Knowledge of Unskilled Breast Oncology Physical Therapists about Exercises and Guidelines in Postoperative Breast Cancer

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Conhecimento de Fisioterapeutas não Especializados em Oncologia Mamária sobre Exercícios e Orientações no Pós-operatório do Câncer de Mama

Conocimiento de Fisioterapeutas no especializados en Oncología de Mama sobre Ejercicios y Directrices en el Posoperatorio de Cáncer de Mama

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ABSTRACT

Introduction: Breast cancer treatment can cause physical and psychological impairments. The current literature advocates that exercises with free range of motion allow patients good functional recovery of the shoulder without increasing the risk of complications, and that progressive resistance exercises are recommended. There is no evidence that procedures on the arm increase the risk of lymphedema. **Objective:** To evaluate the knowledge of unskilled oncology and women's health physical therapists regarding the conduct adopted with patients post breast cancer surgery. **Method:** Prospective cross-sectional observational study carried out with a self-reported questionnaire on the physiotherapist's performance in the postoperative period of breast cancer. **Results:** Forty-four professionals participated in the study, 50% of which had already assisted patients in the postoperative period of breast cancer, 47.7% believe that patients should perform active mobilization of the upper limbs in up to 90º of amplitude, not exceeding the shoulder line in surgeries without immediate reconstruction and 25% advised restriction to any type of load and/or resistance exercises pending medical approval. Most of the professionals investigated advised not to measure blood pressure in the ipsilateral limb to the surgery and not puncture peripheral venous access or collect exams on the limb. **Conclusion:** The conduct adopted by most of the resident and caring professionals investigated is based in outdated recommendations on limb movements, resistance exercises and prevention of lymphedema post breast cancer surgery.

Key words*:* breast neoplasms; mastectomy; exercise therapy; physical therapy specialty.

RESUMO

Introdução: O tratamento do câncer de mama pode gerar uma gama de comprometimentos físicos e psicológicos. A literatura atual sustenta que exercícios de amplitude livre permitem às pacientes boa recuperação funcional do ombro sem aumentar risco de complicações, e que exercícios resistidos progressivos são recomendados. Não há comprovação de que procedimentos no braço aumentem o risco de linfedema. **Objetivo:** Avaliar o conhecimento dos profissionais fisioterapeutas não especialistas nas áreas de oncologia e saúde da mulher quanto à conduta realizada em pacientes no período pós-operatório de câncer de mama. **Método:** Estudo observacional transversal, com dados coletados por questionário autopreenchido, sobre a atuação do fisioterapeuta em pacientes no período pós-operatório de câncer de mama. **Resultados:** Participaram do estudo 44 profissionais, 50,0% dos quais já haviam atendido pacientes em pós-operatório de câncer de mama, 47,7% acreditam que pacientes devem realizar mobilização ativa de membros superiores em até 90º de amplitude, não ultrapassando a linha do ombro em cirurgias sem reconstrução imediata, e 25% orientaram restrição a qualquer tipo de carga e/ou exercícios resistidos até liberação médica. A maior parte dos profissionais participantes da pesquisa orienta a não aferição de pressão arterial no membro homolateral à cirurgia e não puncionar acesso venoso periférico ou coletar exames no membro. **Conclusão:** A conduta adotada pela maior parte dos profissionais residentes e assistenciais analisados se baseia em recomendações desatualizadas sobre movimentação de membros, exercícios resistidos e prevenção de linfedema após cirurgia de câncer de mama.

Palavras-chave: neoplasias da mama; mastectomia; terapia por exercício; especialidade de fisioterapia.

RESUMEN

Introducción: El tratamiento del cáncer de mama puede generar una serie de deterioros físicos y psicológicos. La literatura actual respalda que los ejercicios de amplitud libre permiten a las pacientes una buena recuperación funcional del hombro sin aumentar el riesgo de complicaciones, y que se recomiendan ejercicios de resistencia progresivos. No hay evidencia de que los procedimientos en el brazo aumenten el riesgo de linfedema. **Objetivo:** Evaluar el conocimiento de fisioterapeutas no especialistas en las áreas de oncología y salud de la mujer, sobre la conducta realizada a pacientes en el posoperatorio de cáncer de mama. **Método:** Estudio observacional transversal, con datos recogidos a través de un cuestionario autocompletado, sobre el papel de los fisioterapeutas en pacientes en el posoperatorio de cáncer de mama. **Resultados:** Participaron del estudio 44 profesionales, el 50,0% de los cuales ya había atendido a pacientes posoperados de cáncer de mama, el 47,7% cree que los pacientes deben realizar movilizaciones activas de los miembros superiores en hasta 90º de amplitud, no superando la línea del hombro en las cirugías. sin reconstrucción inmediata, y el 25% recomendó restricción a cualquier tipo de carga y/o ejercicios de resistencia hasta aprobación médica. La mayoría de los profesionales que participan en la investigación aconsejan no medir la presión arterial en el miembro ipsilateral a la cirugía y no perforar el acceso venoso periférico ni realizar exámenes en el miembro. **Conclusión:** La conducta adoptada por la mayoría de los residentes y profesionales asistenciales analizados se basa en recomendaciones obsoletas sobre movimiento de extremidades, ejercicios de resistencia y prevención del linfedema tras la cirugía de cáncer de mama.

Palabras clave: neoplasias de la mama; mastectomia; terapia por ejercicio; especialidad de fisioterapia.

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INTRODUCTION

The incidence of breast cancer in the world is approximately 1,700,000 new cases each year, characterizing it as the most common in women, with its incidence and mortality rates predicted to increase significantly in the next five to ten years[1]. In Brazil, approximately 74,000 new cases were estimated per year until 2025, with the highest rates in the Southeast and South Regions, respectively 84.46/100 thousand and 71.44/100 thousand women[2].

Surgical and adjuvant treatment of breast cancer can generate a range of physical and psychological impairments that represent functional losses, especially in the first years after treatment. Pain, lymphedema, paresthesia, decreased muscle strength, scar retractions, winged scapula, postural changes and reduced range of motion (ROM) of the ipsilateral shoulder to surgery are usually present, and these complications can impair the return to daily activities, impacting the quality of life of patients[3].

The type of axillary approach, the adjuvant cancer therapy, the time elapsed after surgery, the laterality of the affected upper limb and variables inherent to the individual, such as body mass index (BMI) and age, are variables that negatively influence functionality[4]. Rehabilitation of patients at all stages of treatment is necessary to reduce arm and shoulder morbidity. Early exercises in the postoperative period of breast cancer bring benefits for the recovery of joint amplitude, without increasing the risk of scarring complications[5,6].

The current literature supports that upper limb exercises in free range can be safely initiated in the first post operative days[7-9]. Recent studies have identified the benefit and safety of free exercises, compared to limited ones, also in breast reconstruction[10,11].

Lymphedema is a chronic complication related to the treatment of breast cancer, which negatively impacts the functionality and quality of life of patients. Because it is a dreaded condition, many guidelines are given with the supposed aim of preventing lymphedema, such as not taking long plane journeys and avoiding, on the upper limb homolateral to the surgery, taking blood pressure, collecting tests, having venipunctures, removing cuticles or shaving the armpit, without there being any scientific evidence to support these restrictions placed on the patient[12]. The performance of progressive resistance exercises is a protective factor of upper limb lymphedema related to the treatment of breast cancer and is also important for the prevention of exacerbation of the condition, since lymphedema has already been diagnosed and treated[13,14].

Considering that the surgical treatment of breast cancer can promote functional, postural and sensitivity alterations, and that the evidence shows that the use of early postoperative exercises brings benefits for faster recovery of joint movements, generating a positive impact on the kinetic-functional recovery of patients[15],it is necessary to evaluate the knowledge of non-expert physiotherapists in the areas of oncology and women's health on the subject in question, since they can receive these patients in the units where they are allocated.

Thus, the primary objective was to evaluate the knowledge of non-expert physiotherapists in the areas of oncology and women's health, who work in the wards and intensive care units of Hospital São Paulo (HSP), regarding the conduct (exercises and guidance on upper limb care) performed on patients in the postoperative period of breast cancer, for the later development of an explanatory form to be directed to the institution's physiotherapists on evidence-based conducts for physiotherapeutic management in the postoperative period of breast cancer.

METHOD

The research included hired or resident physiotherapists, aged between 20 and 55 years, duly registered with the Regional Council of Physiotherapy and Occupational Therapy (Crefito), not specialists in oncology and/or women's health, who work in the wards or intensive care units of the HSP. Professionals specialized in the areas of women's health and/or oncology, or who have worked in the gynecology sector of the hospital in question, are excluded.

The physiotherapists were recruited by invitation, by e-mail sent by the researchers to the contracted physiotherapists of the hospital, or by *WhatsApp* to the Groups with Residents of the different Multiprofessional Residency programs of the institution, who work in the wards and intensive care units of the HSP. Data were collected through an evaluation instrument developed by the authors of the study on the *google forms* platform, a self-administered questionnaire, built based on the specific scientific literature on the role of the physiotherapist in patients in the postoperative period of breast cancer. The questionnaire was sent with response request within ten days from the date of submission. In cases of non-response, a new invitation was made, recalling the study, with a ten-day deadline. If in the first contact attempt the professional answered that he did not wish to participate in the study, no other attempt was made.

The instrument contained 14 questions, eight to be marked and six open questions, with questions

about guidance that professionals had already passed on or still pass on about ROM limitation or not in the postoperative period of breast cancer, with or without breast reconstruction, and, if they advise limiting ROM, for how long; guidance on resistance exercises and load limitation after breast cancer surgery; and guidelines for the prevention of lymphedema.

The research was approved by the Research Ethics Committee (REC) of the Federal University of São Paulo (Unifesp) under opinion number 5.733.665 (CAAE 60362422.9.0000.5505), according to Resolution nº. 466[16], of 2012, of the National Health Council (CNS). All professionals who agreed to participate in the study agreed to the Informed Consent Form (ICF) for research in a Virtual Environment, which was accessed just before the start of the questionnaire questions. At the end of the study, the researchers prepared an informative material referring to the current evidence of physiotherapeutic management in the postoperative period of women treated for breast cancer, which was provided to the participants.

RESULTS

The study included 44 physiotherapists, hired and residents, who work in the wards and intensive care units of the HSP. Among the research participants, 50.0% (22) were professionals hired from this hospital (employee/consolidation of labor laws), 29.5% (13) were resident physiotherapists of multiprofessional HSP programs in their second year of experience and 20.5% (9) were resident physiotherapists of multiprofessional HSP programs in their first year of experience. Of these, 50 % did not see patients in the postoperative period of mastectomy/conservative surgery for breast cancer and 50 % had already seen patients in the postoperative period of breast cancer.

The professionals who participated in the research are allocated and work in various sectors and programs of the HSP. The sectors/programs with the highest participation of professionals were the Adult Intensive Care Units (15), Clinical and Surgical Respiratory Disorders (7) and Organ Transplantation (7). The other responses were from physiotherapists in the sectors of Cardiology (3), Urgency and Emergency (3), Medical Clinic (2), Child and Adolescent Health (2), Orthopedics (1), Rheumatology (1), Neurosurgery (1), Burn Treatment Unit (1), and Palliative Care Unit (1).

The data regarding the guidelines that professionals have already passed on or would pass on to patients in the postoperative period of breast cancer without immediate reconstruction regarding shoulder ROM are described in Figure 1a. Regarding the time of movement restriction at 90º oriented to patients in the postoperative period of breast cancer without reconstruction, most professionals who pass this type of guidance recommend that it be for 15 days (Figure 1b).

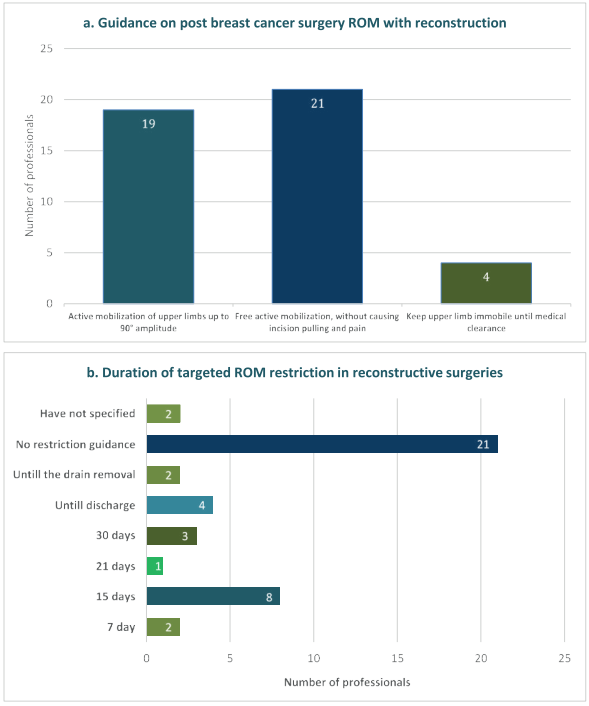

Figure 1. (a) Guidance on ROM for patients after breast cancer surgery without reconstruction; (b) Time of ROM restriction guided by professionals for patients who did not have breast reconstruction

Caption: ROM = range of motion.

Figure 2a describes the guidelines that have already been or are still being carried out regarding shoulder ROM for postoperative breast cancer patients with reconstruction. Data regarding the duration (in days) of 90º movement restriction guidance to operated breast cancer patients with immediate reconstruction are described in Figure 2b. For professionals who did not provide this guidance, the answer was not applicable.

Regarding the load that can be imposed on the upper limb ipsilateral to the surgery, a total of 16 (36.4%) professionals advise to perform resistance exercises with progressive load (without load limit) on the upper limb, in order to avoid lymphedema, 11 (25.0%) recommend restriction to any type of load and/or resistance exercises until medical release, 11 (25.0%) professionals advise to perform resistance exercises only with reduced load on the upper limb ipsilateral to the surgery, in order to avoid lymphedema, and six (13.6%) to perform resistance exercises with load only on the upper limb contralateral

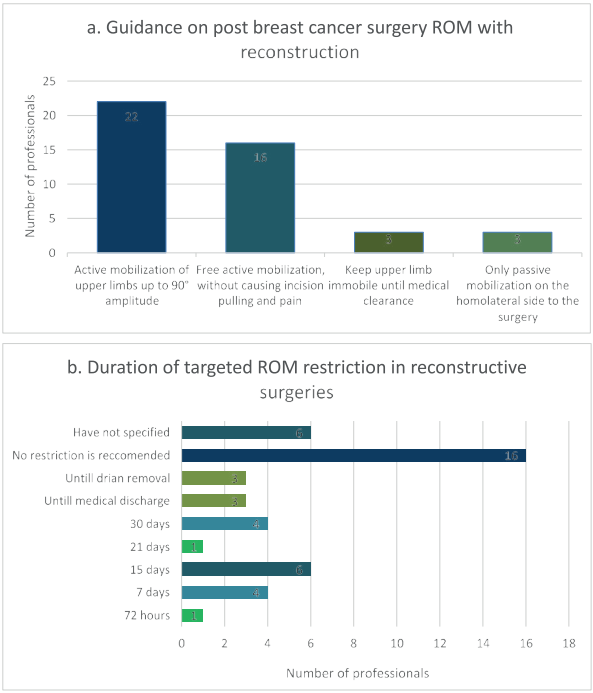

Figure 2. a) Guidance given by professionals after breast cancer surgery with reconstruction; b) Time of ROM restriction guided by professionals for patients who underwent breast cancer surgery with reconstruction

Caption: ROM = range of motion.

to the surgery, in order to avoid the formation of lymphedema.

The guidelines that were passed on or that the professionals would pass on to prevent lymphedema to patients in the postoperative period of breast cancer are described in Table 1.

Other guidelines were described, in response to the open question, by professionals for patients with the objective of preventing lymphedema: drainage and compressive bandaging, avoiding sleeping on the limb ipsilateral to the surgery, avoiding sources of excessive heat, such as moving a hot pot for a long time, mobilization of the affected limb, assisted active movement, not mobilizing the limb or avoiding movements that cause pain, daily skin observation, positioning in an elevated position whenever possible, seeking specialist physiotherapist, staying active by walking for at least 30 min, use of compressive sleeve according to evaluation. A total of 32 professionals did not or would not provide any other guidance to patients.

As a product of this study, a booklet was developed (Figure 3) that will be sent to the institution's physiotherapists, which contains the guidelines given at the hospital by the team specialized in evidence-based breast oncology.

Table 1. Lymphedema guidelines in postoperative mastectomy/breast cancer conservative surgery patients

Guidance	Number of professionals	%
Do not perform lymphatic drainage due to the risk of cancer spread	2	4.5
Do not perform resistance exercises with load in order to avoid lymphedema	5	11,4
Do not take long airplane trips due to the risk of lymphedema	15	34.1
Do not shave the axilla ipsilateral to the surgery due to the risk of lymphedema	21	47.7
Avoid removing cuticle so as not to cause inflammation and thus increase the risk of lymphedema	23	52.3
Do not collect laboratory tests in the upper limb ipsilateral to the surgery due to the risk of lymphedema	28	63.6
Do not place peripheral venous access in the upper limb ipsilateral to surgery due to the risk of lymphedema	32	72.7
Do not measure blood pressure in the upper limb ipsilateral to the surgery, due to the risk of lymphedema	35	79,5
Perform complex physical therapy to prevent lymphedema	37	84,1

Figure 3. Booklet with recommendations on physiotherapy in the postoperative period of breast cancer

DISCUSSION

Surgical procedures for the treatment of breast cancer bring several physical complications, immediate or late, such as limitation of ROM of the upper limbs, muscle weakness, pain, altered sensitivity, reduced functionality and lymphedema, with impairment in the performance of daily physical activities and quality of[ife3]. In view of this scenario, Brazilian physiotherapists are supported by Resolution no. 424[17], of July 8, 2013, which establishes the Code of Ethics and Deontology of Physiotherapy, according to art. 9, which establishes that it is the

fundamental duty of the physiotherapist to use all the technical-scientific knowledge at their disposal and to improve them continuously and permanently, to promote health and prevent conditions that imply loss of the quality of life of the human being. Thus, it is essential that physiotherapists, who offer any type of assistance to patients who have undergone breast cancer surgery, regardless of the sector in which they work, are up to date with current evidence of rehabilitation and prevention of complications.

Depending on the comorbidities presented by the patients or the type of surgical procedure and its complexities, patients in the immediate postoperative period of breast cancer can be transferred to intensive care units, which is where most of the professionals who participated in this research work. In late postoperative conditions, as they have other comorbidities that require assistance, patients can also be allocated to several inpatient units, where they will be assisted by physiotherapists not specialized in breast cancer.

The knowledge of 44 physiotherapists not specialized in oncology was evaluated, including professionals hired from the HSP who work in various sectors and professionals residing in different multiprofessional programs. Of the volunteers, 50.0% reported having already attended patients who had undergone breast cancer surgery and the other 50.0% had never attended patients with this profile.

When asked about the ROM of the upper limb after mastectomy/conservative surgery for breast cancer without immediate reconstruction, 43.2% (19) answered that patients should perform active mobilization of the upper limbs in up to 90º of amplitude, not exceeding the shoulder line, which is not in agreement with the currente literature, since free exercises are safe from the immediate postoperative period when the patient does not undergo reconstruction[7-9].

Of those who would recommend ROM limitation, the majority (8) guided the restriction for 15 days. The recommendation that patients should keep the upper limb ipsilateral to the surgery immobile and await medical release to perform mobilization would be given by one of those who responded, which is worrying, since the physiotherapist has professional autonomy to make decisions in their proposed therapies. However, 21 professionals (47.7%) answered that they guided the free movement of patients, at the personal limit of pain and as long as they did not feel traction of the surgical incision, which is recommended and supported by the literature[7-9].

Silva et al.[8] conducted a randomized clinical trial with operated breast cancer patients comparing free exercises *versus* limited exercises in the immediate postoperative period (started the day after surgery) of breast cancer, in which the free exercise group performed their upper limb movements to their limits and/or discomforts, and another group had their movements limited to 90º in the first 15 postoperative days. The study concluded that performing exercises with free ROM from the first postoperative day allowed patients a good functional recovery of the shoulder without leading to increased complications, such as seroma and desiccation[8].

The post-surgical breast cancer treatment exercise protocol of the institution where this study was carried out was developed by Petito et al.[7], based on the current literature, with flexion exercises and shoulder abduction in free amplitude, stretching exercises and relaxation of the cervical region[15]. This exercise protocol was later evaluated in a randomized clinical trial, in which half of the patients started rehabilitation early, on the day after surgery, and half only after the removal of the drain, which occurred on average nine days after surgery, with no difference between groups regarding the incidence of scar complications, such as seroma and dehiscence, concluding that it is safe to perform exercises in free range from the day after surgery[7].

In 2021, Teodozio et al.[9] conducted a randomized clinical trial with 465 patients who underwent breast cancer surgery, randomized in the immediate postoperative period into a group with upper limb exercises in free ROM and another with exercises in shoulder amplitude limited to 90º, with no difference in the incidence of dehiscence, seroma, infection, necrosis, hematoma and ecchymosis. Analyses were performed in subgroups of patients with conservative surgery or mastectomy, lymph nodeectomy or sentinel lymph node biopsy, also with no statistically significant difference in the emergence of scar complications[9]. The studies by Petito et al.[7], Silva et al.[8] and Teodozio et al.[9], however, did not include patients who had undergone immediate reconstruction.

When asked about ROMin postoperative breast cancer patients with immediate reconstruction, half of the professionals reported instructing patients to perform active mobilization of upper limbs up to 90º in amplitude, not exceeding the shoulder line, of which six professionals stated that this limitation should be for 15 days, which is exactly the current protocol in our institution, which is based on the most current literature on the subject. Of the professionals who answered the questionnaire, 16 released free exercises in these patients, three said that patients should keep their arm immobile until medical release and three that patients could only perform passive exercises.

Studies that indicate safety and benefit of free-range exercises since the immediate postoperative period do not include patients who perform immediate reconstruction, thus there is no possibility at the time of transposing

the findings in non-reconstructed patients to this population[7-9].

In two recent studies, Rizzi et al.[10] and Almeida Rizzi et al.[11], however, applied different exercise protocols in patients in the postoperative period of breast cancer with immediate reconstruction, one including patients who underwent mastectomy and reconstruction with implant, and another with patients after conservative surgery with oncoplastic technique and contralateral symmetrization[10,11]. The patients started upper limb exercises with ROM restriction on the day after surgery and after 15 days they were randomized into two groups, one group in which they could already perform free exercises and another group in which they needed to maintain exercise restriction only up to shoulder height for another 15 days, that is, up to 30 days postoperatively, when they were also released to free exercises. There was no difference between the groups in the incidence and prevalence of scarring complications, with seroma, dehiscence, infection and necrosis, and in the article of patients who had undergone mastectomy and reconstruction withprosthesis[11], there was a difference between the groups in functionality, pain and shoulder ROM, demonstrating, in addition to safety, benefit in not limiting the movements of patients for longer.

The literature, therefore, states that releasing free exercises, as long as they are comfortable for the patient and so that she does not feel the surgical incision pull, is safe after breast cancer surgeries with immediate reconstruction, without impacting healing and without being related to complications, when started 15 days after surgery[7-11]. It is important to note that there are no studies demonstrating that releasing active free exercises from the immediate postoperative period are harmful and increase the incidence of scarring complications, but that, to date, no study protocol has included patients with reconstruction being allowed to move freely from the day after surgery.

One of the complications of surgical treatment of breast cancer is lymphedema, characterized by accumulation of protein-rich fluid in the tissues, inherent to the impairment of lymphatic drainage that can occur due to lymph node removal surgery, radiation therapy in lymphatic drainage pathways and/or chemotherapy. It is a chronic and progressive condition, which causes a considerable decline in the quality of life of patients. Limbs affected by lymphedema are weaker in handgrip strength, and strengthening exercises should be considered to be added to the treatment of patients to gain better functional power[18].

When asked about the load that can be imposed on the upper limb ipsilateral to the surgery for patients in the postoperative period of mastectomy/conservative surgery for breast cancer, 36.4% of the professionals advised that the patients could perform resistance exercises with progressive load (without load limit) on the upper limb, in order to avoid lymphedema, which is correct and supported by the literature. However, 25.0% of the professionals recommended restriction to any type of load and/or resistance exercises until medical release, 25.0% of the professionals recommended resistance exercises only with reduced load on the upper limb ipsilateral to the surgery, in order to avoid lymphedema and 13.6% of the professionals advised performing resistance exercises with load only on the upper limb contralateral to the surgery, to avoid the formation of lymphedema. The idea that patients treated for breast cancer will never be able to take on weight again, or that they should limit their activities up to a certain amount of load, is an old fear that needs to be demystified.

The literature has supported for more than 20 years that progressive resistance exercise can be beneficial in preventing and exacerbating lymphedema, rather than the opposite. In the studies by Schmitz et al.[13,14], patients treated for breast cancer, whether already with lymphedema or at risk of developing lymphedema, were randomized into two groups, a usual follow-up control and an experimental group of progressive resistance exercises in the gym, with no upper load limit. Patients who already had lymphedema and underwent the exercise protocol with load showed, after one year, in addition to improved strength, improvement in the self-reported sensation of lymphedema and less risk of lymphedema exacerbation, with a significant difference between the groups. Patients at risk of lymphedema (without lymphedema, but who had had lymph node removal) and who attended a gym had lower rates of lymphedema compared to the control group, especially those who had more than five lymph nodes removed (3 of 15 *versus* 11 of 49; $p = 0.003$)[13,14].

Mechanical resistance training of weights does not induce or exacerbate breast cancer-related lymphedema when performed under supervision, with slow progression. This type of exercise has robust functional, physiological, psychological, and clinical benefits. Low to moderate intensity weight training exercise with relatively slow progression significantly improved upper limb strength and lower limb strength without increasing arm volume or incidence of breast cancer-related lymphedema[19].

In this research, some guidelines regarding the prevention of lymphedema related to the treatment of breast cancer were questioned. The main guidance selected by the professionals was the recommendation regarding the performance of complex physical decongestive therapy (CFT) (manual lymphatic drainage – MLD,

compressive bandaging, lymphomyokinetic exercises) for the prevention of lymphedema. Although TFC is the gold standard in the treatment of lymphedema, there is no robust evidence in the literature that it works preventively[20].

A randomized controlled trial conducted in Canada compared TFC *versus* elastic compression alone and found that both TFC and compression alone produced considerable improvements in percent reduction in arm volume when lymphedema already existed. Given the significant cost and inconvenience associated with TFC over compression bandage alone, this study provides solid evidence that TFC may not be needed as a first-line therapy for those with early lymphedema. It may play a more important role in those who have failed conservative strategies or in those patients with extensive and long-lasting lymphedema[21].

Although there is no evidence in prevention, 37 professionals have advised MLD as lymphedema prevention. Early stimulation of MLD can modulate pain and stiffness associated with inflammation of lymphatic vessels secondary to surgical lesions. The therapeutic effects of drainage are likely due to the prevention of protein stagnation and inhibition of factors capable of producing lymphatic overload. In addition to stimulating the movement of lymphatic fluids and other tissues and promoting the elimination of fluids and softening of tissues[22].

Other guidelines such as not measuring blood pressure in the upper limb ipsilateral to surgery, not puncturing peripheral venous access in the upper limb ipsilateral to surgery, not collecting laboratory tests in the upper limb ipsilateral to surgery, avoiding removing cuticles so as not to cause inflammation, not shaving the axilla ipsilateral to surgery due to the risk of lymphedema, not taking long plane trips, and not performing lymphatic drainage due to the risk of cancer dissemination were also selected by professionals.

A case-control study of 202 women who underwent unilateral breast surgery with axillary dissection shows that blood pressure monitoring or skin puncture does not increase the risk of lymphedema[23]. The recommendation that skin puncture should be avoided at all costs seems to result from the pre-antibiotic era conjecture that infection was the predominant cause of breast cancer-related lymphedema, limited to case reports, small case series, and a prospective study with methodological flaws. There is no description in the literature that blood pressure measurement using the arm ipsilateral to surgery increases the risk of lymphedema[12].

Other studies evaluated the relationship between air travel and lymphedema and found no correlation. One study set out to examine the effect of air travel on extracellular fluid content measured by bioimpedance analysis, with 53 (74.0%) of 72 subjects having axillary lymph node dissection in 68 (94.0%) women. The researchers found no change in the impedance rates of these women after the flight[24].

Among the risk factors described in the literature, cellulite associated with an increase in body weight and a BMI between 25.0 and 29.9 were significantly associated with arm swelling. Increased body weight and sedentary lifestyle are cited in the literature as risk factors for arm swelling and lymphedema[25].

Some professionals questioned the performance of MLD and the risk of the spread of cancer (metastases). MLD, however, does not have the capacity to generate metastases, since the body is continuously stimulating the lymphatic system through muscle contractions and breathing. Thus, manual stimulation by gentle pressures is proven to be incapable of increasing the risk of relapse. The evolution of the disease occurs because of an adequate microenvironment and according to its tumor biology. Therefore, there is no evidence that MLD has any impact on the increased risk of recurrence and metastasis, and can be safely performed in cancer patients20, as in a study published in the *Journal of Phlebology and* Lymphology[26], when evaluating 49 cancer patients with lymphedema treated with MLD, compressive bandages and exercises, the authors concluded that MLD, associated with the treatment of lymphedema, did not worsen the risk of metastasis in the studied group.

Some other guidelines were passed on to professionals, one of which was to avoid excessive heat sources such as stirring a hot pot for a long time. Relative to temperatures, sudden or prolonged exposure to extreme temperatures can generate tissue damage, inflammation, and precipitate edema in a patient with an already compromised lymphatic system. While prospective evidence supports sauna prevention, there is little data to support temperature-related recommendations for survivors living permanently in areas with hot or humid temperatures. More research is needed to identify the extent of risk conferred by increased temperature in lymphedema[24].

The limitation found in the research was the small number of respondent professionals, making it difficult to collect data in the field. A larger number of respondent professionals and a larger sample size would be recommended.

The research brought important data on the knowledge and management of non-specialist professionals in the areas of oncology and women's health in postoperative breast cancer patients and what guidelines provide or would provide these patients with information regarding

the prevention of complications and the preservation or restoration of functionality. With these data, it was possible to elaborate a form with important information about physiotherapy in the postoperative period of breast cancer to direct non-specialist oncology professionals to make decisions regarding evidence-based therapeutic conducts and planning, since patients treated for breast cancer can be hospitalized in different sectors of the hospital.

CONCLUSION

Most professionals who are not specialists in oncology pass on or would pass on outdated guidelines to patients, such as the need to restrict movement to shoulder height postoperatively, contraindication to exercises with load, and the need for precautions, such as avoiding the limb ipsilateral to the surgery, not measuring blood pressure and not puncturing the limb on the operated side.

In addition, some physical therapists believe that they can only perform free and resistance exercises after medical release. However, some were up-to-date and understood their professional autonomy, the importance of progressive free and resistance exercises for the patient's recovery, and the need to prohibit invasive procedures in the limb ipsilateral to axillary lymph node dissection and air travel, which could impact the recovery and quality of life of patients.

CONTRIBUTIONS

All authors contributed substantially to the design and/or planning of the study; in the collection, analysis and/or interpretation of the data; in the writing and/or critical review; and approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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