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UPPER LIMB FUNCTIONALITY IN MASTECTOMIZED WOMEN

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Abstract: Introduction: Breast cancer is one of the most common neoplasms, mainly in women, and occurs due to the disordered multiplication of abnormal cells in the breast that form a tumor with the potential to invade other organs. Mastectomy is one of the most effective treatments for this cancer, but it can lead to physical complications and fundamental functional limitations for activities of daily living. With this in mind, physiotherapy is essential for recovering upper limb function and functionality in the post-operative period, with a focus on carrying out daily and work activities. **Objective: To** analyze studies carried out on upper limb functionality in mastectomized women and how this can impact on their lives. **Methodology:** This is an integrative review with searches carried out in 3 databases: *Scielo, Pubmed, Virtual Health Library,* with the following descriptors: mastectomy, upper extremities and daily activities. Articles from the last 5 years from 2019 to 2024 were analyzed, according to the following inclusion criteria: full texts available, languages (English, Portuguese, Spanish) and that meet the guiding question of this study. After going through the criteria mentioned above, 5 articles were selected. **Results and discussions:** It was found that mastectomy affects the function of the upper limb on the affected side, having a negative impact on the functional performance of the upper limb in carrying out activities of daily living and the quality of life of mastectomized women. **Final considerations:** The studies analyzed show how mastectomy affects the functionality of the upper limb and can lead to limitations in performing activities of daily living, but there are few studies that have observed these findings over time.

Keywords: Functionality, upper limb, mastectomy.

INTRODUCTION

Cancer represents a significant concern for global public health, and breast cancer is the most prevalent cancer among women and the second most common of all neoplasms. It is estimated that 66,280 new cases of breast cancer will occur annually in Brazil between 2020 and 2022, with an estimated 44.29 cases per 100,000 individuals in the Northeast of the country (DOMINGOS, 2021). Despite being more prevalent in women, breast cancer can also affect men, accounting for only 1% of all cases of the disease (INCA, 2022).

Breast cancer is a disease caused by the disordered multiplication of abnormal cells in the breast, which forms a tumor with the potential to invade other organs (INCA, 2022). The presence of a lump or other suspicious symptom in the breast should be investigated to confirm whether or not it is cancer, initially through clinical examination of the breasts and imaging tests such as mammography, ultrasound or magnetic resonance imaging. Diagnostic confirmation is made through biopsy, a technique that consists of removing a fragment of the nodule or suspicious lesion through punctures (needle extraction) or minor surgery. The material removed is analyzed by a pathologist to define the diagnosis (BRASIL, 2023).

To control this neoplasm, strategies for early detection of the lesion stand out, since the prognosis is better when it is diagnosed in the early stages, resulting in less mutilating therapy, lower mortality rates and consequently a better quality of life for women (DOURADO, 2022).

Breast cancer treatment can be carried out in private health services or by the Unified Health System (SUS), the latter offering all types of surgery, such as mastectomies, breast reconstruction, as well as radiotherapy, chemotherapy, hormone therapy and antibody treatment (BRASIL, 2023).

Mastectomy is surgery that removes the entire breast. It is performed when there is no possibility of preserving the breast or if the patient chooses to do so. The most common types of mastectomy are simple or total mastectomy, which consists of removing only the breast (areola, nipple, fascia, skin and mammary gland), and modified radical mastectomy, which removes the entire breast and axillary lymph nodes, preserving one or both pectoral muscles and radical mastectomy, which removes the entire breast, the axillary lymph nodes and the pectoral muscles (chest wall) under the breast (ACS, 2019).

With a better understanding of the biological characteristics of breast tumors, technological advances and the surgical approach used, surgical treatment has become less aggressive, although these procedures are still associated with a high prevalence of complications in the upper limb homolateral to the surgery (CASASSOLA, 2021).

Breast cancer surgeries, as well as adjuvant therapies, can result in some physical complications, including: infection, skin necrosis, seroma, adherence and scar dehiscence, limitation of range of motion (ROM) of the shoulder, axillary cord, pain, The collection procedure will be through an assessment of sociodemographic aspects, lifestyle, disease history; physical examination, sensitivity, circulatory impairment, muscle strength, goniometry, perimetry, biophotometry and upper limb functionality test. sensory alteration, motor and/or sensory nerve damage, muscle weakness and lymphedema (NASCIMENTO, 2012).

Upper limb function is the basis of fine and gross motor skills, which are fundamental to activities of daily living. Functionality is defined by the interaction between health conditions and the contextual factors in which the individual is inserted, as well as their activities of daily living (CASASSOLA, 2021).

In this context, physiotherapy is essential for recovering upper limb function and functionality in the postoperative period, thus helping to improve the performance of activities of daily living and work (NASCIMENTO, 2012). Therefore, it is necessary to assess the functionality of post-mastectomized women in order to identify the possible alterations that this surgical procedure can cause and then draw up a physiotherapy treatment plan that is appropriate for these women's needs.

The aim of this study is to analyze, through a literature review, the functionality of the upper limb in mastectomized women and how this can impact on their lives.

MATERIALS AND METHODS

This study is composed of an integrative review, which presents a methodological approach based on the following stages: formulation of the guiding question, literature search or sampling, data collection, critical analysis of the studies included, discussion of the results and presentation of the integrative review, providing the synthesis of knowledge and the incorporation of the applicability of the results of significant studies in practice (SOUZA; SILVA; CARVALHO, 2010).

Articles were searched in the Virtual Health Library (VHL), Scientific Electronic Library Online (SCIELO) and Pubmed databases, from 2019 to 2024. The descriptors and terms used were, in Portuguese: "Neoplasia da mama", "Mastectomia", "Extremidades superiores" and "Atividades diárias", in English: "breast neoplams", "Mastectomy", "upper extemity" and "Activities of Daily Living". The articles were then initially analyzed according to the following inclusion criteria: availability of text (full texts available), date of publication (last 5 years) and languages (English, Portuguese, Spanish). Articles with more than 5 years of publication, or dealing with guiding questions unrelated to upper limb functio-

nality in post-mastectomized women, were excluded. After going through the aforementioned criteria, 5 articles were selected that fit the theme and all the material was read and analyzed as shown in figure 1. The publication aspects (title, topic, journal, location, year, language), methodological aspects (type of study, population, location) and main findings of the studies were considered.

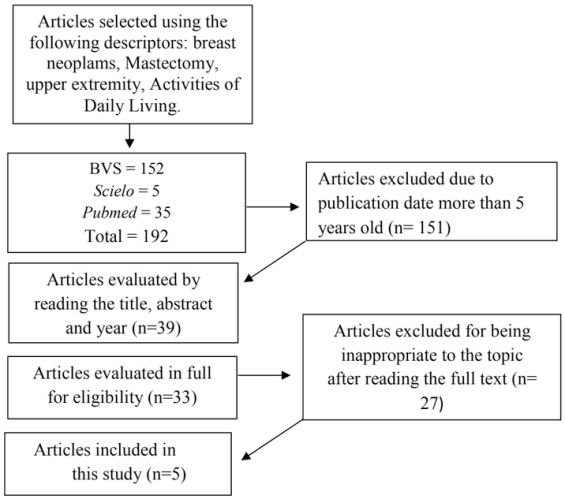

Figure 1: Prism - Methodological Flowchart

Source: Research data

RESULTS AND DISCUSSION

Of the studies selected for this study, 2 were published in Brazilian journals and 3 in international journals. The characteristics and categorization of the selected studies are shown in tables 1 and 2 below:

The surgical procedure performed to treat breast cancer in women can result in both immediate and late complications, such as local infections, opening of the surgical wound, death of skin tissue, accumulation of serous fluid, retractable scars, movement problems, nerve damage, changes in sensitivity, restriction of shoulder range of motion, pain, axillary tightness syndrome and lymphedema. These complications can significantly impair the functional performance of the upper limb on the surgery side, resulting in limitations to perform essential activities of daily living (ADLs), such as self-care, dressing, personal hygiene, tasks at work and at home, leisure and emotional function (MOREIRA et al., 2021).

The study by Moreira (2021) identified that impairment in abduction, flexion and lateral rotation movements represents impaired ROM, which can interfere with carrying out activities of daily living. This is because these movements are essential to ensure good upper limb functionality and are used to perform most everyday tasks. In this study, the questionnaire used to assess symptoms and abilities to perform upper limb activities was the Disabilities of the arm, shoulder and hand (DASH), which is widely used, validated in Portuguese and allows the findings to be compared with other studies and functional scales (ORFALE et al 2005).

GALAVERNA et al. (2020) also carried out a study to analyze shoulder and elbow movements related to functional gain and types of surgery in women and found similar findings to the previous study. They found that the shoulder abduction and flexion movements of the limbs contralateral to the surgery were significantly greater in relation to the movements of the homolateral limb, corroborating the fact that surgical intervention in breast cancer alters the ROM of these movements. She also cites in her article a study of 105 women, whose authors described reduced functional capacity, with greater impairment of activities requiring shoulder abduction and/or flexion. It is worth pointing out that although surgery is one of the most effective treatments for breast cancer, it can lead to impaired upper limb functionality (CAMPOS, 2024).

The study by Fretta et al. (2021) also analyzed the physical-functional changes in the upper limb of patients undergoing breast cancer surgery, comparing the type of surgery and the changes in the homolateral and contralateral upper limb. The main results showed no significant differences in physical function according to the type of surgery, but when

Article	Authors	Title	Journal	Base of Data
A1	LUCENA (2019).	Functionality and quality of life of women 1 year after breast cancer surgery	INCA	BVS
A2	GALAVERNA et al. (2020).	Biophotometric Analysis of Shoulder and Elbow Movements Related to Functional Gain and Surgical Types in Women Undergoing Breast Oncology Surgery.	Brazilian Brazilian Journal of Cancerology	BVS
A3	FRETTA et al. (2021).	Physical Functionality of the Upper Limb after Breast Cancer Surgery in South Brazilian Survivors: A Cross-Sectional Study	Brazilian Brazilian Journal of Cancerology	BVS
A4	MOREIRA et al. (2021).	Functional performance of the upper limb after breast cancer surgery in women	Physiotherapy Brazil	BVS
A5	HAUERSLEV et al. (2020).	Long-term follow-up of shoulder and arm morbidity in patients treated for early breast cancer	Acta Oncológica	BVS

Table 1 - Characteristics of the selected studies

Source: Survey results, 2024.

Article	The authors' main findings
A1	Statistically significant differences were found for physical function (p= 0.043), body image (p= 0.003), arm symptoms (p= 0.030) and upper limb function (p=0.007). Women who underwent conservative surgery obtained better scores for physical function when compared to those who underwent mastectomy.
A2	The analysis of ROM using biophotometry showed that the women had reduced movement in the homolateral limb, regardless of the type of surgery. The DASH O score was calculated by adding up the values assigned to each activity, so the higher the score, the better the functional capacity of the volunteers. The average at the first assessment was 22.9+7.4 and at the reassessment it wasof 26.7+6.1, with p=0.047.
A3	The non-surgical side showed better muscle strength values in flexion, extension and abduction movements (p=0.012 , p=0.006, p=0.014, respectively) and also showed better values for shoulder range of motion in the abduction position (p=0.006).
A4	The movements of abduction, flexion and lateral rotation were the most compromised, associated with the high DASH score, indicating that ADM impairment interferes with performing activities of daily living.
A5	Thirty-four participants (49%) reported one or more changes in functional impairment, with the prevalence of individual symptoms ranging from 10% to 41%. Decreased hand and arm function was reported by 24% and 41% changed their habits of carrying heavy bags. Arm swelling was reported by 26% and was a minor problem (BS = 2) for the majority. Five of them wore a compression sleeve. Decreased shoulder mobility was reported by 26% and received a BS score ¼ 1-2 in more than half. frequency. Around 30% and 53% reported pain in the shoulder or in the region of the operated breast, respectively. Pain intensity graded by VAS revealed a median of 4 in the shoulder.

Chart 2 - Categorization of the selected studies

Source: Survey results, 2024.

analyzing the differences between the surgical and non-surgical side of the arm, better scores were found for shoulder strength and range of motion on the non-surgical side. Furthermore, the results showed a relationship between physical function and upper limb functionality on the surgical side, with worse scores for shoulder range of motion, arm volume and proprioception, regardless of the type of breast cancer surgery. Therefore, regardless of the type of surgical treatment, it generates limitations in the limb on the affected side and impacts on its functionality.

Hauerslev et al. (2020) carried out a cohort study in which they followed women who had breast cancer for more than 10 years, assessing morbidity in the shoulders and arms after treatment for this cancer and observed that two out of three participants complained of one or more subjective symptoms of morbidity in the upper limb on the affected side. Although the results were mostly mild or moderate symptoms, these tended to worsen over the years, negatively impacting the functionality, performance of activities of daily living and quality of life of women who had undergone mastectomy.

The functionality and quality of life of women one year after breast cancer surgery was assessed by Lucena (2019), in which the women reported an impact on their activities of daily living and work. The reports in the interviews complemented the findings of the questionnaires, demonstrating that the limitation of upper limb functionality directly interferes with the execution of work activities.

FINAL CONSIDERATIONS

The studies investigated showed that mastectomy alters the range of shoulder movements on the affected side in women, especially abduction and/or flexion movements, which limits the functionality of the upper limb and the performance of activities of daily living and work that involve these movements. These findings were found in women regardless of the type of surgery performed.

Therefore, it was possible to identify how mastectomy can affect the functionality of the upper limb in women and although the functional and quality of life losses are evident, there are still few studies on this subject, especially with a longitudinal methodological approach. Therefore, further studies are needed to analyze the impact of mastectomy on women over time, the findings of which could guide the adoption of prevention and rehabilitation measures focused on functionality and contribute to improving the quality of life of mastectomized women.

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