Original Article

Assessing the impact of pain on the life of breast cancer survivors using the Brief Pain Inventory

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Abstract. [Purpose] This study attempted to assess the impact of pain on the life of breast cancer survivors using the Brief Pain Inventory (BPI). [Subjects and Methods] A cross-sectional study was conducted. Participants comprised 30 women, aged 30–80 years, who had received treatment for breast cancer (surgery and complementary treatment) at least 12 months prior to the study and had reported chronic pain related to the treatment procedures. [Results] The highest scores were found for "mood" (median: 5.00 points; first quartile: 1.00 points; third quartile: 7.25 points), "normal work" (median: 5.00 points; first quartile: 0.00 points; third quartile: 8.00 points), and "sleep" (median: 4.50 points, first quartile: 0.00 points, third quartile: 8.00 points). [Conclusion] Pain exerts a negative impact primarily on mood, normal work, and sleep among breast cancer survivors.
Key words: Pain measurement, Mastectomy, Breast-conserving surgery

INTRODUCTION

Women with breast cancer—who have undergone standard medical treatment, i.e., surgery, chemotherapy, and/or radiotherapy—commonly experience pain as a consequence of these interventions[1]. The anterior and/or lateral region of the thorax, axilla, and upper limbs are the anatomic sites most often affected by pain in such cases[2]. This pain is generally chronic, lasting more than three months, and requires the attention of different healthcare professionals, including a physiotherapist[3].

For the assessment of pain experienced by breast cancer survivors, recent studies have employed algometry[4], the Numerical Rating Scale[5], Visual Analog Scale[3], Catastrophizing Scale[6] and McGill Pain Questionnaire[7]. However, pain is a complex, multidimensional phenomenon, especially for this group of patients. Its interpretation involves different clinical aspects, including a psychophysical approach that addresses functional, qualitative, subjective, emotional, motivational, and cultural components[8, 9].

Information gleaned through studies categorize pain experienced by breast cancer survivors can help healthcare professionals customize clinical approach and interventions, catering to patients' specific needs. Ferreira et al.[10] found that most patients experienced constant daily pain that began soon after the surgical procedure. Fabro et al.[11] found that pain was more frequently experienced by young women subjected to axillary lymph node dissection. According to De Oliveira et al.[7], a large proportion of breast cancer survivors categorize their pain as "tenderness," "aching," "shooting," and "tiring-exhausting." Considering its multidimensional nature, other relevant aspects of pain still need to be characterized in this population of patients.

By investigating the impact of pain among breast cancer survivors and their lives using the Brief Pain Inventory (BPI), this study can help physiotherapists design pain management strategies to address common signs and symptoms.

SUBJECTS AND METHODS

The present study's procedures were approved by the Human Research Ethics Committee of the Nursing School of Ribeirão Preto (University of São Paulo, Ribeirão Preto, SP, Brazil) under process number 162/2007. The study objective and procedures were explained to patients; those agreeing to participate signed a statement of informed consent.

Thirty women enrolled at the Breast Cancer Teaching, Research and Rehabilitation Center of the Nursing School of Ribeirão Preto were recruited in this cross-sectional study. Inclusion criteria were: being 30–80 years of age, having

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Table 1. Central tendency and dispersion values for the breast cancer survivors' responses to the Brief Pain Inventory items

Items	MinV	MaxV	FQt	TQt	Md
General activities	0.00	10.00	0.00	4.25	0.50
Mood	0.00	10.00	1.00	7.25	5.00
Walking ability	0.00	10.00	0.00	4.25	0.00
Normal work	0.00	10.00	0.00	8.00	5.00
Relationships with others	0.00	10.00	0.00	5.00	0.00
Sleep	0.00	10.00	0.00	8.00	4.50
Enjoyment of life	0.00	10.00	0.00	6.50	3.00

MinV: minimum value; MaxV: maximum value; FQt: first quartile; TQt: third quartile; Md: median

received treatment for breast cancer (surgery and complementary treatment) at least 12 months before the study, and having reported chronic treatment-related pain. The exclusion criteria were receiving surgical or complementary (radiotherapy and chemotherapy) treatment during the study period, recurrence and/or metastasis, and a diagnosis of neurological disorder, osteoarticular disorder, and/or fibromyalgia. All recruited women met the eligibility criteria and were selected.

The BPI was administered to evaluate pain and its impact on patients' lives. This questionnaire was developed by Cleeland and Ryan[12] and has been validated for use on the Brazilian population[13]. The BPI is divided into a sensory dimension and a reactive dimension (interference of pain in the patient's life). The reactive dimension consists of the following items: "general activities," "mood," "walking ability," "normal work," "relationships with others," "sleep," and "enjoyment of life." The interference of pain is scored on an 11-point scale, where 0 represents "the absence of pain or interference" and 10 represents "as bad as it can be." Only the reactive dimension was employed, as the purpose was to evaluate the impact of pain on the daily lives of breast cancer survivors. A physiotherapist who was familiar with the BPI administered the questionnaire in an interview format without time constraints in a private, well-lit, climate-controlled room.

For data analyses, simple descriptive statistical analysis were performed. The Shapiro-Wilk test determined nonnormal data distribution. Thus, the data were expressed in terms of minimum, maximum, median, first quartile, and third quartile. The SPSS version 17.0 (Chicago, IL, USA) was used for all statistical analyses.

RESULTS

The participants' mean age was 55.69±11.46 years (range: 32.18–79.30 years). Twenty-four of the 30 participants had received chemotherapy and 23 had received radiotherapy. Fifteen participants had undergone mastectomy and 15, lumpectomy. Fifteen had surgery on the right side, fourteen had surgery on the left side, and one had bilateral surgery. Moreover, all except one had undergone axillary node clearance. The mean time since the procedure was 4.08±4.31 years.

Table 1 displays the breast cancer survivors' scores for items on the BPI. The highest median values were found for "mood," "normal work," and "sleep."

DISCUSSION

In the present study, "mood," "normal work," and "sleep," items of the BPI were aspects of the breast cancer survivors' lives that were most impacted by pain. The importance of this study lies in the need to understand how pain affects breast cancer patients so that therapeutic approaches, based on the actual needs of women, can be established.

Recent clinical trials conducted with breast cancer survivors have mainly investigated the effect of physiotherapeutic programs on pain intensity and the pressure pain threshold. Cantarero-Villanueva et al.[3] found a greater reduction in pain intensity in the neck, shoulders, and axillae following an aquatic physical therapy program in comparison with standard care. Fernández-Lao et al.[4] reported that a multidimensional program involving strengthening exercises and massage as the major components was more effective in terms of improving neck and shoulder pain and reducing widespread pressure hyperalgesia in comparison to standard treatments. Silva et al.[14] found that transcutaneous electrical neural stimulation promote electrical modification in the parietal region and a decrease in pain in patients with intercostobrachial pain after breast cancer surgery. Therefore, future studies should consider the use of the BPI to allow better identification of the effects of physiotherapeutic treatment regarding other dimensions of pain among cancer patients.

These findings underscore the importance of considering those aspects of living that are compromised by pain when evaluating and developing treatment plans. Moreover, Galiano-Castillo et al.[15] reported that depressed mood is associated with the level of physical activity, perceived shoulder pain, fatigue, and muscle strain in breast cancer survivors. Ha and Choi[16] found that proprioceptive neuromuscular facilitation exercises helped lower depression and anxiety rates in breast cancer survivors. Castro-Sánchez et al.[17] found that manual therapy effectively improved sleep quality in individuals with fibromyalgia syndrome. Similarly, Eadie et al.[18] found that a physiotherapy program led to improved sleep quality in individuals with chronic low back pain. Thus, based on these studies, physical therapy interventions can act on the relationship between pain, mood, and sleep.

Regarding the influence of pain on work, we emphasize the importance of the physiotherapist's role. According to Phillips et al.[19], a physiotherapeutic program for improving the physical health status of patients with pain significantly helps reduce work-related problems and costs. Thus, any physiotherapeutic approach first requires a complete patient history that identifies labor activities and activities of daily living to establish effective interventions that promote physical autonomy. This can result in improved functioning and rehabilitation.

Recent studies have employed the BPI in other groups of patients with cancer. An investigation involving colorectal cancer survivors yielded similar results, with a moderate influence of pain on mood, normal work, and sleep[20]. Scarpi et al.[21] used the BPI to assess pain in patients with bone metastases and found that pain considerably interfered with walking ability. In the present study, pain did not interfere with walking among breast cancer survivors as much as it did in previous studies, probably because breast cancer is related to trunk and upper limb impairments. Therefore, each type of cancer involves different areas and aspects of pain that in turn influence various aspects of life.

The present study's limitations should be considered. A convenience sample was used. No measurement of pain was conducted prior to breast cancer treatment. Further, the study only focused on the characterization of pain and no comparisons were made with a control group, nor were other statistical approaches used.

In conclusion, pain exerts a negative impact mainly on mood, normal work, and sleep among breast cancer survivors.

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