Long-term treatment for emotional distress in women with breast cancer

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Abstract

Purpose

Breast cancer patients have many needs, including strategies to cope with the associated distress, during and after cancer treatment. Establishing and implementing adequate social and emotional support for these women, to reduce the detrimental effects of stress resulting from their treatment and disease, is the need of the hour. This study aims to assess how women, diagnosed and treated for breast cancer, combat emotional stress using mechanisms of coping and control and emotional defense, as well as to identify potential groups among them, with different long-term patterns and needs.

Methods

98 patients belonging to a local breast cancer support association (ALMOM), were enrolled in this study. A questionnaire specifically designed for them was administered, and its internal consistency and reliability assessed. A hierarchical clustering was employed to classify the women.

Results

An adequate internal reliability was obtained with Cronbach's α near or greater than 0.6. Personal feelings were significant and clearly correlated with coping strategies and maladaptive coping. Three groups of women were identified: positivist, unsafe, and hopeless women, with different long-term emotional needs to be satisfied.

Conclusions

Psychological therapeutic interventions should be maintained in many breast cancer patients over time, even after treatment completion, in order to consolidate adaptive and sustainable responses.

1 Introduction

Cancer, as a disease, is a growing global phenomenon. According to estimates, the number of new cases each year will rise from 18.1 million in 2018 (International Agency for Research on Cancer, 2019) to 24.6 million by 2030.60% of those cases will occur in developing countries (Bray et al., 2012). Breast cancer, in particular, represents a severe public health problem, as it is the most common cancer affecting women. Every year, 1.7 million women are diagnosed with breast cancer (Ginsburg et al., 2017), and it accounts for a significant number of deaths among adult women all over the world. It is also the most frequent malignant neoplasm amongst the female population in Spain, with 25.215 new cases diagnosed in year 2012 (29% of carcinomas in women) (Miranda and Marín, 2015).

Treatment modalities for breast cancer include surgery, combined with radiation, chemotherapy, and/or hormonal therapy. Some of these treatments may render long-standing adverse effects which present over time and may impact a survivor's quality of life. The choice for the most appropriate therapeutic option depends on several factors, such as age, the site of the tumor, financial availability, results of mammography and other diagnostic tests, and the way the patient deals with her disease and the affected breast.

Besides these, it has now been established without doubt, that cancer is also a social and emotional disease, requiring treatment beyond medical therapies (Saeedi-Saedi et al., 2015). The progress of the disease has its own emotional connotations, affecting not only patients and their families, but also the healthcare professionals responsible for their treatments, and even the population in general, who fear it and wish to be free of it. In addition to treatment-related consequences, the deleterious effects of this disease at a psychological level should also be considered. Breast cancer is probably the most dreaded of women's tumors, where a woman experiences the fear of death, social stigma, fear of mutilation, and the risk of recurrence – besides coping with the side-effects of chemotherapy and uncertainty about her future and that of her family's (Saeedi-Saedi et al., 2015). All these feelings and emotions should be taken into account by the healthcare professionals involved in the care of these patients.

As described before, patients with breast cancer have many needs, including strategies to cope with the associated distress, during and after treatment. The emotional distress associated with this disease reduces the quality of life and treatment compliance in breast cancer patients, and increases the economic burden on healthcare (Li et al., 2015; Stagl et al., 2015). Establishing and implementing appropriate social and emotional support should be a strategy, to reduce the deleterious effect of the stress surrounding the treatment. Such support is crucial to promote patients' emotional security and stability, as everyone feels the need to be part of a particular social group (family or friends).

It should be borne in mind that breast cancer treatment leads to many situations that may threaten the psychosocial integrity of women. Their social behavior is seriously affected, leading to restrictions on their social lives and changes in their daily life activities. All these factors may contribute to depressive behavior and social isolation.

Today there is a broad consensus that a cancer patients' care should align with an integrated vision that combines clinical, psychosocial and emotional outcomes. In Spain it is common to fully inform patients about their prognosis and even discuss the possibility of death, but it is exceptional that a coping strategy is considered during this period, especially in long-term patients. However, expressing their fears and feelings, and participating in support groups may help these women cope with their disease-related distress. This type of therapy is recommended to encourage emotional expression and the management of those psychological problems associated with the oncological disease. Some studies (Brunault et al., 2016; Jassim et al., 2015) have shown that patients receiving this therapy increase their ability to solve problems, modulate their negative feelings, and express their emotions without inhibitions or restraint, thereby improving their quality of life.

As mentioned earlier, a diagnosis of breast cancer is always a source of stress for women, triggering a great variety of emotional problems while they adjust to their new situation. This adaptation phase tends to extend to the follow-up. During this period, women undergo distinct psychological stages with regards to acceptance - moving easily forwards and backwards between these stages. Their feelings and emotions are not under control until they enter the acceptance phase and consolidate lasting adaptive responses, and then, only if the psychotherapy is maintained right from the diagnosis, throughout the entire process.

Based on these considerations, the objective of this study was to assess how women who are diagnosed with, and treated for breast cancer face their long-term emotional stress and employ mechanisms of coping, control and emotional defense. This information will help to better recognize their psychosocial needs and to implement emotional support for them and their families, in order to achieve complete psychological and social rehabilitation. It will also allow us to improve communication and interaction skills among the different healthcare members involved in breast cancer treatment.

2 Methods

An observational cross-sectional study was carried out with women diagnosed and treated for breast cancer at the time of the survey, or at a previous point in their lives.

2.1 Participants

Participants were recruited from the local Association of Women with Breast Cancer (ALMOM) in Leon (Spain). The study was first described to the Chairperson and the Review Board of the association, who agreed to the research. It was then explained in numerous meetings to all members of the association, taking on board the recommendations made by the Psychological Board of the association. The three nurses who participated in this study were

available on several dates (previously announced) in the seat of the association, to help participants fill in the questionnaires under their supervision. All the women who decided to participate, individually signed informed consent forms, signaling their willingness to collaborate on this research, as well as to ensure their rights as voluntary participants and safeguard their privacy. Approval from the Association's Review Board and its Psychological Board, as well from the Research Ethics Committee of the University of Leon (ULE 009–2015), was obtained.

2.2 Design of the questionnaire and data collection

The questionnaire consists of three parts: demographic details, clinical information and a questionnaire exploring emotions. The emotional section was developed in two phases. In the first phase a review of the literature was carried out by searching for those validated questionnaires related to emotions, emotional distress and cancer patients. As most of them also try to obtain information from patients that are not always related to emotions or psychosocial distress, we decided to use only those questions specifically designed to assess emotions. Then, in the second phase, the multidisciplinary team that carried out this study reached a consensual agreement about which questions that would be included in the questionnaire to provide more information on the emotional state of the patients.

These questionnaires were: the Family Environment Scale (FES) (Moos and Moos, 1994) adapted to Spanish population (Seisdedos et al., 1989), that sorts relationships among family members into three aspects: development, stability and relationships. For the purposes of this study, nine questions belonging to different aspects of the relationships were selected, to assess the degree of communication within the family, as well as their degree of conflict. From the Scale of Assessment of Stress (EAE) (Vitaliano et al., 1985) six questions were selected, to evaluate the degree of threat and the perceived importance of stressful situations, as well as the degree of perceived control related to their disease. The Hospital Anxiety and Depression Scale (HAD) (Zigmond and Snaith, 1983), adapted to Spanish cancer patients (López-Roig et al., 2000) was also used, containing (five questions) to assess the patient's emotional state due to oncological disease. Two questions related to coping and psychosocial adjustment due to cancer were taken from the Psychosocial Adjustment to Illness Scale (Derogatis, 1986). From the Emotional Adaptation to Cancer Questionnaire (Andrew et al., 1991) twelve questions were selected to assess psychosocial responses caused by the impact of breast cancer diagnosis and treatment. Finally, fourteen questions were chosen from the Questionnaire of Coping Strategies (Rodriguez Marin et al., 1992) as they provided information on how often women use coping strategies to deal with their illness.

The questions were then organized into four sections based on the information to be obtained. The first section included questions that assessed womens' personal feelings directly relating to their disease. In the second section, the questions were related to the emotional coping strategies used to deal with breast cancer. In the third part, the questions focused on obtaining information on their immediate social environment (family or friends). In the fourth and final section, questions were related to maladaptive coping strategies developed by these women towards their disease. The questionnaire was completely anonymous in order to guarantee the confidentiality of these answers. All questions were scored according to the scale described in each corresponding questionnaire. In all of them, the lowest value was always associated with the most positive answer, and the highest value with the most negative answer. Thus, the highest scores in the questionnaire were associated with the more negative emotions or feelings. The questionnaire was provided to 8 women to verify that it was well understood, and to check the time needed to answer all the questions. It was not time-consuming, as it took only about 15–20 min to be answered. From these 8 questionnaires, the estimated standard deviation of scores was 20. Assuming a precision of 0.225 and an alpha value of 0.05, a sample size of 76 participants was calculated. With a dropout rate of 20%, the required minimum sample size was set at 91 participants (Argimon and Jimenez, 2010).

2.3 Data analysis

The answers were processed and analyzed using Microsoft Excel 2013 and IBM SPSS 21.0. A basic descriptive study was carried out in those sections of the questionnaire containing demographic and clinical data. In quantitative variables, normality was assessed by Kolmogorov-Smirnov test. If data was normal, ANOVA and/or a non-paired t-test was employed, but if data was not normal, the non-parametric Mann-Whitney U or Kruskal-Wallis test was carried out. Reliability was evaluated using the Cronbach's α coefficient. Convergent validity was assessed by correlating each item with its own section, and divergent validity by correlating each item with the other sections of the questionnaire. Evidence of strong item convergent validity was defined as $r > 0.4$ (Zhang et al., 2017). Additionally, the Spearman-Rho coefficient was used to evaluate the association between the different sections of the questionnaire. Hierarchical cluster analysis was then conducted to identify those groups with different needs for long-term emotional support.

Scores were used to classify women, and they were first standardized as they differed from one section to another. For cluster classification, Ward's minimum-variance method was chosen due to its strength in population recovery (Finch, 2005). The criteria followed to select the number of groups with distinct patterns of emotional needs were: error variance (marked increase without subsequent plateauing of increments); Mojena's stopping criterion; the smallest size of any group should be greater than 4% of the sample; F value and dendogram. Discriminant analysis was afterwards carried out to detect those individuals that had not been correctly assigned. Chi-square test (qualitative variables), as well as t-test (quantitative variables) were then used to establish comparisons between cluster groups. A level of $p \leq .05$ was considered as significant.

3 Results

Of 112 eligible breast cancer patients who belong to the ALMOM Association and were invited to take part in this study, 98 (87.5%) agreed to participate, providing full informed consent and completing the questionnaire. As observed by the interviewer, it was well-accepted, and easily understood.

Demographic and clinical characteristics are detailed in Tables 1 and 2, respectively. Patient mean age was 53.1 ± 8.1 years. Most participants (57.1%) were married or had a partner, and had children (78.6%) but not dependent relatives (75.5%). 49% were currently employed, and 66.3% had received secondary or higher education. Most of them (90.8%) were diagnosed with early stages of cancer (stage II or below), with an average time since diagnosis of 4.3 ± 3.5 years. Almost all participants had had surgery as their primary treatment (98.0%); 95.9% received adjuvant chemotherapy; 73.5% adjuvant radiation therapy, and 37.8% endocrine therapy.

Table 1 Demographic characteristics of the sample.

alt-text: Table 1

	No. of patients (%)
Age (years)	
30-39	1 (1.02%)
40-49	33 (33.67%)
50-59	42 (42.85%)
60-69	20 (20.40%)
70-79	2 (2.04%)
Marital status	
Married/partner	56 (57.14%)
Widowed	5 (5.10%)
Single	11 (11.22%)
Separated/divorced	14 (14.28%)
No answer/don't know	12 (12.24%)
Education	
Elementary school	28 (28.57%)
Secondary school	34 (34.69%)
Higher education	31 (31.63%)
No answer/don't know	5 (5.10%)
Nº of children	
No child	21 (21.42%)
1 child	20 (20.40%)
2 children	39 (39.79%)
3 children	13 (13.26%)
4 children	5 (5.10%)
Employment status	
Housewife	14 (14.28%)
Employed	48 (48.97%)
Unemployed	9 (9.18%)
Retired	16 (16.32%)

Temporary incapacity for work	5 (5.10%)
No answer/don't know	6 (6.12%)

Table 2 Clinical characteristics of the sample.

alt-text: Table 2

	No. of patients (%)
Disease stage	
I	6 (6.12%)
II	83 (84.69%)
III	6 (6.12%)
IV	0 (0%)
Cured	1 (1.02%)
No answer/don't know	2 (2.04%)
Self-prognosis	
Good	30 (30.61%)
Bad	31 (31.63%)
Not determined	34 (34.69%)
No answer/don't know	3 (3.06%)
Treatment	
Chemotherapy	94 (95,91%)
Radiotherapy	72 (73,46%)
Endocrine therapy	37 (37,75%)
Surgery	96 (97,95%)
Type of surgery	
Tumorectomy	5 (5.10%)
Simple mastectomy	50 (51.02%)
Radical mastectomy	41 (41.83%)
No answer/don't know	2 (2.04%)
Current status of disease	
No recurrence	53 (54.08%)
Follow-up after recurrence	32 (32.65%)
Active disease	9 (9.18%)
No answer/don't know	4 (4.08%)
Interval between reviews	

Three months	17 (17.34%)
Six months	28 (28.57%)
One year	26 (26.53%)
Others	18 (18.36%)
No answer/don't know	9 (9.18%)

Table 3 summarizes the scores achieved in the whole questionnaire, and in each section, as well as maximum and minimum values, while Table 4 shows Cronbach's α values together with convergent and divergent validity. Total scores for the questionnaire ranged from 60 to 142 points, with a mean of 106.46 ± 21.54 points. Cronbach's alpha value was 0.909 for the whole questionnaire's ranging values. As for each section, Cronbach's alpha ranged from 0.885 to 0.624, indicating an acceptable reliability and a good internal consistency. Item section correlation exceeded the 0.4 criterion for item-convergent validity, whereas item-discriminant validity displayed that items were more closely correlated with their own dimensions than with others. Neither ceiling nor floor effect was observed in any of the questionnaire sections, or in the whole questionnaire.

Table 3 Score values (mean ± SD) and theoretical range of the answers to the questionnaire.

alt-text: Table 3

	$\bar{x} \pm SD^a$ (range)	Theoretical range
Questionnaire	106.46 ± 21.539 (60–142)	25–187
Section I (personal feelings)	21.75 ± 8.205 (3–40)	0–42
Section II (coping strategies)	43.08 ± 9.483 (27–59)	11–66
Section III (environmental influence)	3.35 ± 2.262 (0–8)	0–9
Section IV (maladaptive coping)	38.28 ± 6.407 (23–51)	14–70

a $\bar{x}$: mean; SD: standard deviation.

Table 4 Convergent and discriminant validity and Cronbach's α calculated.

alt-text: Table 4

	Cronbach's α (range)	Convergent validity	Divergent validity
Questionnaire	0.909 (0.904–0.913)	–	–
Section I (personal feelings)	0.885 (0.871–0.891)	0.402–0.779	−0.370-0.354
Section II (coping strategies)	0.862 (0.837–0.868)	0.551–0.795	−0.143-0.523
Section III (environmental influence)	0.692 (0.593–0.818)	0.439–0.803	−0.160-0.416
Section IV (maladaptive coping)	0.624 (0.575–0.643)	0.414–0.564	−0.330-0.404

Table 5 summarized correlations calculated between the whole questionnaire, the different sections of this one, and other variables such as patients' age and the years since diagnosis (Spearman-Rho coefficient). As expected,

the highest significant correlations were observed between total scores and those achieved in each section of the questionnaire, with high or moderately high values between the different sections. Regarding those correlations obtained with age or years since diagnosis, no significant correlations were obtained, except a significant negative one between age and personal feelings (-.226, p < .05).

Table 5 Correlation between the sections of the questionnaire and some variables (age of patients and years since diagnosis).

alt-text: Table 5

	Age	Years since diagnosis	Section I	Section II	Section III	Section IV
Years since diagnosis	0.333[b]					
Section I(personal feelings)	−0.226[a]	−0.074				
Section II(coping strategies)	−0.052	0.059	0.623[b]			
Section III(environmental influence)	−0.001	0.069	0.297[b]	0.355[b]		
Section IV(maladaptive coping)	−0.044	−0.103	0.544[b]	0.616[b]	0.377[b]	
Questionnaire	−0.132	−0.034	0.847[b]	0.891[b]	0.471[b]	0.794[b]

Spearman-Rho coefficient. Significant correlation to [a] p = .05 and [b] p = .01.

We also studied the characteristics of the sample, taking into account several demographic and clinical variables (Table 6). Personal feelings were significantly more negative in married/partnered women (Mann-Whitney *U* test, p = .006), as well as in those having children (Mann-Whitney *U* test, p = .016) and women with recurrences (Mann-Whitney *U* test, p = .001). Significant differences were also found in some cases for age, civil status, disease stages or follow-up intervals.

Table 6 Scores (mean ± SD[a]) obtained in the questionnaire according to several demographic and clinical characteristics of the sample.

alt-text: Table 6

	Questionnaire	Section I (personal feelings)	Section II (coping strategies)	Section III (environmental influence)	Section IV (maladaptive coping)
Age (years)					
30-49	110.68 ± 23.66	23.91 ± 7.47[b]	43.94 ± 11.58	3.26 ± 2.17	39.56 ± 5.33
50-59	107.60 ± 20.89	21.33 ± 8.46	42.57 ± 8.92	3.43 ± 2.25	40.26 ± 5.87
> 60	104.32 ± 16.41	19.23 ± 8.29[b]	42.73 ± 6.90	3.32 ± 2.51	39.05 ± 5.23
Marital status					
Married/partner	110.91 ± 21.51[b]	23.16 ± 7.83[b]	43.82 ± 9.54	3.77 ± 2.44[b]	40.16 ± 5.80
Others	99.43 ± 18.81[b]	18.17 ± 7.84[b]	40.53 ± 9.01	2.60 ± 1.91[b]	38.13 ± 5.49
Children					
Yes	108.75 ± 21.18	22.69 ± 8.04[b]	43.42 ± 9.59	3.31 ± 2.26	39.34 ± 5.43
No	104.90 ± 20.31	18.33 ± 8.08[b]	41.86 ± 9.22	3.48 ± 2.34	41.24 ± 5.71
Education					
Elementary school	110.93 ± 17.15	23.39 ± 8.16	43.00 ± 9.02	3.61 ± 2.04	40.93 ± 3.89
Secondary school	108.29 ± 21.66	21.91 ± 7.70	43.91 ± 9.21	3.56 ± 2.51	38.91 ± 6.33
Higher education	104.97 ± 22.82	20.29 ± 8.84	42.52 ± 9.94	2.90 ± 2.26	39.26 ± 5.69

Disease stage					
I	109.00 ± 31.11	23.50 ± 9.19	41.00 ± 14.14	4.00 ± 4.24	40.50 ± 3.54
II	117.00 ± 17.01	26.86 ± 7.49[b]	44.00 ± 8.68	4.29 ± 2.63	41.86 ± 4.78
III	105.92 ± 21.12[b]	20.60 ± 7.92[b,c]	42.83 ± 9.71	3.13 ± 2.14	39.35 ± 5.67
IV	124.83 ± 11.62[b]	31.17 ± 5.19[c]	46.17 ± 7.20	5.00 ± 2.61	42.50 ± 3.78
Self-prognosis					
Good	106.80 ± 20.46	21.37 ± 9.05	42.00 ± 9.33	3.83 ± 2.12	39.60 ± 5.69
Bad	110.84 ± 20.68	22.42 ± 8.12	45.19 ± 9.34	3.19 ± 2.55	40.03 ± 5.66
Not determined	107.35 ± 22.43	21.68 ± 8.01	42.79 ± 9.78	3.18 ± 2.17	39.71 ± 5.61
Years since diagnosis					
0-1	105.71 ± 22.44	21.53 ± 8.86	41.24 ± 9.86	3.00 ± 2.18	39.94 ± 5.77
2-5	109.13 ± 20.74	22.78 ± 8.24	43.17 ± 9.56	3.17 ± 2.08	40.02 ± 5.33
6-10	106.70 ± 22.76	20.26 ± 8.21	43.57 ± 9.74	3.91 ± 2.63	38.96 ± 5.45
> 10	108.25 ± 6.13	17.50 ± 1.73	47.00 ± 6.06	4.00 ± 2.94	39.75 ± 9.00
Current status of disease					
No recurrence	101.58 ± 18.83[d]	19.91 ± 7.98[b]	39.89 ± 8.68[d]	3.36 ± 2.31[b]	38.43 ± 4.76[b]
Follow-up after recurrence	120.09 ± 15.44[d,e]	25.34 ± 6.79[b]	48.50 ± 7.34[d]	3.78 ± 2.21[c]	42.47 ± 5.00[b,c]
Active disease	104.89 ± 24.17[e]	21.56 ± 9.04	44.00 ± 11.00	1.67 ± 1.73[b,c]	37.67 ± 4.85[c]
Interval between reviews					
3–6 months	110.91 ± 18.21	22.74 ± 8.56	43.70 ± 8.22	3.24 ± 2.20	41.24 ± 4.97[d]
1 year/more	103.74 ± 22.24	20.56 ± 7.69	42.05 ± 10.26	3.37 ± 2.44	37.77 ± 5.28[d]

[b,c] Mann-Whitney U test; [d,e] non-paired t-test (p < .05).

[a] SD: standard deviation. In a column and for a certain characteristic, a repeated letter means significant differences.

Cluster analysis indicated the existence of three groups with different patterns of emotional characteristics and needs. Discriminant analysis showed that 91.8% cases were correctly classified with hierarchical analysis. Table 7 summarizes the characteristics and scores of the three groups considered. The number of women was nearly similar in these groups. We labeled these groups as "positivist" (group 1), "unsafe" (group 2), and "hopeless" (group 3). Unsafe women were significantly older than those belonging to the hopeless group. In this latter group, the percentage of married/partnered women was significantly higher (Chi-square test, p = .017), as also was the percentage of those with children (Chi-square test, p = .013). In the "hopeless" group, more than a half of patients had suffered cancer recurrence (Chi-square test, p = .000), and follow-up intervals tended to be significantly shorter in both unsafe and hopeless groups (Chi-square test, p = .032).

Table 7 Clustering profiles: demographic and clinical characteristics.

alt-text: Table 7

	Women (N = 98)		
	Positivist (N = 30)	Unsafe (N = 34)	Hopeless (N = 34)
Age (years)	53.03 ± 8.66	55.68 ± 7.59[c]	50.53 ± 7.37[c]

(mean ± SD[a])			
Married/partner[b] N (%)	17 (56.7)	14 (41.2)	25 (73.5)
Children[b] N (%)	26 (86.7)	21 (61.8)	30 (88.2)
Education			
Elementary school	4 (13.3)	15 (44.1)	9 (26.5)
Secondary school	13 (43.3)	8 (23.5)	13 (38.5)
Higher education	11 (36.7)	10 (29.4)	10 (29.4)
Disease stage N (%)			
I	1 (3.3)		1 (2.9)
II	1 (3.3)	3 (8.8)	3 (8.8)
III	28 (93.3)	29 (85.3)	26 (76.5)
IV	–	2 (5.9)	4 (11.8)
Self-prognosis N (%)			
Good	7 (23.3)	14 (41.2)	9 (26.5)
Bad	10 (33.3)	9 (26.5)	12 (35.3)
Not determined	11 (36.7)	10 (29.4)	13 (38.2)
Years since diagnosis	4.3 ± 2.8	4.8 ± 4.8	3.7 ± 2.0
Current status of disease[b] N (%)			
No recurrence	20 (66.7)	22 (64.7)	11 (32.4)
Follow-up after recurrence	2 (6.7)	12 (35.3)	18 (52.9)
Active disease	6 (20)	–	3 (8.8)
Interval between reviews[b] N (%)			
3–6 months	9 (30)	21 (61.8)	16 (47.1)
1 year/more	19 (63.3)	11 (32.4)	13 (38.2)
Questionnaire scores			
Section I (personal feelings)	14.70 ± 4.16	19.94 ± 7.50	29.79 ± 3.35
Section II (coping strategies)	33.43 ± 5.84	42.00 ± 5.71	52.68 ± 4.60
Section III (environmental influence)	1.60 ± 0.86	3.29 ± 2.37	4.94 ± 1.84
Section IV (maladaptive coping)	33.73 ± 3.31	40.76 ± 4.43	44.03 ± 2.70
Total	83.47 ± 9.55	106.00 ± 7.83	131.44 ± 5.58

[a] SD: standard deviation.

[b] Significant differences with Chi-square test (p < .05).

[c] Within a characteristic, a repeated letter means significant differences with non-paired *t*-test (p < .05).

4 Discussion

Cancer is a complex disease, which affects patients and their families in both, physical and emotional aspects. Most breast cancer patients report emotional distress and may need emotional help (Giese-Davis et al., 2006). In fact, emotional distress is an important issue for these patients and can reduce their quality of life. Breast cancer, in particular, causes various negative emotions in women, which may be strongly related not only to changes in their own body and health, but also have consequences on their more immediate social environment. The various treatments for breast cancer (chemotherapy, radiotherapy, surgical intervention, etc.) have had an enormous impact on women's lives. All of them have severe sequelae, which result in negative feelings and a failure of coping strategies. The sequelae may include hair loss, infertility, weight gain or premature menopause, and sometimes a limited ability to move an affected arm, alterations in body image, dyspareunia, reduced sexual desire and lower sexual interest of the partner, and consequently, low self-esteem (Brédart et al., 2016; Eng et al., 2015; Gu et al., 2015; Paterson et al., 2016; Testa et al., 2014).

As explained before, in this study we administered a specifically designed questionnaire to detect emotional problems in breast cancer patients. The questionnaire showed good consistency and reliability when applied to our patients, with Chronbach's α values above or near the acceptable level of 0.70 (Hair et al., 2006). Similar values were calculated when assessing negative emotions in patients with breast cancer (Ho et al., 2004).

Some authors (Grégoire et al., 2017; Levkovich et al., 2018) have described the psychological aspects of those women suffering from breast cancer, and the way they discover the most appropriate psychological intervention for their treatment and, more specifically, their coping styles. The relationship between various emotional factors (irritability, guilt and cognitive alterations such as confusion, lack of concentration) was also highlighted (Kamińska et al., 2015). We observed in our study that most women decided not to express their emotions to their closest circle to avoid "damaging them". In this sense, a higher incidence of a potential repressive style of response in breast cancer patients has been observed, when compared with a control group of healthy women of the same age and sociocultural characteristics (Sirgo and Gil, 2000). Karakoyun-Celik et al. (2010), pointed out that the most relevant characteristic of breast cancer patients was their inability to express emotions associated with the diagnosis and progression of their disease.

Once diagnosed, breast cancer becomes a critical source of stress that leads to a variety of adaptation problems. Some studies have observed rates of emotional distress ranging from 34% (Dabrowski et al., 2007) to 39% (Saeedi-Saedi et al., 2015) in breast cancer patients. In our study, most patients reported that they often felt the loss of control in their lives. However, other studies (Stanton and Snider, 1993; Zainal et al., 2013) suggest that the most stressful period for a woman with breast cancer is the period from diagnosis to the surgical procedure. Kornblith et al. (1998) observed that certain negative emotions associated with cancer continue to influence women for several months, or even years, after the end of treatment. From the answers given by patients to several questions, we observed that many patients continued to experience anxiety, fear of recurrence, feelings of loneliness, and various problems in different areas of their lives (social, physical, work, sexual, etc.). In one study, 34% of breast cancer patients showed anxiety before surgery, dropping only to 26% the following year (Schou et al., 2004) - whereas this value was lower (19%) for Mehnert and Koch (2008).

As described in the *Methods* section in our questionnaire, the more negative the feelings the higher the scores. Most of the significant correlations (Table 5) were found between the whole questionnaire and some of its sections, as all of them are intrinsically correlated. Section I provides information on the personal feelings of breast cancer patients, and they are clearly related to coping strategies and maladaptive coping. The lowest correlations were obtained with the social environment (section III), whose influence could cause substantial changes in their personal feelings, as well as in their coping strategies (adaptive or maladaptive), but they are not determinant. Table 5 also shows that personal feelings are correlated with coping strategies (r = 0.623). In these women, the more negative the feelings the higher the failure to establish any effective coping strategy, resulting in feelings of helplessness and hopelessness. If the negative feelings persist long term, it could affect their capacity to fight against the situation. This also explains the correlation obtained between personal feelings and maladaptive coping (r = 0.544), as there was a wide group of women who were not able to find a psychological solution to their disease. We also observed that women tended to use maladaptive coping with dysfunctional behavior (r = .616). With regards to the age of patients, although moderately correlated, in our study we found that emotional feelings were significantly less negative in older women than in those younger. Previous studies have also reported that younger women were more likely to experience a decline in emotional well-being than older women (Janz et al., 2014).

We also explored if certain demographic or clinical characteristics could be associated with less or more negative feelings in these women. As summarized in Table 6, scores were significantly higher for those patients who had a partner. They expressed more negative feelings, and their opinion on their social and family environment with respect to their disease was worse than those of single women. This could indicate the limited support provided by their relatives and their immediate social environment. Women with children felt significantly worse, probably because of their increased sense of responsibility. The current status of their disease was also a determining factor for emotional stress: greater negative feelings and poorer coping strategies were observed in women who had suffered recurrences. Coping strategies are probably conditioned by the uncertainty of the current status of their disease, even when the cancer is not active. As did Spencer et al. (1998), we also observed that even when the disease was in remission, women continued to have concerns regarding cancer, including the fear of recurrence, the risk of cancer aggravation, or their ability to adapt to a life without disease. It is clear that completion of treatment does not mean the end of the adaptation process, but continues to evolve throughout the follow-up phase.

Finally, with respect to the three groups of women identified through cluster analysis, the group of positivist women showed that they were capable of controlling negative feelings arising from their illness. They probably

developed mechanisms of emotional adjustment to redirect their experiences towards coping strategies aimed at positively solving their problem, and overcoming those personal and/or social concerns derived from breast cancer. They exchanged their positive expectations about breast cancer for positive expectations about their recovery, reaching a balance between their hopes, dreams and prospects. The lack of recurrence and less frequent revisions probably helped them distance themselves from their illness. Therapeutic psychological interventions for these women should include humanistic care, even for their closest social environment, to reach a better adaptation to diagnosis, prognosis and treatment and, thus, a higher quality of life.

The 'unsafe group' includes those women who were not able to control negative feelings arising from breast cancer, but were aware of the existence and influence of these feelings. They tried to apply effective coping styles, but they alternated them with moments of denial, fatalism or anxious preoccupation. For this reason, they overcame, only partially. their personal and/or social problems caused by breast cancer. They remained anchored in cancer grief, which they can leave behind only through coping and adjustment, or avoidance and denial. For women like these, it is necessary to assess their mood and self-perception of breast cancer in order to enhance their coping strategies.

Finally, in the 'hopeless women' (group 3), three characteristics influence their psychological recovery: stasis, inability to change their emotions, and inflexibility. This imbalance causes a discordance among their physiological, motor and cognitive response systems. They show such overwhelming and frequent negative feelings that they are not able to formulate any effective coping strategy against them. They live between helplessness and despair, with a great burden of anxious worry weighing on their spirit and their ability to overcome cancer is directly affected by this. Therapeutic interventions should first identify and address all their maladaptive reactions, and then train the women to control their emotional stressors, and to implement adaptive responses and a new lifestyle.

When considering coping strategies, it is essential that these strategies are provided to patients, to diminish their negative feelings towards the illness, which will lead to a reduced psychological stress and emotional anxiety (National Comprehensive Cancer Network, 1999). Coping strategies used by breast cancer patients are an important issue to establish comparisons, as well as a relationship among different ways of coping: cognitions, behaviors and emotional responses (Brandão et al., 2016). In our study, women showed different mechanisms of emotional control to counteract the discomfort produced by an unpleasant emotion (Wang et al., 2014). On the other hand, we observed that they employed a repressive coping style, trying to control any response to a negative emotion. This can lead to a high discordance among the different response systems: physiological, cognitive and motor (Thompson et al., 2013).

Nurses, especially Oncology nurses, play an essential supporting role during the different stages of care. They can provide expert practical information on breast cancer and post-treatment status to these women and their families, as well as recognize a patients' particular needs (Halkett et al., 2006; Jones et al., 2010). Breast cancer patients require a whole lot of assistance, and nursing actions must find a balance between the physical, emotional and social functions. A screening should be performed to assess what information and awareness patients and their families have about the disease and demystify and replace it with updated and accurate information (Holst-Hansson et al., 2017).

A multidisciplinary approach is required to reduce the negative impacts of breast cancer treatment on women. Specific measures include the management of the symptomatology caused by breast cancer, the control of treatment-related adverse effects, maintaining the quality of life of these patients, and providing women the tools to make well-informed personal decisions and manage their lives better.

In contrast to other studies which evaluate emotional distress in breast cancer patients in the short term, we continued to monitor patients after the completion of their medical treatment, to assess how the ongoing threat of recurrence affected them on a physical, psychological, social and spiritual level. So, the adaptive or maladaptive coping strategies that women implemented through physiological, cognitive, emotional and social reactions were observed by us. We have seen, for instance, that women mostly employ a repressive coping style, trying to control any response to negative emotions.

A diagnosis of breast cancer triggers problems of psychological adaptation in those women who suffer from it. The completion of a course of medical treatment does not mean the end of this adaptation process, which continues throughout the follow-up phase of their illness (Saeedi-Saedi et al., 2015). In our study most women were in the recovery phase, after their medical treatment, with more or less frequent medical check-ups. It is precisely in this phase that we can establish if women have implemented adaptive or maladaptive coping strategies, to design a specific, therapeutic, psychological intervention (Aguirre-Camacho and Moreno-Jiménez, 2017).

For women with breast cancer, their disease plays an important role in their lives, and it does so constantly, regardless of whether their treatments have been completed. In general, they feel responsible for their illness and, in some ways, guilty right from diagnosis, throughout the disease process (Kim et al., 2014).

Our study shows how the health system overestimates technical procedures. Beyond that, the professional empathy of healthcare professionals is crucial for patients to develop positive coping styles. Psychological interventions should begin at the moment of diagnosis and be maintained over time, even after medical treatment has finished, as they aim to help patients control feelings of anxiety, anger and depression in their daily lives, over time. Psychological therapy should start early, to improve quality of life during and after the illness. In our case, when patients join the ALMOM association searching for different kinds of help, this help sometimes came too late, and a large number of women did not achieve positive results. We propose that every patient diagnosed with breast cancer receive supportive therapy from the moment of diagnosis, to help them express their emotional distress and to teach patients how to manage problems associated with their disease. Psychological therapy should be maintained and it should focus on two fundamental aspects: emotional expression, coping strategies and adapting to change by working on not only the

most basic behaviors, but also their thoughts. Therapy should continue even after medical treatment is completed, until adaptive responses are verified. Healthcare should also be extended to all members of the family who have a close relationship with the woman patient.

This will provide holistic care to patients, with the aim of achieving better adaptation to diagnosis, prognosis and subsequent treatments. Moreover, it will help reduce the impact of hospital dynamics on people, and ensure a better quality of life to women, despite their breast cancer diagnosis. As explained before, women should be treated by a multidisciplinary team: doctors, nurses, nursing assistants, psycho-oncologists, etc., so that the responsibility of healthcare is equitably shared among the personnel, along with the "duty" of providing advice and psychological support to the affected family.

Our results highlight the need for professionals to review false beliefs, especially concerning treatment. The general idea is that treatment can make women feel better, but experience shows that once treatment has begun, and even after its completion, women realize that it has not been as liberating as expected. The objective is to improve not only coping strategies but also women's awareness about the disease, how to manage expectations and face any situations that arise (Hellerstedt-Börjesson et al., 2016).

4.1 Limitations

The limitations of this study should also be noted when applying the findings. A specific group of women belonging to an association that provides psychological, physical and emotional support, was employed in this study. Also, as most women who took part in this study were at stage II, our results should be applied primarily to women at this cancer stage. The results may be interpolated to similar contexts and patient groups, although further studies should be carried out to generalize them to a wider female population.

5 Conclusions

Therapeutic psychological intervention in patients with breast cancer should be initiated once diagnosis is established, and should be maintained and extended even after medical treatment is completed, in order to consolidate lasting adaptive responses. Teaching patients to manage emotions should not be neglected by healthcare professionals, as it is crucial for maintaining and/or restoring the quality of life of these patients. Our study highlights the need for evaluating interventions for specific population groups. We have differentiated between three types of women: those who have changed their perspective on life despite their diagnosis; those who have in some way, remained anchored in their grief and, finally, women with emotional dependence.

Data statement

Data would be available on request to authors.

Declarations of interest

None.

CRediT authorship contribution statement

Leticia Sanchez: Conceptualization, Methodology, Resources, Investigation, Data curation, Writing - original draft. **Nelida Fernandez:** Conceptualization, Methodology, Writing - review & editing, Supervision, Project administration. **Angela P. Calle:** Conceptualization, Methodology, Resources, Investigation, Supervision, Project administration. **Valentina Ladera:** Writing - review & editing, Supervision, Visualization. **Ines Casado:** Resources, Investigation, Data curation, Software. **Ana M. Sahagun:** Conceptualization, Methodology, Software, Writing - review & editing, Supervision, Project administration.

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Highlights

- Breast cancer diagnosis causes problems of long-term emotional adaptation.

- Emotional therapeutic interventions should be implemented from the moment of diagnosis until consolidating adaptive responses.

- Interventions should consider the humanization of care, to achieve better adaptation to diagnosis, prognosis and treatment.

- Specific psychological interventions should be designed taking into account the characteristics of personality in each woman.

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