



Clinical and sociodemographic factors that may influence the resilience of women surviving breast cancer: cross-sectional study

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Abstract

Purpose Breast cancer is one of the most common diseases, affecting many thousands of women. Although more than 80% of women survive the experience, very few studies have been conducted to examine the question of resilience among long-term survivors of breast cancer. The aim of this study is to describe the clinical and sociodemographic factors that correlate with greater resilience in women survivors of breast cancer, in the Costa del Sol Health Area (Spain).

Methods Accordingly, a descriptive cross-sectional study was conducted, with respect to 59 survivors of breast cancer, who each completed a questionnaire for analysis according to the Connor-Davidson Resilience Scale (CD-RISC).

Results The median resilience score was 77 (interquartile range 70–80). The group of patients who had survived for six or more years since the diagnosis had a higher score for total resilience (90: IR 76–92) than those diagnosed more recently (74: IR 65.7–83.7) ($p = 0.012$). Regarding the patients' education background, the group with no formal qualifications or only primary studies had a score of 72 (IR 64–84), versus 79 (IR 74–89.7) for the group with higher levels of education ($p = 0.016$). Of the clinical variables, only the administration of chemotherapy was significantly associated with the score obtained on the CD-RISC scale ($p = 0.012$).

Conclusions The results obtained in this study lead us to conclude that sociodemographic and clinical factors have a positive impact on the level of resilience among women resident in the Costa del Sol Health Area and who are long-term survivors of breast cancer.

Keywords Resilience · Breast cancer · Long-term cancer survivors · Psychological adaptation

Introduction

Cancer is one of the diseases with the highest incidence worldwide. Breast cancer is the second most common worldwide (11.9%) and the fifth most common cause of death (6.4%) [1].

Despite the increasing incidence of breast cancer, the introduction of screening programmes and improvements in the therapies available have enabled larger numbers of patients to become long-term survivors (LTS) [2].

The diagnosis of breast cancer produces changes in the quality of life of those affected, due to the effects of the treatments applied (such as radical surgery of the breast), lymphedema, infections associated with surgery, or the side effects of adjunct treatments (chemotherapy, hormone therapy, radiotherapy, or target therapies) [3]. These physical, psychological, and social repercussions may stimulate a coping process in the patient, with the activation of mechanisms (sometimes unknown or unobserved) that promote resilience, i.e. the capacity to thrive in the face of adversity [4]. In addition to individual capabilities, resilience refers to the processes and mechanisms through which successful results are achieved, despite the difficulties encountered [5]. Studies in this respect have detected the impact of multidimensional factors, with

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effects that vary according to context, time, age, sex, and cultural origin [5, 6] as well as the circumstances to which each individual is exposed [7].

The concept of resilience is increasingly taken into account in research into chronic diseases [8–10]. Thus, some studies have assessed the levels of resilience during the diagnostic and treatment phases of breast cancer [11], while others have considered interventions to increase patients' resilience [4]. However, very little research has been conducted with specific regard to the question of resilience among LTS of breast cancer.

The Spanish Society of Medical Oncology (SEOM) has published a handbook of recommendations for LTS of breast cancer, to enable comprehensive, coordinated follow-up of these patients by the specialised and primary healthcare professionals involved [2]. Furthermore, multistranded therapies are being employed, seeking to address the treatment of these patients in a more holistic manner, better adapted to their specific needs. For example, taking into account the multifactor reality produced by a diagnosis of cancer, new approaches have been applied to complement the standard treatments, seeking (among other aims) to reduce the sequelae that are often suffered by cancer patients. Studies have highlighted the benefits that can be obtained from aspects such as yoga, mindfulness, moderate physical exercise, and appropriate nutrition, as integrative measures to promote the health of cancer patients [12].

The goal of the present study was to determine the level of resilience among LTS of breast cancer and to evaluate the clinical and sociodemographic factors that correlate with greater resilience in women surviving breast cancer in the Costa del Sol Health Area.

Material and method

This cross-sectional descriptive study was performed in 2017. The patients included were all LTS of breast cancer and had been treated in the Costa del Sol Health Area, in southern Spain, which serves a population of 463,000 (as on 1 January 2016), according to the Spanish National Institute of Statistics (INE) [13].

The following inclusion criteria were applied: women aged over 18 years, speakers of Spanish, diagnosed and treated in the Costa del Sol Area with breast cancer at least 5 years before the study period, and currently free of cancer. Patients were excluded if, for medical or linguistic reasons, they were unable to complete the questionnaire or had a life expectancy of less than 1 year due to their previous comorbidity.

Variables

Sociodemographic variables were obtained in relation to the participants' age, educational level, employment status, and family/

household situation. The clinical variables analysed included the type of surgery of the primary tumour and of the axilla, the anatomopathological results, the dates of the surgical procedures, and the subsequent oncological treatment provided (Table 2).

Resilience was evaluated using the 25-item Connor-Davidson Resilience Scale (CD-RISC) developed by Connor and Davidson, based on a questionnaire to which responses are measured on a Likert scale ranging from 0 (not true at all) to 4 (almost always true). Both the individual factors considered and the total score obtained (between 0 and 100 points) are taken into consideration. The CD-RISC is not exclusive to the context of cancer and has been used in various social, educational, and health fields. The Spanish-language version used in the present study has been validated for situations of chronic stress, with good reliability ($\alpha = 0.90$), variance (55.3%), and interfactor reliability ($\alpha = 0.75\text{--}0.86$) [14]. The results obtained are presented as the sum of the scores for each factor, as the sum of the five factors, and as the base 100 standardised scores for the factors. The higher the score for each dimension, the more resilience shown by the individual (Table 1) [15].

The population to participate in the study was obtained from a database provided by the Oncology Unit of the Costa del Sol Hospital, which included all women who had been treated for breast cancer and were being followed up, up to January 2017. These patients were sent a letter informing them about the study, requesting informed consent, together with the resilience questionnaire and a pre-franked envelope for its return. The letters were mailed between March and June 2017, and a reminder was sent at 1 month after the first posting.

Statistical analysis

In the descriptive analysis performed, measurements were taken of the position, median, and interquartile range (IR) (P75–P25) for the quantitative variables and of frequency distribution for the qualitative variables. The qualitative variables considered were sociodemographic and clinical (level of education, marital status, employment situation, household situation, cancer stage, type of surgery, lymphadenectomy, chemotherapy, radiotherapy, and hormoneotherapy). The differences in factor scores and total resilience were evaluated considering the dichotomous qualitative variables, by the Mann-Whitney *U* test. Previously, the quantitative variables were dichotomised taking the median as a criterion; those with three or more categories were grouped according to the “proximity” criterion. In all analyses, the level of statistical significance taken was $p < 0.05$. The statistical program used was SPSS v15.0.

Results

From the case records available and after selecting the breast cancer cases diagnosed during the previous 5 years,

Table 1 Distribution of the 25 items among the five factors of resilience

Factor 1	Persistence-tenacity-self efficacy	10. I give my best effort, no matter what 11. I can achieve my goals 12. When things look hopeless, I do not give up 16. I am not easily discouraged by failure 17. I think of myself as a strong person 23. I like challenges 24. I work to attain my goals 25. I take pride in my achievements
Factor 2	Control under pressure	6. I see the humorous side of things 7. Coping with stress strengthens me 14. Under pressure, I focus and think clearly 15. I prefer to take the lead in problem solving 18. I can make unpopular or difficult decisions 19. I can handle unpleasant feelings 20. I have to act on a hunch
Factor 3	Adaptability and support networks	1. I have close and secure relationships 2. I am able to adapt to change 4. I can deal with whatever comes my way 5. Past success gives me confidence for new challenges 8. I tend to bounce back after a hardship or illness
Factor 4	Control and purpose	13. I know where to turn to for help 21. I have a strong sense of purpose 22. I feel in control of my life
Factor 5	Spirituality	3. Sometimes fate or God can help 9. Things happen for a reason

we obtained an initial study population of 180 patients. Of these, 15 were excluded: one was male, three had suffered a relapse of breast cancer, one had cognitive disability, and ten had been lost to follow-up. Finally, 165 questionnaires were sent out; 59 completed copies were returned, for a response rate of 35.7% (Fig. 1).

The characteristics of the patients included are shown in Table 2. The median age was 60 years (IR 53–68) and the median number of years elapsed since diagnosis, 6 (IR 6–7). With respect to education, 59.3% of the sample had no qualifications or only primary studies, and 40.7% had secondary education or university studies. By marital status, 66% of the women were married or living in a partnership. By employment status, 76.3% were not in paid employment. The majority of the participants (79.7%) lived accompanied at home.

With respect to the clinical characteristics of the tumour, 67.2% of the patients had been treated with conservative surgery, which was associated with axillary lymphadenectomy in 56.9% of the cases. 54.5% of the women had presented stage II–III disease, which required radiotherapy and/or hormone therapy in over 80% and chemotherapy in 60% of cases.

The median score for total resilience was 77 (IR 70–80). In the standardised scores, the maximum value obtained was for factor 4 (control and purpose; 83.3 (IR 66.7–91.7)) and the

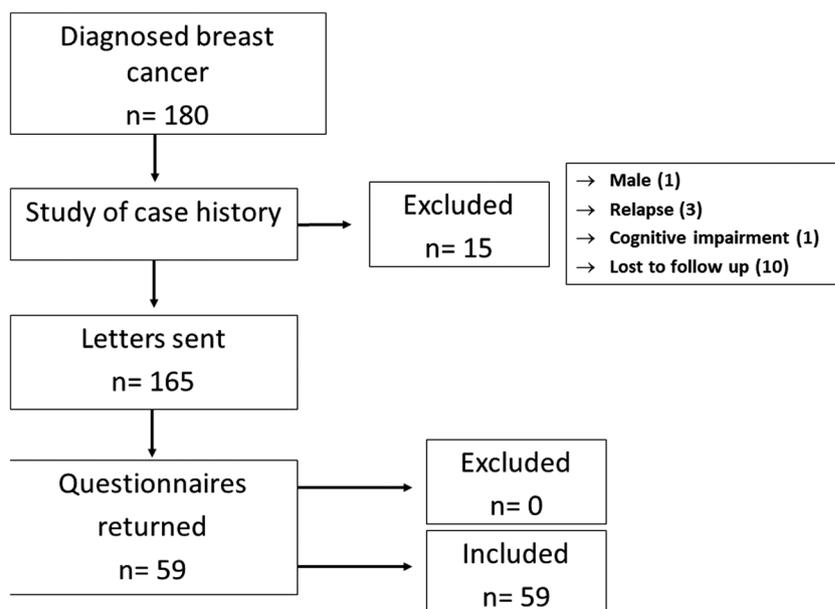
minimum value was obtained for factor 2 (control under pressure; 71.4 (IR 53.6–82.1)).

No significant association was found between the patients' age and any of the five CD-RISC factors, or the total score. For factor 1 (persistence-tenacity-self-efficacy), the women aged under 60 years had a median score of 27 (IR 23.5–29), compared to the group aged ≥ 60 years, who had a median score of 24 (IR 21–28). This difference was not statistically significant ($p = 0.058$).

A significant association was observed between the number of years elapsed since the diagnosis, in factors 2 (control under pressure) and 3 (adaptability and support networks), and the total score for the CD-RISC scale. Thus, the group of patients who had survived for six or more years since the diagnosis had a higher score for total resilience (90: IR 76–92) than those diagnosed more recently (74: IR 65.7–83.7) ($p = 0.012$).

Regarding the patients' education background, for factor 3 (adaptability and support networks), those with no formal qualifications or only primary studies had obtained a CD-RISC score of 16 (IR 15–18), compared to 18 (IR 16–19) among those with higher levels of education ($p = 0.024$). For factor 4 (control and purpose), too, there were significant differences; the patients with less formal education had a score of 9 (IR 8–10), while the second group had a score of 10.5 (IR

Fig. 1 Extracted from HCS database of patients with breast cancer



10–11) ($p = 0.005$). Regarding the total CD-RISC score, the group with no formal qualifications or only primary studies had a score of 72 (IR 64–84), versus 79 (IR 74–89.7) for the group with higher levels of education ($p = 0.016$).

Analysis of the sociodemographic variables (marital status and employment situation) and of the patients' household situation revealed no significant differences among the CD-RISC scores obtained.

Of the clinical variables, only the administration of chemotherapy was significantly associated with the score obtained on the CD-RISC scale. Thus, the women who were not given chemotherapy had a score of 22.5 (IR 20–26.2) for factor 1 (persistence-tenacity-self-efficacy) compared to the 27 (IR 21–29) obtained by those who received chemotherapy treatment ($p = 0.038$). For factor 2 (control under pressure), the group that received no chemotherapy scored 18.5 (IR 14–20.5), compared to the 21 (IR 16–24.5) obtained by the patients given chemotherapy ($p = 0.048$). For the total level of resilience, the scores for the two groups, respectively, were 71 (IR 63–69) and 79 (IR 72–89) ($p = 0.012$) (Table 3).

Discussion

In terms of the resilience levels of long-term breast cancer survivors, the total scores obtained were high. Significant differences were recorded for some of the sociodemographic and clinical characteristics analysed. Thus, higher levels of resilience were observed in the women who had secondary education or university studies and also among those who had received chemotherapy. In addition, an inverse relationship

was found between levels of resilience and the time elapsed since diagnosis.

Breast cancer has many repercussions, impacting on physical and psychological levels, and they may persist throughout the survivor's life [16, 17]. Among LTS of breast cancer, high scores were recorded for resilience (77 on the CD-RISC scale), exceeding those reported in previous studies conducted in Spain for populations composed of healthy adults aged 18–60 years (72.5) [18] and of first-year university students (68.5) [19]. A qualitative study carried out in Spain concluded that oncological patients conceptualised the experience of cancer as a transformative process, after which former areas of concern were no longer granted such importance, and the survivors had a greater capacity to enjoy small daily pleasures [20]. In the case of most patients who experience and survive the disease and its phases of treatment, this transformation in their lives is reflected in increased resilience [21].

According to our findings, the less time elapsed since the diagnosis, the higher the patient's level of resilience. These results are in line with previously published reports, according to which resilience emerges in relation to stressors and the sensation of being under threat. Thus, Farber et al. [10] showed that elements of resilience were less evident during asymptomatic or progression phases of HIV, but became more present as the symptoms of the disease became more apparent and personally threatening. In the psychiatric context, Kim et al. [22] and Kraji et al. [23] found empirical evidence of the influence of stressful events, such as the death of a relative, on the generation of resilience among adolescents.

A sociodemographic factor found to be significantly correlated with total resilience (in a positive association) was that of the patients' level of education. This finding corroborates

Table 2 Descriptive analysis

	Median	IR	
		P25	P75
Age	60.00	53.00	68.00
Years since diagnosis	6.00	6.00	7.00
	<i>n</i>	<i>%</i>	
Level of education			
No qualifications	8	13.5	
Primary	27	45.8	
Secondary	18	30.5	
University	6	10.2	
Marital status			
Married or in partnership	39	66	
Single	4	6.8	
Separated or divorced	7	11.9	
Widowed	9	15.3	
Employment situation			
In employment	14	23.7	
Retired	18	30.5	
Unemployed	7	11.9	
On sick leave	9	15.3	
Housewife	10	16.9	
Other situation	1	1.7	
Household situation			
Living alone	12	20.3	
Living accompanied	47	79.7	
Cancer stage ¹			
I	25	45.5	
II	19	34.5	
III	11	20.0	
Type of surgery ²			
Conservative	39	67.2	
Mastectomy	19	32.8	
Lymphadenectomy ³			
No	25	43.1	
Yes	33	56.9	
Chemotherapy			
No	22	37.3	
Yes	37	62.7	
Radiotherapy ⁴			
No	11	19	
Yes	47	81	
Hormonotherapy ⁵			
No	8	14	
Yes	49	86	

Lost to study: 1 = 4; 2 = 1; 3 =; 4 = 1; 5 = 2

evidence reported in earlier studies, such as Ma et al. on resilience and kidney diseases [24], and reinforces the concept of

“empowered patients”, since an active patient, with educational and social resources and control over her own life and health, tends to have greater capacity to decide, to satisfy her needs, and to solve problems [25]. Although in the present study we did not evaluate the patients’ degree of knowledge about the disease and its diagnostic process, it is striking that the women with a higher educational level obtained higher scores in the dimension of adaptability, control, and purpose. It would be interesting, in future research, to consider this aspect in greater detail, with a larger sample.

Regarding the different treatments administered to the patients, the experience of chemotherapy is the factor that produced the greatest impact in terms of increasing the level of resilience. Exposure to chemotherapy has a negative impact on patients both in the short and long term [26]. This treatment generated adverse situations among the women in our study, requiring them to face and overcome difficulties, in a process that stimulated highly transformative processes of resilience. Our results are in line with others according to which the greater the difficulty and the feeling of threat, the higher the level of resilience produced [10].

Among the limitations of our study, the low response rate (35.7%) is one of the most important; this circumstance means that the conclusions drawn from our results may not be generalisable to the entire population with breast cancer in our healthcare setting. As a consequence of this low response rate, the statistical power of the study is limited, as concerns interpretation of the statistical tests proposed. Nevertheless, some meaningful statistical associations were obtained. Furthermore, we did not assess sociodemographic factors in the period immediately following diagnosis, and therefore, we were unable to determine whether the experience of the disease changed the profile of our patients in terms of employment and personal status. Accordingly, further research should be undertaken to measure resilience with respect to social and cultural factors, taking into account their status before and after the diagnosis of breast cancer, as well as the evolution of resilience from the first diagnosis and during and after treatment.

These findings are of direct practical importance, since they make it possible to select patients and to focus attention on aspects whereby resilience can be improved. Thus, one of the actions arising from our research is the creation of a workshop to foster empowerment among survivors of breast cancer.

The results obtained in this study lead us to conclude that sociodemographic and clinical factors have a positive impact on the level of resilience among women resident in the Costa del Sol Health Area and who are long-term survivors of breast cancer. A background of higher education, the administration of adjuvant chemotherapy, and the time elapsed since the diagnosis are all positively associated with the total score obtained on the CD-RISC scale.

Table 3 Analysis of sociodemographic and clinical variables

	Factor 1			Factor 2			Factor 3			Factor 4			Factor 5			Total CD-RISC		
	Persistence-tenacity-self-efficacy			Control under pressure			Adaptability and support networks			Control and purpose			Spirituality					
	M	IR	p	M	IR	p	M	IR	p	M	IR	p	M	IR	p	M	IR	p
Total (59 patients)	26	22–29		20	15–23		17	15–18		10	8–11		6	5–7		77	70–86	
Standardised total (59 patients)	81.3	68.8–90.7		71.4	53.6–82.1		85	75–90		83.3	66.7–91.7		75	62.5–87.5				
Age																		
< 60 (n = 29)	27	23.5–29	0.058	21	15–24.5	0.399	17	15.5–18.5	0.909	10	9–11	0.511	5	4–7	0.145	79	71–87.5	0.511
≥ 60 (n = 30)	24	21–27		19.5	14.7–22.2		17	15–18		10	8–11		6	5–7.2		73.5	65.7–86	
Year of diag.																		
< 6 (n = 9)	29	25.5–29.5	0.066	24	21–26	0.022	19	17–19.5	0.009	11	9.5–11.5	0.061	8	5–8	0.139	90	76–92	0.012
≥ 6 (n = 50)	25	21–28		19.5	14.7–22		16	15–18		10	8–11		6	5–7		74	65.7–83.7	
Education																		
None/primary (n = 35)	24	21–28	0.066	19	14–22	0.064	16	15–18	0.024	9	8–10	0.005	6	5–8	0.48	72	64–84	0.016
Secondary/university (n = 24)	27	24–29		21	16.7–26		18	16–19		10.5	10–11		6	4.2–7		79	74–89.7	
Marital status																		
Married/partnership (n = 39)	25	21–29	0.381	20	14–22	0.356	17	15–18	0.704	10	8–11	0.618	6	4–8	0.672	75	65–86	0.447
Single/separated or divorced/widowed (n = 20)	27	22.2–28.7		20	19–23.7		17	15.2–18.7		10	8.2–11		6	5–7		78.5	70–86.7	
Employment situation																		
In employment (n = 14)	25.5	23.2–29		19.5	14–21.2		17	15.7–18.2		10	7.7–11		5.5	4–7		77	69.7–81.7	
Retired (n = 18)	24.5	21.7–28.2		20	16.5–23.5		17	14.7–18.2		10	8.7–11		6	5–7		74.5	69–86.2	
Unemployed (n = 7)	27	21–30		20	15–26		16	16–20		10	8–11		5	4–8		72	71–88	
On sick leave (n = 9)	26	22.5–28.5		24	14–26		17	14.5–19.5		10	9.5–11		6	4–8		86	67.5–91	
Housewife (n = 10)	25.5	19–28		18	14–20.2		16	13.7–18		10	7.5–10.2		7	5.7–7.2		76	59.7–81.5	
Other situation (n = 1)	32	32–32		27	27–27		19	19–19		11	11–11		4	4–4		93	93–93	
Household situation																		
Living alone (n = 12)	27	22–27.7	0.821	19.5	16.7–21.7	0.835	17.5	16–18	0.768	9.5	7.5–11	0.773	6	5–7	0.931	76	70–86	0.895
Living accompanied (n = 47)	25	21–29		20	15–24		17	15–18		10	8–11		6	4–8		77	66–87	
Cancer stage																		
I (n = 25)	25	21.5–27	0.461	19	14–21.5	0.225	16	15–18	0.114	10	8–10.5	0.202	6	4–7	0.074	74	66–79	0.114
II–III (n = 30)	26.5	21–29		20	15–26		17	16–19		10	9–11		6	5–8		78.5	69–90	
Type of surgery																		
Conservative (n = 39)	26	21–29	0.572	20	14–22	0.361	16	15–18	0.598	10	8–11	0.906	6	4–7	0.377	77	64–86	0.567
Mastectomy (n = 19)	25	22–27		20	16–24		17	16–18		10	9–11		6	5–8		75	72–86	
Lymphadenectomy																		
No (n = 25)	26	21–27.5	0.694	19	14–21.5	0.135	16	15–18	0.568	10	8–11	0.37	5	4–7	0.081	77	63.5–80	0.19
Yes (n = 33)	24	22–29		20	15.5–25.5		17	15.5–18		10	9–10		6	5–8		75	70.5–89	

Table 3 (continued)

	Factor 1		Factor 2		Factor 3		Factor 4		Factor 5		Total CD-RISC							
	M	IR	M	IR	M	IR	M	IR	M	IR	M	IR						
Chemotherapy	Persistence-tenacity-self-efficacy		Control under pressure		Adaptability and support networks		Control and purpose		Spirituality									
	22.5	20–26.2	0.038	18.5	14–20.5	0.048	16	14.7–18	0.054	10	8–10	0.08	6	4–7	0.154	71	63–69	0.012
Yes (n = 37)	27	23.5–29		21	16–24.5		17	16–19		10	9–11		6	5–8		79	72–89	
Radiotherapy	Persistence-tenacity-self-efficacy		Control under pressure		Adaptability and support networks		Control and purpose		Spirituality									
	25	23–27	0.968	20	16–22	0.937	16	15–18	0.411	10	9–11	0.708	6	4–6	0.276	77	72–79	1
Yes (n = 47)	26	21–29		20	15–24		17	15–19		10	8–11		6	5–8		75	66–87	
Hormonotherapy	Persistence-tenacity-self-efficacy		Control under pressure		Adaptability and support networks		Control and purpose		Spirituality									
	26	19–30.7	0.773	24	15–26.7	0.163	18.5	16–19	0.232	10	6.5–11.7	0.981	6	4.2–7.7	0.806	84	63.5–92.2	0.28
Yes (n = 49)	25	21.5–29		20	15–22.5		17	15–18		10	8.5–11		6	5–7		75	69–86	

M median, IR interquartile range, p significance value

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Compliance with ethical standards In all respects, the present study complies with the Helsinki Declaration and with applicable legislation on the protection of patients’ rights (Act 15/2002). All data were recorded anonymously, in strict accordance with the laws and data protection regulations in force (Act 41/2002 of 14 November; Act 15/1999 of 15 December). The study was approved by the Costa del Sol Research Ethics Committee on 26 October 2016, under internal code number 005_oct_PR-Resiliencia.

Conflict of interest The authors declare that they have no competing interests.

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