 52.40$; $SD = 7.26$). The whole sample had suffered from breast cancer. The most frequent combined treatments were surgery, chemotherapy, radiotherapy and hormone therapy (32.79%); and surgery, radiotherapy and hormone therapy (28.69%). The time elapsed since the end of treatment ranged from 1 month to 8 years.

2.2. Measuring instruments

- *Hospital Anxiety and Depression Scale (HADS; Zigmond and Snaith, 1983)* is a 14-item scale with 2 subscales - Anxiety (HADS-A) and Depression (HADS-D). The total HADS score ranges from 0 to 42 while the subscales ranging from 0 to 21. In the depression and anxiety subscales, scores of 8–10 indicate probable and scores over 10 indicate clinical cases. In psychoncology, the HADS score has been proven to be an accurate instrument in identifying cancer patients with depression and anxiety (Walker et al., 2007).
- *18-item Brief Symptom Inventory (BSI-18; Derogatis, 2001)*. Consists of 18 items, which are answered using a 5-point Likert scale. Responses to the items allow scores to be obtained in 3 dimensions (Somatization, Depression and Anxiety) and a Global Severity Index (GSI), which resumes the general level of psychological distress. A T score ≥ 63 in the GSI or in two of the dimensions indicates a clinical case. Several studies show the good reliability and validity of the inventory and endorse its use with Spanish samples (Galdón et al., 2008).
- *EORTC QLQ-C30 version 3.0 (Aaronson et al., 1993)* is a questionnaire designed to assess the quality of life of cancer patients and comprises a global health status/QoL scale (2 items) and five functional scales: physical functioning (5 items), role functioning (2 items), emotional functioning (4 items), cognitive functioning (2 items) and social functioning (2 items). There are

three symptom scales - fatigue (3 items), nausea and vomiting (2 items) and pain (2 items) - and 6 single items relating to dyspnea, insomnia, loss of appetite, constipation, diarrhea and financial difficulties. Of the 30 items, 28 are scored on four-point Likert scales and the remaining two items (29 and 30, for global health status) are scored on modified seven-point linear analog scales. Scores were derived from mutually exclusive sets of items, with scale scores ranging from 0 to 100 after linear transformation. Higher scores for the functional and global health status/QoL scales indicate a higher level of functioning and a better QoL, respectively, whereas higher scores in symptom scales represent a higher level of symptoms. Various studies have tested the psychometric guarantees offered by the instrument with Spanish samples (Arrarás et al., 1995).

- *Short form of the 1978 Beck Depression Inventory (BDI-IA) based on the cognitive-affective subscale (BDI-IA-SCA; Beck and Steer, 1993)*. Consists of the first thirteen items of the BDI-IA, referring to affective-cognitive symptoms of depression. Beck and Steer (1993) recommended its use when evaluating depression in patients with medical conditions. This instrument showed an adequate degree of criterion validity when distinguishing between those hospitalized patients with medical conditions who were and were not suffering from depressive disorders. Sanz and García-Vera (2007) found α coefficients > 0.70 in three Spanish samples and an acceptable index of diagnostic precision (area under the ROC curve = 0.81). Based on the total score, four levels of severity can be distinguished: minimal (0–6), light (7–11), moderate (12–20) and serious (21–39). This data confirms the suitability of this instrument when it is important that the instrument be administered quickly.
- *Environmental Reward Observation Scale (EROS; Armento and Hopko, 2007)*. A self-administered questionnaire which supplies information regarding the quantity and availability of reinforcement received from the patient's environment. It consists of 10 items, answered using a 4-option Likert scale. Higher scores indicate a greater quantity and availability of reinforcement. Here the Spanish adaptation of the EROS was used (Barraca and Pérez-Álvarez, 2010), for which data is available confirming its reliability ($\alpha = 0.86$) and validity (high correlations with the BDI-II, BADS, STAI-E/R, AAQ).
- *Acceptance and Action Questionnaire - II (AAQ-II; Bond et al., 2011)*. This is a self-rating questionnaire designed to measure experiential avoidance and psychological inflexibility. It consists of 7 items, answered using a 7-point Likert scale. High scores indicate a greater degree of experiential avoidance and psychological inflexibility. The Spanish translation of this questionnaire showed good internal consistency ($\alpha = 0.88$) and scores showed significant relationships with general scales measuring psychopathological state and quality of life (Ruiz et al., 2013).
- *Behavioural Activation for Depression Scale (BADS; Kanter et al., 2007)*. Consists of 25 items measuring four dimensions: Activation, Avoidance/Rumination, Work/School Impairment and Social Impairment. A 7-point Likert scale is used. The scale provides scores for each of the dimensions and also a total score. High scores in Activation and in the total score show a higher level of activation, whilst higher scores in the other dimensions indicate a greater degree of impairment. The Spanish adaptation of the BADS (Barraca et al., 2011) showed validity evidence (statistical significant correlations with the BDI-II, the AAQ, the ATQ, the MCQ-30, the STAI and the EROS were found) and acceptable internal consistency (between $\alpha = 0.76$ and $\alpha = 0.90$). Factor analysis confirmed the four dimensions of the original instrument.

2.3. Procedure

Over a 6-month period, a consecutive preselection of cancer survivors was made from patients with a scheduled hospital appointment. All those women who fulfilled the selection criteria were informed, verbally and in writing, of the objectives and procedures of the study and of the guarantees regarding confidentiality in the evaluation and treatment of data. They were then asked to give their written consent. Each participant filled in the evaluation tests independently. All the participants, in line with a written protocol, were given the same instructions. The evaluation room was suitable, in terms of facilities and privacy, to allow the tests to be carried out adequately. None of the participants received additional help to fill in the questionnaires. The tests took approximately 20–30 min.

2.4. Ethics statement

This study was carried out in accordance with the recommendations of Research Ethics Committee of the Principality of Asturias. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by the Research Ethics Committee of the Principality of Asturias, Spain (Ref. 45/14).

2.5. Data analysis

Depending on the type of variable, the corresponding descriptive statistics were obtained. Participants whose scores showed clinical anxiety, depression or distress cases were identified. In none of the sociodemographic and clinical conditions were statistically significant differences found between participants with or without emotional distress. Student's *t*-test was used to determine group differences between participants with or without emotional distress in all psychological flexibility measuring instruments. In the cases where homoscedasticity assumption was violated, degrees of freedom were corrected. An additional bootstrapping ($n = 1000$) was carried out to study those differences simulating the analysis on a larger sample.

The Pearson correlation coefficients were calculated between the quantitative variables.

In order to determine the variables which predict anxiety, depression, general distress and quality of life, multiple linear regression analyses were carried out using a stepwise method. In order to avoid biased results, influential outliers were removed from the database when carrying out linear regression based on both the standardized residuals and Cook's distance criteria. Data analysis was performed with the SPSS statistical package (V.22) and a 5% a priori Type I error.

3. Results

3.1. Anxiety, depression and general distress

Table 1 shows the descriptive statistics of the sample for anxiety, depression and general distress. The HADS scores reflect the absence of anxiety in 45.10% of the sample, and indicate that anxiety was probable or clinically significant in 54.90%. The results in the depression subscale indicate that 74.60% were not suffering from depression, and that probable or clinically significant depression was shown by 25.40%. According to the scores in the BSI-18, 41.00% of the sample showed general distress, 43.40% somatization, 33.90% depression and 31.40% anxiety. The results in the BDI-IA-SCA indicate that 61.00% of the participants showed minimal depression, 23.80% mild depression, and 15.30% moderate or serious depression.

Table 1
Descriptive statistics in the anxiety, depression and general distress scales.

	HADS-A	HADS-D	BSI-18 S	BSI-18 D	BSI-18 A	BSI-18 GSI	BDI-IA-SCA
N	122	122	122	122	122	122	106
M	8.23	4.68	5.66	6.33	6.29	18.27	6.14
SD	4.40	3.98	4.76	5.99	4.99	14.07	5.63

Note. HADS-A: Anxiety subscale of the HADS. HADS-D: Depression subscale of the HADS. Subscales and global scale of the BSI-18: BSI-18 S: Somatization. BSI-18 D: Depression. BSI-18 A: Anxiety. BSI-18 GSI: Global Severity Index. BDI-IA-SCA: Short form based on the cognitive-affective subscale of BDI. N = Sample size. M = Mean. SD = Standard Deviation.

Table 2
Descriptive statistics in the scales/items of the QLQ-C30.

	QL2	PF2	RF2	EF	CF	SF	FA	NV	PA	DY	SL	AP	CO	DI	FI
M	68.11	83.29	79.44	65.29	69.15	73.97	32.96	4.03	26.17	13.61	43.42	10.47	18.61	9.09	23.14
SD	21.32	15.91	25.72	28.10	29.32	29.96	25.74	13.49	27.96	23.70	36.45	22.37	28.60	22.77	35.45

Note. QL2: Global health status/QoL. PF2: Physical functioning. RF2: Role functioning. EF: Emotional functioning. CF: Cognitive functioning. SF: Social functioning. FA: Fatigue. NV: Nausea and vomiting. PA: Pain. DY: Dyspnoea. SL: Insomnia. AP: Appetite loss. CO: Constipation. DI: Diarrhea. FI: Financial difficulties. M = Mean. SD = Standard Deviation.

3.2. Quality of life

The mean scores in the QLQ-C30, evaluating the participants' general quality of life and role, social, cognitive and emotional functionality were around or below 70 out of 100 points, with insomnia and fatigue having a notable presence (Table 2). Quality of life appeared to be deteriorated.

3.3. Psychological flexibility

The mean scores in the EROS, the AAQ-II and the BADS of the participants identified as clinical case of anxiety (HADS-A), depression (HADS-D; BDI-IA-SCA) or emotional distress (BSI-18 GSI), indicated in all cases greater psychological inflexibility than the rest of participants. A comparison between the participants with or without emotional distress was statistically significant in all cases, except in two of those related to activation (BADS-A) (Table 3). Given the "reduced" number of participants, a

bootstrapping was applied (n = 1000), confirming the robustness and stability of these results in terms of the differences found.

3.4. Relationship between variables

3.4.1. Correlations

The correlations between the scores for anxiety, depression, general distress and quality of life were high and significant. The highest correlations between the scores in psychological flexibility were found between the EROS and the AAQ-II, the AAQ-II and the Avoidance/Rumination dimension of the BADS, between this latter dimension and the Social Impairment dimension of the BADS; and between the Work/School Impairment dimension of the BADS and both the EROS and the AAQ-II (Table 4).

3.4.2. Multiple linear regression

Previous results obtained by the research group (Fernández et al., 2011, 2013) and data from the literature was used to detect

Table 3
Differences between participants with or without emotional distress in psychological flexibility variables. Student's t-test.

		HADS-A		HADS-D		BSI-18 GSI		BDI-IA-SCA	
		0–7	≥8	0–7	≥8	<63	≥63	0–6	≥7
EROS	M (n)	33.47 (53)	25.75 (64)	31.60 (87)	22.43 (30)	32.34 (68)	24.96 (49)	32.38 (61)	23.75 (40)
	t (df)		7.42 (115)		7.88 (115)		6.86 (115)		8.21 (99)
	Sig.		<0.001		<0.001		<0.001		<0.001
AAQ-II	M (n)	13.83 (53)	28.20 (64)	17.69(87)	33.30 (30)	15.88 (68)	29.76 (49)	16.43 (61)	32.53 (40)
	t (df)		-9.18(115)		-10.33 (115)		-8.52 (115)		-10.38 (99)
	Sig.		<0.001		<0.001		<0.001		<0.001
BADS- A	M (n)	26.37 (53)	23.09 (64)	25.68(87)	21.37 (30)	26.13 (68)	22.42 (49)	25.19 (74)	22.44 (40)
	t (df)		1.86 (115)		2.16 (115)		2.10 (115)		1.45 (99)
	Sig.		0.65		0.033		0.038		0.15
BADS -WSI	M (n)	3.85 (53)	11.88 (64)	6.30 (87)	13.87 (30)	5.26 (68)	12.37 (49)	5.43 (61)	14.4 (40)
	t (df)		-7.05 (115)		-5.25 (115)		-5.36 (115)		-5.69 (99)
	Sig.		<0.001		<0.001		<0.001		<0.001
BADS- SI	M (n)	1.64 (53)	8.64 (64)	2.54 (87)	13.97 (30)	2.73 (68)	9.27 (49)	2.13 (61)	11.13 (40)
	t (df)		-5.63 (115)		-6.41 (115)		-4.48 (115)		-5.40 (99)
	Sig.		<0.001		<0.001		<0.001		<0.001
BADS- A/R	M (n)	8.42 (53)	23.11 (64)	12.48 (87)	27.97 (30)	10.10 (68)	25.27 (49)	11.67 (61)	26.40 (40)
	t (df)		-7.85 (115)		-6.83 (115)		-7.93 (115)		-6.93 (99)
	Sig.		<0.001		<0.001		<0.001		<0.001

Note. HADS-A: Anxiety subscale of the HADS. HADS-D: Depression subscale of the HADS. BSI-18 GSI: Global severity index of the BSI-18. BDI-IA-SCA: Short form based on the cognitive-affective subscale of BDI. EROS: Environmental Reward Observation Scale. AAQ-II: Acceptance and Action Questionnaire–II. Dimensions BADS: A: Activation. WSI: Work/School Impairment. SI: Social Impairment. A/R: Avoidance/Rumination. M = Mean. n = Sample size. df = degrees of freedom.

Table 4

Pearson correlation coefficients between the scales of anxiety, depression, general distress, quality of life, fatigue, pain, insomnia and psychological flexibility.

	HADS-A	HADS-D	BSI-18 GSI	QL2	FA	PA	SL	BDI-IA-SCA	EROS	AAQ-II	A	WSI	SI
HADS-D	0.693**												
BSI-18 GSI	0.761**	0.734**											
QL2	-0.551**	-0.553**	-0.635**										
FA	0.483**	0.622**	0.688**	-0.670**									
PA	0.227*	0.387**	0.446**	-0.474**	0.686**								
SL	0.521**	0.493**	0.573**	-0.547**	0.637**	0.506**							
BDI-IA-SCA	0.669**	0.766**	0.686**	-0.530**	0.491**	0.206*	0.427**						
EROS	-0.645**	-0.812**	-0.590**	0.475**	-0.539**	-0.275**	-0.403**	-0.703**					
AAQ-II	0.765**	0.794**	0.704**	-0.503**	0.591**	0.307**	0.458**	0.802**	-0.782**				
A	-0.227*	-0.401**	-0.279**	0.280**	-0.223*	-0.260**	-0.191*	-0.263**	0.452**	-0.259**			
WSI	0.512**	0.596**	0.513**	-0.469**	0.495**	0.290**	0.252**	0.582**	-0.623**	0.620**	-0.374**		
SI	0.501**	0.653**	0.519**	-0.422**	0.406**	0.098	0.372**	0.672**	-0.574**	0.578**	-0.289**	0.497**	
A/R	0.675**	0.670**	0.658**	-0.442**	0.484**	0.204*	0.445**	0.694**	-0.616**	0.757**	-0.175	0.596**	0.626**

Note. HADS-A: Anxiety subscale of the HADS. HADS-D: Depression subscale of the HADS. BSI-18 GSI: Global severity index of the BSI-18. QLQ-C30: QL2: Global health status/ QoL. FA: Fatigue. PA: Pain. SL: Insomnia. BDI-IA-SCA: Short form based on the cognitive-affective subscale of BDI. EROS: Environmental Reward Observation Scale. AAQ-II: Acceptance and Action Questionnaire – II. Dimensions BADS: A: Activation. WSI: Work/School Impairment. SI: Social Impairment. A/R: Avoidance/Rumination. * $p < 0.05$ (bilateral). ** $p < 0.01$ (bilateral).

Table 5

Data of multiple linear regression equations.

Dep. var.	Pred. var.	N	β	Typical Error	Sig.	Tolerance	R^2
HADS-A	AAQ-II	112	0.707	0.023	<0.001	0.767	0.670
	SL		0.230	0.007	<0.001	0.767	0.711
HADS-D	EROS	112	-0.395	0.04	<0.001	0.388	0.655
	AAQ-II		0.327	0.025	<0.001	0.352	0.737
	FA		0.165	0.008	0.004	0.651	0.755
	BADS SI		0.151	0.026	0.008	0.665	0.768
BSI-18 GSI	AAQ-II	113	0.526	0.082	<0.001	0.605	0.607
	FA		0.279	0.039	<0.001	0.487	0.690
	SL		0.168	0.026	0.015	0.566	0.704
BDI-IA-SCA	AAQ-II	90	0.557	0.027	<0.001	0.496	0.697
	BADS SI		0.190	0.033	0.003	0.659	0.742
	BADS WSI		0.209	0.035	0.002	0.600	0.762
	SL		0.124	0.007	0.036	0.751	0.771
QL2	FA	114	-0.547	-0.064	<0.001	0.697	0.467
	EROS		0.249	0.245	0.002	0.697	0.511

Note. Dep. var.: Dependent Variable. Pred.var.: Predictor variables. N = sample size. β = Standardized coefficient. R^2 = Adjusted coefficient of determination. HADS-A: Anxiety subscale of the HADS. HADS-D: Depression subscale of the HADS. BSI-18 GSI: Global severity index of the BSI-18. BDI-IA-SCA: Short form based on the cognitive-affective subscale of BDI. QLQ-C30: QL2: Global health status/QoL. FA: Fatigue. SL: Insomnia. EROS: Environmental Reward Observation Scale. AAQ-II: Acceptance and Action Questionnaire – II. Dimensions BADS: A: Activation. WSI: Work/School Impairment. SI: Social Impairment. A/R: Avoidance/Rumination.

the predictor variables. These included the EROS, the AAQ-II, each of the dimensions of the BADS, the subscales of fatigue (FA) and pain (PA) and the insomnia item (SL) of the QLQ-C30. These fulfilled requirements regarding assumption of normality and multivariable homoscedasticity. Table 5 shows the results of the linear regression analysis for each of the dependent variables.

The variables AAQ-II and SL determine 71.10% of the variability in the scores in the HADS anxiety subscale. The relative importance in predicting the score in this subscale is greater for the AAQ-II ($\beta = 0.707$). In the case of the depression subscale, the EROS, AAQ-II, FA and BADS SI variables explain 76.80% of the differences in the scores, the EROS ($\beta = -0.395$) being the greatest predictor.

Three variables, AAQ-II, FA, and SL determine 70.40% of the variability in the scores in the BSI-18 GSI. The variable with the greatest relative importance in predicting the score in the BSI-18 GSI is AAQ-II ($\beta = 0.526$).

The variables AAQ-II, BADS SI, BADS WSI and SL explain 77.10% of the scores in the BDI-IA-SCA, highlighting the AAQ-II ($\beta = 0.557$) as the greatest predictor.

Finally, the analysis shows that 51.10% of the variability in QL2 is determined by the FA and the EROS. In this case, FA ($\beta = -0.547$)

has greater relative importance in predicting the score.

4. Discussion

In cancer survivors, the abandoning of or reduced involvement in everyday activities and inflexible avoidance of thoughts, feelings and memories related to the oncological process is thought to be a major factor in the emergence of emotional problems. This study was designed to evaluate patterns of experiential avoidance and loss of activation amongst cancer survivors and their relationship with emotional distress, anxiety, depression and perceived quality of life.

The participants chosen for this study were women who had overcome breast cancer. This was for two main reasons. Firstly, breast cancer is the most common cancer in women (Ferlay et al., 2013) and, secondly, it is also amongst the cancers with the highest survivorship rate after 5 years (Berrino et al., 2007). Although the results obtained could be considered relevant in terms of the psychological wellbeing of cancer survivors, it is important to restrict any generalization of the results to this specific oncological population, at least until data for more heterogeneous samples

becomes available. However, this does not detract from the relevance of the results, especially bearing in mind the potential importance that these could have for such a large sector of the population as that of breast cancer survivors.

Approximately half of the people in the sample were shown to be suffering from clinically significant emotional distress. The results were similar regardless of the different evaluation instruments employed, all of which are widely-used and offer adequate score guarantees. A greater presence of anxiety than depression was found, coinciding with findings obtained in numerous studies. A meta-analysis (Mitchell et al., 2013) of a total of 43 studies carried out between 1995 and 2013 found a greater prevalence of anxiety than depression in cancer survivors, although the prevalence found, both for anxiety and depression, was less than that shown in this study. It is important to remember that variability in published results may be the result of study design or of the measuring procedures used (Walker et al., 2013). There is, nevertheless, no doubt that a high percentage of survivors suffer from emotional problems.

Most other studies have shown the quality of life of breast cancer survivors to be satisfactory in the long term. Nonetheless, some authors related the deterioration found to adjuvant therapy (Casso et al., 2004) whilst in another analysis of the quality of life of breast cancer survivors, Ganz et al. (2002) found a slight, but not significant, worsening of physical and role functioning, which they attributed to changes related to age rather than to the oncological process. Other authors have concluded that those whose emotional state is more seriously affected appear less likely to gradually recover their day-to-day activities (Scheffold et al., 2014). The results obtained suggest that the quality of life of the participants in this study may have improved since finalizing the oncological treatment. Be that as it may, their quality of life was worse than that of participants in previous studies involving Spanish survivors (Arrarás et al., 1995). It is also possible that this lower quality of life may have been the result of certain particular characteristics of the participants. These may have included experiential avoidance patterns. It must be remembered that the avoidance of experiences such as fears, losses etc. can lead to a reduction in participation in everyday situations such as household chores, work or leisure activities. In other studies, it has been observed that cancer-related cognitions and avoidance treatment were the strongest predictors of quality of life and depression (Gillanders et al., 2015). Rumination, as a strategy to avoid adverse situations/experiences, has been clearly and repeatedly associated with the onset and subsequent development of depression (Spinhoven et al., 2014). Like any form of avoidance, it can lead to greater social isolation and, consequently, to reduced exposure to environmental sources of reward. Furthermore, it is a strategy associated with the absence of attempts to actively solve problems, which also leads to reduced social participation (Martell et al., 2001). Similarly, a meta-analysis (Aldao et al., 2010) examined the role of six different emotional regulation strategies (acceptance, avoidance, problem solving, re-evaluation, rumination and suppression) in the symptoms of four psychopathologies (anxiety, depression, eating disorders and substance abuse) and found that maladaptive strategies were more strongly associated with psychopathology than adaptive strategies. Specifically, the effect size for rumination was large, while avoidance, problem solving and deletion was medium to large. The authors concluded that it was rumination, avoidance and difficulties with re-evaluation that were most strongly associated with depression and anxiety. In short, all these data suggest the importance of a transdiagnostic approach in studies of psychopathology.

As a result, certain role functions are progressively lost, as are the potential rewards associated with those functions. The loss of rewards is directly linked to emotional disorders and a low quality

of life (Jacobson et al., 2001). With oncological patients in particular, changes in interpersonal relationships and in leisure time has consistently been linked to a depressed emotional state, negative assessment of quality of life, tiredness, insomnia and pain (Fernández et al., 2011, 2013; Ng et al., 2015).

Given that the AAQ-II has been proved to be adequate for measuring experiential avoidance in populations suffering from moderate depression or anxiety (Fledderus et al., 2012) and bearing in mind the high percentage of participants in this study with clinically significant emotional distress, it is possible to affirm that our results coincide with those of other studies, which have concluded that the presence of experiential avoidance is greater in clinical samples (Ruiz et al., 2013) and that anxiety and depression are closely associated with cancer (Cernvall et al., 2016). All of this suggests that our results may provide new evidence regarding the role played by avoidance in psychological problems and, in particular, in breast cancer survivors.

It has been demonstrated that experiential avoidance patterns are common to all emotional problems (Hayes et al., 2012), whilst reduced involvement in valuable activities is more specific to depression (Jacobson et al., 2001). Our results, therefore, indicate a clear pattern of experiential avoidance in a sample characterized by a high degree of emotional distress. It is possible that the maintaining of valuable everyday activities observed in the sample was in fact acting as protection against depression. All this data suggests that psychological inflexibility is indeed a transdiagnostic model.

The high and significant correlations found between the following scores must be interpreted in the light of this transdiagnostic model. Firstly, all those used to evaluate emotional distress (HADS, BSI-18 GSI and BDI-IA-SCA), which had previously been observed in other studies (Andreu et al., 2008). Secondly, the scores for psychological inflexibility, which show the correlation between AAQ-II and the EROS and Work/School Impairment dimension of the BADS; and between Avoidance/Rumination and the Social Impairment dimension of the BADS. The strong relationship between those variables would confirm the inverse relationship between avoidance and involvement in valuable activities in important areas of life. Similar significant correlations had already been found in other studies (Barraca and Pérez-Álvarez, 2010; Barraca et al., 2011), although these were not so high. This fact would show the importance that the experience of cancer has in explaining avoidant behaviors. Thirdly, high and statistically significant correlations were also found between the avoidance scales (AAQ-II, BADS: Avoidance/Rumination) and the scores for emotional problems. In this case the correlations indicate a positive relationship between avoidance and emotional problems and a negative relationship between avoidance and quality of life. These results coincide with others published (Gillanders et al., 2015; Hulbert-Williams and Storey, 2016) which confirm the role played by avoidance of negative emotional experiences in the various emotional difficulties experienced by cancer survivors.

The strong negative relationship between emotional difficulties and the amount and availability of environmental reinforcement (EROS) is particularly noteworthy, as is the close positive relationship between environmental reinforcement and quality of life. These same relationships had previously been identified by Barraca and Pérez-Álvarez (2010) in the general population. In the specific case of oncological patients, significant evidence of the relationship between social reinforcement and quality of life has been found (Ng et al., 2015). In this sense, the EROS scores could be said to be the best predictor of the quality of life of study participants.

Psychological activation, in the sense of involvement in valuable life activities, measured using the BADS, showed a negative relationship with depression, anxiety and general distress. Effects on work/schooling and on social life (BADS) did, however, show a close

relationship with all the scores related to emotional distress and a negative relationship with quality of life. These results confirm the premise that there exists a relationship between abandonment/reduction of involvement in valuable everyday activities and emotional difficulties, particularly depression, in cancer patients. The results of a previous study (Fernández et al., 2011, 2013) confirmed this idea, finding both the aforementioned relationship and the alternative, that is, the absence of clinically significant emotional problems in those oncological patients who maintained their involvement in relevant activities.

Fatigue and insomnia (QLQ-C30) have a significant positive relationship with emotional difficulties and a significant negative relationship with quality of life. In line with these results, Jones et al. (2016) found that approximately 63% of cancer survivors with significant levels of fatigue also showed clinically relevant symptoms of depression and anxiety, and Sharma et al. (2012) found a strong association between sleeping problems and emotional distress in oncological patients.

The results of the regression analysis indicate that scores in the instruments measuring psychological inflexibility predict an extremely high percentage of the variability in the scores of instruments measuring emotional difficulties. All the analyses, except quality of life, include, amongst the predictor variables, at least one of the avoidance scales. These results confirm the role of avoidance as a common element in the various emotional problems. The values in the EROS were found to be a predictor variable of the scores in the HAD-D. Additionally, the values in the BADS-SI and the BADS-WSI were also found to be predictor variables of scores in the BDI-IA-SCA. These results corroborate the role played by reduced participation in rewarding activities in cases of depression.

Fatigue (QLQ-C30) was amongst the predictor variables of the clinical variables HADS-D, BSI-18 GSI and QL2. This result suggests that fatigue also plays an important part in the emotional difficulties and the quality of life of cancer survivors. It is possible that this symptom may hinder participation in valuable activities and favour a context which favours avoidance and rumination. Gillanders et al. (2015) also offer regression analysis results which confirm the role played by psychological flexibility in the emotional problems and quality of life of patients following cancer treatment. They state that concern related to the disease and cognitive avoidance are strong predictors of scores in depression and quality of life and that cognitive fusion explains a high percentage of the variance in anxiety scores.

Our study does have certain limitations, the main one being that the participants were not selected at random, thus limiting the extent to which the results can be generalized. Nevertheless, the characteristics of the study and the reliability of the statistical tests used guarantee the validity of the results, which show that anxiety, depression and general distress in breast cancer survivors is related to a response pattern based on avoidance. It has been suggested that EA is a fundamental vulnerability factor in emotional distress (Hayes et al., 1996). However, any study of psychological inflexibility as a transdiagnostic condition of emotional problems also requires a study of the other processes which define it and of the interrelationships between them (Hayes et al., 2006). In particular, it has been suggested that the avoidance of internal experiences together with a literal interpretation of the meaning of thoughts (e.g., the thought, *I am hopeless*, is equivalent to the psychological experience of being hopeless, Greco et al., 2008), would imply higher levels of emotional distress. Similarly, a low definition of personal values and inefficient actions, lack of values, clarity and unworkable action is also considered a fundamental response pattern in explaining the psychopathology (Bardeen and Fergus, 2016). Consequently, another potential limitation of the study is that by focusing particularly on an evaluation of EA and Activation,

it may offer only a partial insight into the processes of psychological inflexibility.

Studies of psychological inflexibility in oncology have, to date, been less widespread than in other areas. Nevertheless, this contextual approach and, in particular, Acceptance and Commitment therapy (ACT) has proved to be efficient in the psychological treatment of oncological patients (Rost et al., 2012) and has shown its capacity to diminish EA, fusion with thoughts and increase levels of acceptance (Arch and Mitchell, 2016). An increase in levels of acceptance and activation in oncological patients is of particular importance with regard to nursing care. The cultural context encourages patients to fight against the cancer and win the battle. Having overcome the oncological treatment, the fight is frequently directed against thoughts and emotions regarding the fear of a relapse and the limitations resulting from the disease and the treatment. Frequently, survivors are told by health workers and friends and family that they “must be strong and forget the disease” if they are to get on with their lives. In other cases, it is the patient herself who feels she must first get well and then get back to her normal routine. This idea may be what triggers the battle to control/suppress negative thoughts and emotions. The advice and support of health workers in the fight against cancer is functional when patients are encouraged to increase therapeutic adherence or to recover daily roles and actions which are valuable to them. But it can also be dysfunctional when suggestions are made that the patient should eliminate any negative thought or feeling in order to “feel good”. The tremendous emphasis placed on being positive means that the fight against private events related to the cancer can easily turn into an ongoing strategy of experiential avoidance. As previously stated, far from erasing the private events that it aims to control/eliminate, avoidance only strengthens such events whilst interfering with the return to the activities of daily life on which, ultimately, the person's well-being will depend. It is vitally important for nursing staff to encourage patients to see their thoughts and emotions regarding the cancer as private experiences and not as objective events, since survivors frequently become trapped in the past, ruminating over negative thoughts or painful memories and/or caught up in fantasies about an uncertain future while losing touch with the present. In such cases of experiential avoidance and loss of contact with the present, nursing staff can give the person guidance regarding the importance of participating, on a daily basis, in viable, gratifying activities which are congruent with their personal values. These values can act as a framework within which to plan flexible behavioural patterns, adapted to the social context and physical state according to each moment of the oncological process.

To conclude, the study shows that anxiety, depression and general distress in cancer survivors is related to a response pattern based on avoidance. With regard to depression, as well as avoidance, a reduced involvement in rewarding activities also plays a part. Based on these results, it would be important to take avoidance and involvement in activities into account when preventing, evaluating and treating emotional problems in cancer survivors.

Conflicts of interests

The authors state no conflicts of interest.

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