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# Psychosocial Clinical Pathway of Breast Cancer in Portuguese Women: The Distress, Emotional Control, Neuroticism, Social Support, Coping, Quality of Life and Body Image Perception's Changes over Time

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**Abstract:** Distressing events can lead to negative outcomes, such as post-traumatic stress symptoms; however, they can also lead to positive outcomes, being an experience of post-traumatic growth or benefit finding. In the context of cancer, the positive thinking may impact on important psychological outcomes, including depression, anxiety, positive well-being and health behaviors. There are few longitudinal studies in this area. Thus, the aim of this study was to investigate the psychosocial clinical pathway of Portuguese women with breast cancer (time 1 "diagnosis", time 2 "surgery" and time 3 "treatments"). A total of 30 women diagnosed with breast cancer were evaluated, on 3 separate occasions, in relation to: distress, emotional control, neuroticism, social support, body image perception, coping and quality of life (QoL). The non-parametric Friedman test was used to compare the variables on each occasion. The changes' analysis of the psychosocial pathway of breast cancer, illustrated the slight impact of breast cancer as a negative life event. These results show a good adjustment at all levels (emotional, social and physically). The levels of neuroticism and body image perception indicated significant changes throughout time. The results indicate that finding positive meaning in response to a distressing event, such as breast cancer, is psychologically protective and, thus, may indirectly influence the long-term occurrence of depressive symptoms and impaired QoL. Considering the rapidly growing population of Portuguese breast cancer survivors, it is important to better understand their treatment and survival experiences in further studies.

**Key words:** Breast cancer, breast psychosocial pathway, longitudinal study.

## 1. Introduction

Both global and nationally, breast cancer is the most common oncological disease in the female population and the one with the highest number of survivors [1–3]. These aspects justify the increased relevance of the published scientific literature, both in terms of the psychosocial impact of the disease's process assessment, and in terms of survival.

A review of the first studies in this area, between the fifties and seventies of the twentieth century, demonstrated the interest that immediately emerged, in the evaluation of the diagnosis and treatment of breast cancer's psychosocial impact, stressing the paradoxical effect of the medical intervention, as the treatments that women underwent were beneficial for the remission of the cancer, but implied emotional changes [4, 5].

The breast cancer process can have several psychosocial consequences, as it develops over a given period of time, being that it has a different duration in every woman. This process is commonly referred to as *psychosocial clinical pathway*. This term refers to a set of stages, which correspond to the different moments of medical intervention (diagnosis, surgery, treatments, terminal phase) [6]. Each stage is considered unique and can be understood as a source of stress, which may contribute to an increased psychological morbidity in these women [4, 6–10].

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A set of complex and differentiated psychosocial responses to the disease may arise. These responses reflect the fluctuations that occur in the emotional adjustment, as well as the type, and amount, of personal and social resources that the woman has, and that act as a protective shield [11].

However, the studies are not consistent, and therefore raise several hypotheses regarding the impact of the *psychosocial clinical pathway* in breast cancer. The negative impact, on one hand, and the discovery of meaning, on the other are opposite possibilities that may, nevertheless, co-exist [12].

The disease's process can be experienced as a crisis, but one that triggers the search for meaning for this life event, and often for life itself, which may lead to changes in the way one lives [13–15]. For some women the crisis dissipates only one year after surgery and has a negative impact [16]. Other women make a positive attribution of this experience and view the psychosocial clinical pathway as a transition, which enabled *personal growth* — an existentialist concept, which reflects a restructuration in the way one sees the world and his/her life project. Therefore, the positive aspect is the rediscovery of life and its redefinition, which translates an attitude of *posttraumatic growth* [17–19].

Research has highlighted multiple factors that influence these different responses during breast cancer's process.

The presence of features such as: emotional control; low neuroticism, associated with Type C personality; the use of ineffective coping strategies; and low perceived social support (from partner, family, friends and health professionals), may negatively influence the way women react to the disease process [20–37].

Considering this, the main objective of this research was to study the impact of the psychosocial clinical pathway of breast cancer. We compared the evolution of psychosocial factors (emotional status and control, coping strategies, social support, neuroticism and quality of life — QOL), in women with breast cancer in three different moments.

## 2. Method

### *2.1 Participants*

A total of 30 women with breast cancer participated in this study. The sample was collected through a non-probabilistic sampling, accidental type [38].

The selection of participants was made taking into account the following inclusion criteria: (1) voluntary decision to participate in the study; (2) primary breast cancer (the first time the individual has breast cancer); (3) understanding Portuguese; (4) having completed the 1st cycle of basic education, (5) not having received treatment (chemotherapy, radiotherapy and hormone therapy) initially. The socio-demographic and clinical characteristics of the sample are described in Tables 1 and 2.

### *2.2 Material*

To select the instruments, certain aspects were taken into account, namely: Suitability to evaluate this study's variables, their structure and use, national and internationally. The questionnaires' authors were contacted order to obtain their authorization and gather information about the instruments' validity and quotation. For the questionnaires that were not translated into Portuguese we used the technique of translation and back-translation. The instruments used are part of a project's research protocol on the psychosocial impact of breast cancer in Portuguese women, and all presented a good reliability [39, 70]. The instruments chosen are listed below:

**QSDC** — evaluates the socio-demographic and clinical variables [40].

**SSSS** — Scale of Satisfaction with Social Support [41] — assesses the individual's satisfaction with the perceived social support. It comprises 15 items, distributed in four subscales (satisfaction with friendships, social activities, intimacy, and family).

**CECS** — Courtauld Emotional Control Scale [42]— consists of 21 items, and measures the overall control of negative emotional responses. It is divided into three sub-scales, assessing the degree of anger, anxiety and depression control.

**Table 1 Frequency and percentage of socio-demographic and clinical variables (n = 30).**

| Variables | Categories | Frequencies | % |
|---|---|---|---|
| Age group | 24-38 | 3 | 10.0 |
| | **39-53** | **14** | **46.7** |
| | 54-68 | 7 | 23.3 |
| | > = 69 | 6 | 20.0 |
| Marital status | Single | 4 | 13.3 |
| | **Married/cohabitation** | **20** | **66.7** |
| | Divorced/separated | 2 | 6.7 |
| | Widow | 4 | 13.3 |
| Schooling | **Elementary school** | **8** | **26.7** |
| | Middle school | 6 | 20.0 |
| | Junior High School | 6 | 20.0 |
| | **Senior High School** | **8** | **26.7** |
| | Tertiary | 2 | 6.7 |
| Professional Situation | Active | **19** | **63.3** |
| | Active/Sick Leave | 1 | 3.3 |
| | Unemployed | 2 | 6.7 |
| | Retired | 6 | 20.0 |
| | Another | 2 | 6.7 |
| Family Background | **No** | **18** | **60** |
| | Yes | 12 | 40 |
| Breast Pathology Background | **No** | **20** | **66.7** |
| | Yes | 10 | 33.3 |
| Prior Psychopathology | No | **15** | **50** |
| | Yes | 15 | 50 |
| Psychological Psychotherapy | No | **29** | **96.7** |
| | Yes | 1 | 3.3 |
| Type of Surgery | Partial | 3 | 10 |
| | **Radical** | **27** | **90** |
| Post-operatory Treatments | QT | 2 | 6.7 |
| | RT | 2 | 6.7 |
| | **QT /RT** | **4** | **13.3** |
| | HT | 1 | 3.3 |
| | **QT/ HT** | **6** | **20** |
| | RT/ HT | 4 | **13.3** |
| | QT /RT/ HT | 11 | 36.7 |
| Diagnostics | Stage 1 | 4 | 13.3 |
| | **Stage 2** | **25** | **83.3** |
| | Stage 3 | 1 | 3.3 |

QT – chemotherapy; RT – radiotherapy; HT - hormone therapy.

BSI — Brief Symptom Inventory — is a 53-item psychopathological symptoms' inventory, which includes nine dimensions (somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism) and three global indices. The Portuguese version was assessed by Canavarro [43]. In this investigation we used the subscales of depression and anxiety, as did Schnoll [44].

**Mini-Mac —** Mental Adjustment to Cancer scale, short version [45] — consists of 29 items and assesses five strategies of coping with cancer: helplessness/

**Table 2 Frequency and Percentage of Negative Life Events (n = 30).**

| Variables | Categories | Frequencies | % |
|---|---|---|---|
| Family Conflict | No | 22 | 73.3 |
| | Yes | 8 | 26.7 |
| Separation/Loss | No | 7 | 23.3 |
| | **Yes** | **23** | **76.7** |
| Life changes | No | 24 | 80.0 |
| | Yes | 6 | 20.0 |
| Other's and own disease | No | 13 | 43.3 |
| | **Yes** | **17** | **56.7** |
| Financial Problems | No | 27 | 90.0 |
| | Yes | 3 | 10.0 |
| N Negative Life Events | 0 | 2 | 6.7 |
| | **1** | **9** | **30.0** |
| | **2** | **11** | **36.7** |
| | 3 | 6 | 20.0 |
| | 4 | 1 | 3.3 |
| | 5 | 1 | 3.3 |

hopelessness; anxious preoccupation; fighting spirit; cognitive avoidance and fatalism.

**QLQ-C30** — Quality of life questionnaire [46] — is a scale to assess the QOL in cancer patients. It comprises 30 items, divided by a global scale, five functional scales (physical, role, emotional, cognitive and social functioning), and three sub-scales of symptoms associated to cancer and its treatment, and six single items assessing symptoms that cancer patients often numbering.

**QLQ-BR23** — Quality of life questionnaire [47] — this module is applied specifically to patients with breast cancer, during the disease process (surgery and treatments). It is a 23-item questionnaire, divided into four functional scales (body image, sexual functioning, sexual satisfaction, and future perspective) and into four symptom scales (which assess symptoms of the disease and the side effects of treatment).

**NEO-FFI** — The NEO Five Factor Inventory is a shortened version of the Personality Inventory NEO-PI-R developed by Paul Costa and Robert MacCrae in 1992 — The Portuguese version was assessed by Lima [48]. In its short version, the NEO-FFI, consists of 60 items, with a 4-point Likert-type response scale, which allows to evaluate five basic personality dimensions, as is postulated in the "Big Five" theory: neuroticism, extraversion, openness, agreeableness and conscientiousness [49].

### *2.3 Procedure*

The literature search was done using several databases (PsycINFO, PsycARTICLES, Medline, Web of knowledge) and focused on the following keywords: anxiety, depression, emotional control, coping, quality of life, social support, psychological impact, psychosocial adjustment, breast cancer, survivor, life events, personality, neuroticism, benefit finding.

In order to recruit the participants we contacted the Central Hospitals of Lisbon, where the procedures followed were similar: the women were contacted, then, in a suitable space and together with the researcher, they completed the first page of the instrument, and then filled the remaining pages of the instrument alone.

The research protocol applied was always the same, being that the QLQ-BR-23 [47] was only applied after the surgery and treatments, as it is supposed to be.

The statistical analysis included both a descriptive analysis of socio-demographic, clinical and psychosocial variables, and an inferential analysis of the study's variables. The questionnaires were coded, according to the procedures detailed by their authors, and then the results were transformed into scores from 0 to 100. The data were entered into an electronic database, using SPSS (v. 18, SPSS Inc., Chicago, IL).

We analyzed each variable's normality and homogeneity of variances, using the Kolmogorov-Smirnov test and Levene's test, for a significance level of 0.05 [38, 50].

To analyze the differences between the psychosocial variables, over the psychosocial clinical pathway of breast cancer, we resorted to the use of Friedman's ANOVA by ranks, a non-parametric method for comparing populations from paired samples, which enables the study of a single factor in two or more repeated samples [38, 50].

We used the Cronbach's Alpha in order to estimate the reliability of each factor from the original scales, taking into account what Marôco and Garcia-Marques [39] consider to be acceptable values in this measure [70].

## 3. Results

### *3.1 Descriptive Analysis*

#### 3.1.1 Stage 1

These women presented, in average, low levels of: depression; anxiety; emotional control of anger; and overall health status.

In addition, they reported high levels of: satisfaction with in intimate, family, friends, social activities' and overall social support; anxiety, sadness and overall emotional control; physical, emotional and social QOL; helplessness/hopelessness; fighting spirit; avoidance; and of neuroticism (Table 3).

**Table 3 Mean, median, standard deviation, minimum and maximum of psychosocial variables (n = 30).**

| Variables | Dimensions | Mean | Median | SD | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Social Support | Friends | 50.64 | 56.36 | 18.041 | 13.65 | 68.25 |
| | Social Activities | 54.34 | 58.96 | 17.133 | 25.40 | 74.13 |
| | Family | 70.28 | 78.92 | 21.844 | 27.50 | 95.13 |
| | Intimacy | 63.59 | 71 | 20.747 | 21.24 | 84.20 |
| | Total | 67.93 | 67.71 | 15.107 | 39.00 | 91.40 |
| Emotional Control | Anger | 45.29 | 42.53 | 18.354 | 20.47 | 81.87 |
| | Anxiety | 50.05 | 51.71 | 15.820 | 19.73 | 78.93 |
| | Sadness | 61.41 | 51.70 | 25.260 | 24.80 | 99.20 |
| | Total | 52.25 | 52.08 | 14.573 | 21.67 | 86.67 |
| BSI | Depression | 13.33 | 8.58 | 12.235 | .00 | 41.67 |
| | Anxiety | 13.37 | 11.30 | 8.805 | 2.30 | 29.80 |
| *Coping* | Helplessness/Hopelessness | 72.37 | 71.06 | 12.919 | 47.67 | 98.50 |
| | Fighting Spirit | 53.90 | 55.66 | 8.395 | 33.33 | 75.33 |
| | Cognitive Avoidance | 57.91 | 59.15 | 7.062 | 42.50 | 75.87 |
| QDV | Global Health Status | 41.87 | 41.67 | 23.998 | .00 | 100 |
| | Physical | 81.55 | 86.67 | 17.558 | 20 | 100 |
| | Emotional | 63.89 | 66.67 | 24.285 | .00 | 100 |
| | Social | 89.58 | 100 | 19.212 | .00 | 100 |
| Personality | Neuroticism | 52.89 | 52.38 | 7.428 | 36.73 | 64.50 |

3.1.2 Stage 2

These women presented low levels of: depression; anxiety; of anger, anxiety and overall emotional control; helplessness/hopelessness; and neuroticism. Further more, they reported high levels of: satisfaction with in intimate, family, friends, social activities' and overall social support; anxiety, emotional control of depression; physical, emotional and social QOL; fighting spirit; avoidance; overall health status; body image; and sexual functioning and satisfaction (Table 4).

3.1.3 Stage 3

These women reported low levels of: depression; anxiety; of anger, anxiety and overall emotional control; helplessness/hopelessness; neuroticism; and overall health status.

Moreover, they presented high levels of: satisfaction with in intimate, family, friends, social activities' and overall social support; emotional control of depression; physical, emotional and social QOL; fighting spirit; avoidance; body image; and sexual functioning and satisfaction (Table 5).

### *3.2 Differences over Time*

The significant differences ($p < 0.05$) between the psychosocial variables over the psychosocial clinical pathway (three stages) are presented in Table 6.

Satisfaction with social support from the family is low in the 1st stage, and higher in the other two stages.

Resorting to a fighting spirit strategy is lower in the 1st stage, and higher in the other two stages, with no significant differences found between the 2nd and 3rd stages.

The control over anxiety is higher in the 1st stage, and presents the lowest value in the 3rd stage. There are

**Table 4 Mean, median, standard deviation, minimum and maximum of psychosocial variables (n = 30).**

| Variables | Dimensions | Mean | Median | SD | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Social Support | Friends | 51.31 | 54.60 | 15.440 | 13.65 | 68.25 |
| | Social Activities | 51.34 | 49.70 | 15.491 | 14.83 | 74.13 |
| | Family | 79.61 | 87.02 | 20.986 | 19.03 | 95.13 |
| | Intimacy | 69.19 | 71.76 | 18.884 | 16.84 | 84.20 |
| | Total | 71.66 | 71.15 | 15.327 | 30.79 | 91.40 |
| Emotional Control | Anger | 38.97 | 35.61 | 18.675 | 20.47 | 81.87 |
| | Anxiety | 42.16 | 39.46 | 15.554 | 19.73 | 78.93 |
| | Sadness | 60.71 | 57.20 | 22.587 | 24.80 | 99.20 |
| | Total | 47.28 | 45.30 | 14.873 | 23.73 | 86.67 |
| BSI | Depression | 18.90 | 16.28 | 12.790 | .00 | 45.77 |
| | Anxiety | 14.33 | 11.30 | 12.070 | .00 | 53.10 |
| *Coping* | Helplessness/hopelessness | 41.00 | 38.56 | 12.488 | 27.90 | 66.47 |
| | Fighting Spirit | 63.05 | 62.83 | 13.018 | 20.67 | 82.67 |
| | Cognitive Avoidance | 56.04 | 56.90 | 10.769 | 18.97 | 75.87 |
| QDV | Global Health Status | 52.29 | 50 | 19.384 | .00 | 100 |
| | Physical | 74.72 | 73.33 | 18.085 | 13.33 | 100 |
| | Emotional | 66.11 | 66.67 | 23.264 | .00 | 100 |
| | Social | 74.03 | 75 | 24.330 | .00 | 100 |
| | Body Image | 73.79 | 77.78 | 28.584 | .00 | 100 |
| | Sexual | 86.67 | 100 | 20.452 | 11.11 | 100 |
| Personality | Neuroticism | 26.18 | 24.22 | 9.713 | 9.30 | 45.40 |

**Table 5 Mean, median, standard deviation, minimum and maximum of psychosocial variables (n = 30).**

| Variables | Dimensions | Mean | Median | SD | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Social Support | Friends | 55.17 | 55.56 | 11.692 | 13.65 | 68.25 |
| | Social Activities | 52.11 | 53.37 | 17.871 | 14.83 | 74.13 |
| | Family | 78.82 | 81.81 | 18.592 | 19.03 | 95.13 |
| | Intimacy | 69.87 | 79.80 | 19.955 | 16.84 | 84.20 |
| | Total | 72.92 | 72.97 | 12.717 | 34.09 | 91.40 |
| Emotional Control | Anger | 44.61 | 41.46 | 13.888 | 20.47 | 78.67 |
| | Anxiety | 41.19 | 39.46 | 15.410 | 19.73 | 78.93 |
| | Sadness | 56.83 | 49.60 | 22.807 | 24.80 | 99.20 |
| | Total | 47.54 | 44.72 | 15.988 | 22.73 | 82.80 |
| BSI | Depression | 16.23 | 14.35 | 10.886 | .00 | 35.83 |
| | Anxiety | 15.12 | 13.00 | 12.477 | .00 | 48.20 |
| *Coping* | Helplessness/hopelessness | 43.62 | 45.43 | 13.363 | 27.90 | 78.00 |
| | Fighting Spirit | 63.13 | 62.33 | 12.683 | 20.67 | 82.67 |
| | Cognitive Avoidance | 56.73 | 56.90 | 9.510 | 27.87 | 75.87 |
| QDV | Global Health Status | 42.71 | 45.83 | 19.038 | 8.33 | 100 |
| | Physical | 78.33 | 80.00 | 15.989 | 13.33 | 100 |
| | Emotional | 72.15 | 75.00 | 23.208 | .00 | 100 |
| | Social | 81.53 | 100 | 23.845 | .00 | 100 |
| | Body Image | 76.94 | 83.33 | 24.872 | .00 | 100 |
| | Sexual | 83.70 | 100 | 22.999 | .00 | 100 |
| Personality | Neuroticism | 25.88 | 24.27 | 9.502 | 6.88 | 47.20 |

**Table 6 Ranks' means and values of the friedman's test for the psychosocial variables with significant differences between the stages.**

| Psychosocial Variables | Stages | | | Friedman $X^2$ | d.f. | P |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | | | |
| Social Support – Family | $1.65^{a}$ | $2.22^{b}$ | $2.13^{ab}$ | 6.241 | 2 | **.044** |
| Fighting Spirit | $1.33^{a}$ | $2.32^{b}$ | $2.35^{b}$ | 20.887 | 2 | **.000** |
| Helplessness/hopelessness | $2.90^{a}$ | $1.45^{b}$ | $1.65^{b}$ | 38.000 | 2 | **.000** |
| Anxiety Control | $2.38^{a}$ | $1.93^{ab}$ | $1.68^{b}$ | 7.810 | 2 | **.020** |
| Neuroticism | $3.00^{a}$ | $1.43^{b}$ | $1.57^{b}$ | 46.828 | 2 | **.000** |
| Global Health Status | $2.70^{a}$ | $1.92^{b}$ | $1.38^{c}$ | 28.450 | 2 | **.000** |
| Body Image | - | $1.65^{a}$ | $1.35^{b}$ | 4.263 | 1 | **.039** |

Ranks' means with different letters show significant differences for $\alpha = 0.05$.

no significant differences between the 1st and 2nd stages, or between the 2nd and 3rd stages.

The neuroticism level is higher in the 1st stage, and lower in the other two stages. No significant differences were found between the 2nd and 3rd stages.

The overall health perception is higher in the 1st stage, and lower in the other two stages, with no significant differences between stages 2 and 3.

Body image is perceived as more negative in the 2nd stage, when compared with the 3rd stage.

## 4. Discussion

We found, in our sample, an emotional stability continuum since the initial moment (breast cancer diagnosis) until the final moment (post adjuvant therapy), as the depression and/or anxiety symptoms

presented low values, and appeared unchanged throughout the disease's course.

These results indicate that women, while going through the disease process, found some gain in adversity; this ability to somehow "profit" from the disease is designated, in the literature, as *benefit finding*. This means these women give a greater importance to every moment of their lives, to relationships with others, and that they change their priorities and objectives [17–19, 51, 52].

In this sense, there appears to be, as described by Anaut [53], a positive psychosocial development: being faced with the diagnosis and the treatments for breast cancer are moments with a negative impact; however, they were overcome by these women in a resilient way, by transforming the "negative" into "positive".

Some other studies reached similar conclusions in the assessment of the disease over time [12, 54– 57].

Moreover, there are times when the cancer diagnosis is even considered a relief, to finally arrive at a clarification of the clinical situation. This suggests that the state of uncertainty about the diagnosis can cause more anxiety than the actual adverse event (diagnosis of breast cancer and loss of the breast). Sometimes, levels of anxiety and depression tend to decrease after the diagnosis' disclosure [13].

According to the Common Sense Model of Illness Cognition [58–60], these aspects are related to the perception of disease control, i.e., if women believe and feel confident on the positive outcome of the treatments, their anxiety levels tend to decrease.

This increased awareness may explain the variation in the levels of emotional control. At the time of diagnosis the anxiety control was felt as necessary, as a *coping* style, in a moment that is generally considered, in the literature, as causing a greater anxiety [61].

When a patient receives a cancer diagnosis different negative emotional reactions, which hide many fears (death; dependence on family and health professionals; disfigurement; inability to pursue objectives; social breakdown of relationships; consequences of the disease, surgery and treatments) may occur [62], being that anxiety control is a way of coping with all these fears. The studies that have explored this issue show that, women with breast cancer only use emotional control as coping strategies, being that they do not maintain this response over the course of the disease [23, 26, 63–65].

However, some women from our sample may already have emotional experience in effectively dealing with distress situations and, thus, they present the cognitive and social resources necessary to deal with the demands of the *psychosocial clinical pathway*, of breast cancer [66]. This is the integrative model's perspective of conceptualization and assessment of the individual's response to a stressful event, mediated by the interaction of personal and exterior resources [67].

Specifically, women diagnosed with breast cancer have a more pessimistic attitude about the future and do not express their anxiety, however, after the treatment, when they have more information about the disease's prognosis they can adopt a more optimistic attitude [45]. Therefore, this way of dealing with the disease process is considered positive, adapted and effective, being understood by many authors as a challenge set by the woman for herself, i.e., the woman sets the objective of overcoming the disease [18, 68].

Also, we reached the same conclusions as Lazarus and Folkman [69], who had stated in their transactional model that, coping is an active process. Therefore, the individuals may use different coping strategies over the course of the disease by adopting the one that balances their emotional state [66].

In addition, these women present an average level of perceived satisfaction with social support, being that when this occurs, there is a clear and positive influence in the management of the disease [29, 70]. However, in our sample, the perception of family support suffered changes over time. It can be difficult for the family to deal with emotions and to employ their skills to help effectively, thereby providing a negative support

because it does not help alleviate the distress felt by women, or promote their physical recovery [71–73].

Studies have shown that the emotional and instrumental support, provided by the family and other members of the social network, tend to increase over the breast cancer pathway, and have a positive effect on the woman's emotional state [20–23, 26, 29, 37, 71, 74–76].

The constant presence of family support is important, particularly after the treatments, as this stage is considered the threshold into survival. At this point the understanding, expression and regulation of emotions, according to that of the informal social network, reduce the impact of this change.

The QoL areas where women from our sample reported changes are the overall health status and body image. When diagnosis of breast cancer was first made, they perceived themselves as healthy given that they had not, yet, been subjected to any treatment. Over time, the reported levels of perceived overall health status decreases. Moreover, the physical QoL tends to remain stable, i.e., women can continue their activities of daily living, however, the perception of an altered health status, may indicate that they admit to having a disease, but do not feel ill [77].

Several studies explain that this result is due to the impact that performing surgery and more intrusive treatments (e.g., mastectomy, radiation therapy together with chemotherapy) have on women [78, 79].

This also explains the changes in body image, felt with more intensity after surgery. Although the studies are contradictory in their results, surgery is often pointed as the most intrusive treatment, having a substantial impact on femininity and on women's physical attractiveness [16, 80–84].

Over time, and at the final stage, after treatment, women's perception of the changes in their body image decreases, and an integration of this new image in their physical identity occur. The increased perception of family support, due to a more open discussion about breast cancer, may have potentiated a positive confrontation and integration of this new body image [13, 85].

The women in this study express adaptation changes in the various stages of the psychosocial clinical pathway of breast cancer. However these changes seem to be positive, as they denote a balanced emotional response as well as an effective social and cognitive response; which, in general, translate a reduced impact on both an emotional level and on their QoL.

However, it is noteworthy that we observed a change in the personality trait "neuroticism" towards an emotional adjustment, over time (i.e., there is a change from emotional instability to emotional stability). This change may be related to a decrease in the anxiety control, which is no longer perceived as a useful and effective coping strategy, therefore, it decays in parallel with the helplessness/hopelessness, while the fighting spirit emerges. This event is in agreement, theoretical and empirically, with the association between low neuroticism, and high fighting spirit levels [61, 86–88].

Thus, the change in the neuroticism trait over time strengthens the final conclusion of this study, which is related to the adoption of an adaptive trajectory when faced with an event that is considered to have negative impact.

## 5. Conclusion

Considering the psychosocial clinical pathway, we observed that the women in our sample faced breast cancer as a benefit finding event, as has been observed in several other studies [18, 44, 52, 88, 89, 90], or as posttraumatic growth, which includes: better relationships with family and friends, sense of competence, changes in priorities, greater emotional strength, deeper spirituality and a desire live everyday fully [19, 51, 52].

As suggested by the "distress evaporation" theory [20], this trajectory of a positive evolution enables a good psychological prognosis, as it presents no indicators for the development of post-traumatic stress disorder [12, 20].

However, it is very important, both in terms of research and clinical practice, to pay attention to the survival stage, stimulating the application of the acquired experience to other emotional events, and as a testimony in the peer's support (peer navigator).

In this way, the strengths of this study are related with is longitudinal nature, that show the psychosocial trajectory impact of the breast cancer. Besides that, it shows witch aspects could change over time in the positive way. That evidences the importance of early clinical intervention on the coping strategies and social support, as two tools that can improve the psychosocial adjustment in the breast cancer women.

The body image and neuroticism changes throughout breast cancer treatment indicates a good psychological prognosis, but these two variables need to be better explored in future studies, and in the next stage — survival — to better understand their influence and their stability of change over time.

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