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# ORGANIZATION OF REHABILITATION ACTIVITIES FOR PATIENTS WITH BREAST CANCER: A LITERATURE REVIEW

*A.A. KHOZHAYEV[1], A.Zh. ABDRAKHMANOVA[2], T.G. GONCHAROVA[2], A.S. KAZHENOVA[2], N.S. KHVAN[2]*

[1]Asfendiyarov Kazakh National Medical University, Almaty, the Republic of Kazakhstan;
[2]Kazakh Institute of Oncology and Radiology, Almaty, the Republic of Kazakhstan

## ABSTRACT

***Relevance:*** *The high incidence of breast cancer in the world, leading to a high percentage of disability in the female population, requires not only the development of new technologies for early diagnosis and treatment, but also calls for the creation of effective approaches to rehabilitation measures, which indicates their socially significant nature.*

***The study aimed to*** *identify the specific aspects of medical rehabilitation for breast cancer patients based on a literature analysis.*

***Methods:*** *To achieve this goal, an analysis of available literary sources was conducted in leading electronic databases, including SpringerLink, PubMed, and Embase, with an emphasis on modern scientific achievements in the field of cancer patient rehabilitation. The selection of scientific publications was carried out according to the following key terms: "malignant neoplasms of the mammary gland", "rehabilitation medical strategies", "quality of life of cancer patients".*

***Results:*** *A systematic analysis of scientific sources confirmed the need to introduce a multidisciplinary approach to the formation and implementation of medical rehabilitation programs for patients who have undergone breast cancer treatment. It has been proven that this category of patients faces many physiological, somatic, and psychological disorders that have a significant impact on their adaptation and social functioning. Significant changes in the physical and psycho-emotional state often lead to the loss of professional and social roles, which require the implementation of complex rehabilitation strategies. The complex nature of rehabilitation contributes to the comprehensive recovery of patients, ensuring an increase in their quality of life and social integration.*

***Conclusion:*** *The use of integrated medical rehabilitation programs for patients who had breast cancer contributes to the restoration and/or optimization of lost functions of patients and their successful social adaptation.*

***Keywords:*** *breast cancer, rehabilitation measures, quality of life.*

***Introduction:*** Breast Cancer (BC) is the leading cause of cancer death in most countries of the world. According to the World Health Organization, 685,000 people died from breast cancer worldwide in 2020 and 670,000 in 2023 [1-3]. In Kazakhstan, breast cancer incidence also ranks first among other malignant neoplasms every year, making a significant contribution to both incidence rates (14.5% in 2020, 14.9% in 2023) and mortality rates (7.8% in 2020, 8.1% in 2023) [4]. At the same time, an annual reduction in these indicators of no more than 2-4% can be achieved only in those countries where not only modern, effective treatment technologies are introduced, but also methods of restorative medicine are widely adopted. The aggressiveness of the malignant process necessitates the use of techniques in antitumor therapy that aim not only to eliminate the primary tumor focus but also to restore the normal functioning of disrupted life processes, which significantly impact the quality of life of patients [5-7]. Considering the above data, the most vital task is the development and implementation of effective rehabilitation strategies aimed at minimizing the adverse effects of antitumor treatment and enhancing the functional state of patients [8, 9].

***The study aimed to*** identify the specific aspects of medical rehabilitation for breast cancer patients based on a literature analysis.

***Materials and methods:*** This review is based on a systematic analysis of published scientific sources devoted to the problems of medical rehabilitation of women who have had breast cancer. The information search was conducted in leading electronic bibliographic databases, including SpringerLink, PubMed, and Embase, with a focus on contemporary trends in restorative medicine. The following key terms were used as search criteria: "malignant neoplasms of the mammary gland", "rehabilitation medical strategies", "quality of life of cancer patients". The final analysis included 30 publications that met the criteria of scientific significance and methodological validity.

***Results:*** Individualization of treatment and rehabilitation programs is a key area of modern medical rehabilitation of patients with breast cancer, similar to modern trends in the treatment of this disease. According to U. Olsson Möller et al., women who have undergone treatment for breast cancer face significant negative consequences, and their rehabilitation needs often remain unmet. Studies show that up to 43% of patients experience chronic dis-

tress, requiring a comprehensive therapeutic approach [10]. However, the problem of timely detection and restoration of individual physiological disorders in the body of women with breast cancer remains, which significantly reduces their chances of full rehabilitation [11, 12].

E. Wisotzky et al. in their study analyzed the functional interaction of specialists in rehabilitation teams and identified key problems in the distribution of responsibilities. It was found that the lack of a clear delineation of functions between attending physicians and rehabilitation specialists sometimes leads to duplication of certain responsibilities and the omission of others, ultimately resulting in a decrease in the effectiveness of rehabilitation measures. Based on the data obtained, the authors proposed an algorithm for optimizing interdisciplinary interaction, which allows for increased coordination of specialists' work and improved quality of rehabilitation care for patients with breast cancer [13].

Focusing on improving the quality of medical services, some authors offer an updated understanding of rehabilitation, which eliminates the boundaries between primary treatment, rehabilitation, and palliative care in oncology. The last two areas, in some interpretations by individual researchers, suggest similar activities, including symptomatic treatment to minimize the consequences of the tumor process and specialized treatment. These approaches are also aimed at optimizing healthcare resources by reducing the length of hospital stay and decreasing the number of unexpected rehospitalizations. Despite common goals, rehabilitation and palliative care use different methods [5]. Palliative care is aimed primarily at providing psychological and social support to the patient, creating comfortable conditions for his stay, and taking into account the spiritual aspects of the disease. In contrast, rehabilitation measures focus on restoring motor, cognitive, and psycho-emotional functions, reducing the level of disability, and improving the overall quality of life for patients [14].

S. Wittry et al. identify four key stages of rehabilitation of cancer patients: preventive, restorative, supportive, and palliative. The preventive stage, aimed at preparing the patient for specialized treatment, begins after diagnosis, with the patient being informed about the possible consequences of therapy and a personalized rehabilitation plan being developed. The recovery period encompasses rehabilitation measures implemented during and immediately following the completion of antitumor treatment. At this stage, physiotherapeutic, medicinal, and psychological methods are used to help minimize the side effects of therapy and restore the patient's functional capabilities. The supportive stage focuses on monitoring the condition and correcting functional and psychosocial parameters, while the palliative stage provides comprehensive symptomatic treatment to enhance the quality of life. Particular attention is paid to elderly patients with concomitant diseases, weakened musculoskeletal system, and risk of fractures, where an individualized approach is required with the involvement of family resources [15].

J. Weis and J. M. Giesler emphasize that oncological rehabilitation aims to reduce the impact of limitations caused by the disease and its treatment, promoting the social reintegration of the patient [16]. Given the increase in breast cancer incidence and the improvement of therapeutic approaches, the rehabilitation of cancer patients is of key importance in the healthcare system. In various countries, recommendations for follow-up care for women who have had breast cancer are being developed based on research results, emphasizing that to ensure the effectiveness of rehabilitation, a detailed personalized assessment of the patient's condition is required based on examination data from a multidisciplinary group of specialists, including specialized oncologists, specialized experts, rehabilitation specialists, psychologists, and social workers. To systematize information about the impact of the pathological process and treatment measures on various aspects of the patient's life, as well as to monitor the impact of external factors on the dynamics of rehabilitation, various classifications are being developed, for example, the International Classification of Functioning (ICF) of Disabilities and Health, aimed at diagnosing functional limitations [17].

A large-scale study by Spanish scientists has demonstrated that increased life expectancy, active implementation of early detection programs, and decreased mortality in breast cancer lead to an increase in the number of patients who require rehabilitation support over a long period. This fact is also explained by the fact that the disease and the corresponding antitumor treatment of patients complicate their integration into the professional environment, leaving significant physical and psychosocial consequences that can persist for a long time. In response to this problem, a guideline was developed to regulate the coordinated interaction of specialized and primary healthcare services. The proposed recommendations encompass aspects of post-therapeutic patient monitoring, the development of individualized rehabilitation strategies, and the organization of interdisciplinary specialist interaction. Additionally, the document contains general provisions aimed at maintaining a stable condition of female patients, including weight control, adherence to principles of rational nutrition, regular physical activity, cessation of smoking and alcohol consumption, use of auxiliary treatment methods (in particular, reflexology), monitoring of signs of possible relapse and strict control of compliance with hormonal therapy for 5-10 years. The issue of professional readaptation of female patients and their return to work is also considered [17].

J. Klocker et al. conducted a study of the effectiveness of a three-week inpatient rehabilitation program that included psychosocial support, correction of functional disorders, and training in the basics of a healthy lifestyle. The

sample included 3,233 patients, whose data were analyzed dynamically over a five-year period. The use of validated assessment scales (European Quality of Life – 5 Dimensions, EuroQol EQ-5D) revealed a significant improvement in the quality of life of patients immediately after completing the program, as well as during subsequent monitoring at 6 and 12 months. A decrease in anxiety and depression, as well as an increase in the level of psychological stability, were noted, which confirms the high effectiveness of rehabilitation measures based on biopsychosocial principles [18].

F. Di Iulio et al. conducted a systematic review of the literature, which analyzed cognitive impairment associated with antitumor therapy based on 29 studies. Based on the studies, the authors concluded that the combined use of hormonal therapy and chemotherapy in cancer patients affects the quality of life, in particular the deterioration of cognitive functions and the emergence of neuropsychological disorders. In patients with breast cancer, memory impairment, verbal abilities, and motor speed were most pronounced. The importance of neuropsychological diagnostics helps to objectively assess the effect of chemotherapeutic drugs not only on the tumor, but also on the central nervous system of patients with breast cancer, which can be regarded as a side effect of chemotherapy drugs and, in turn, is necessary for adequate rehabilitation measures [19].

The work by SL Bober et al. demonstrated that every year thousands of young women suffering from breast cancer face a difficult choice: to undergo drug suppression of ovarian function, leading to early menopause or sexual dysfunction, in order to reduce the risk of recurrence of the disease. The solution to this problem can be facilitated by the psycho-sexual rehabilitation complex developed by the authors, which is aimed not only at reducing sexual dysfunction, but also at combating psychological stress. The implementation of the developed rehabilitation complex was carried out during a study of 20 young patients with breast cancer, who underwent a 4-hour group treatment session, including cognitive therapy techniques based on mindfulness, exercises on "body awareness," and some questions related to sexual health. When analyzing the obtained data, a significant improvement in the psychological state of patients was revealed, including a decrease in anxiety levels and restoration of sexual function. Such results indicate the need for rehabilitation measures, which are especially relevant for young women with drug-induced menopause caused by breast cancer treatment [5, 20]. Surgical intervention in the treatment of breast cancer is also fraught with a violation of functional capabilities. Considering that more than half of breast cancer cases occur in middle-aged women (45 to 64 years old), preserving the function of the upper limbs becomes a key aspect, since this group of patients is often the main breadwinners of their families, is actively professionally active, and is at the peak of their careers [5].

Asian women have higher body fat percentage, lower physical activity levels, and lower bone mass than Western women, which may impact functional outcomes after surgery. In a single-center prospective cohort study with 6-week follow-up, the functional status of 44 patients (including 16 sector resections and 28 mastectomy patients) was assessed after early rehabilitation (from day 1 postoperatively) including a set of shoulder and upper extremity exercises. Shoulder range of motion and disability were assessed preoperatively, 2 weeks, and 6 weeks postoperatively. Results showed that at week 6, patients were able to regain active shoulder range of motion, but some patients experienced higher levels of disability, particularly in the group of women who underwent axillary lymph node dissection after sentinel lymph node exploration. The presented data further emphasize the importance of using active methods of early rehabilitation [5, 21].

Concerning the recovery of breast cancer patients after surgical treatment, numerous studies indicate the need for a comprehensive approach. Thus, WA Calo and colleagues developed the Strength After Breast Cancer (SABC) program, which included an online course for physiotherapists that incorporated specialized physical exercises. When surveying physicians who had completed the course, 76% of respondents reported implementing the program in their outpatient rehabilitation clinics, confirming the effectiveness of online training under this program [22].

A study of the effectiveness of magnetic therapy in the early stages after radical surgery in 64 patients with breast cancer showed a significant improvement in the quality of life, a decrease in pain syndrome (according to the following indicators: intensity, duration, frequency, irradiation), a decrease in muscle-tonic syndrome in the shoulder-scapular region, a decrease in the level of venous congestion in patients in the "magnetic therapy" group compared to the "placebo" group [23]. Based on the data obtained, it can be stated that the use of general magnetic therapy for 2-4 days after surgery is rational, as it helps improve patient condition.

Psychosocial support is also an important aspect of the comprehensive rehabilitation of patients with breast cancer. MK Derakhshan and MH Karbassian in their studies of cancer patients focused on the prevalence of mental disorders (depression, anxiety disorders, sleep disorders), which were especially common in women with breast cancer. The importance of non-drug treatments, such as cognitive behavioral therapy, was emphasized. The authors also point out that such disorders are often underestimated, although many patients need not only psychological but also psychiatric care. The results of using psychiatric drugs in the treatment of some patients with breast cancer were evidence of this. The researchers paid special attention to their interaction with other antitumor agents and hormonal drugs used for treatment. In conclusion, the researchers argue that psychiatrists should actively participate in rehabilitation teams, helping to identify psychosocial problems and develop individual plans for rehabilitation treatment [5, 24].

Modern technologies also play an important role in the rehabilitation of patients with breast cancer. J. Ollero et al. suggested monitoring such parameters as heart rate, energy expenditure, and hand mobility in their studies. To do this, the authors developed a system that can be controlled from three applications (for smart watches, smartphones, and a web application). Such technologies help patients and medical experts evaluate the effectiveness of rehabilitation [5, 25]. A similar program was used by M. Rutsch et al., who developed the ReNaApp mobile application for the rehabilitation of patients with breast cancer. This application proved effective in improving long-term rehabilitation outcomes and encouraged patients to participate more actively in physical activity, thereby enhancing their quality of life [26].

The last decade has also seen an increase in attention to patient involvement in research, particularly in planning individualized treatment and rehabilitation programs. This approach enhances the quality of research and enables the consideration of patients' opinions. As a result of such research, high acceptability of materials for participants is revealed and the general applicability of the data obtained increases [27]. A crucial aspect is the involvement of patients in the research process, which enhances the understanding of the problems being studied and strengthens the connections between researchers and the community [28].

A study by ER Nissen and colleagues demonstrates the benefits of establishing a working group to develop a psychosocial rehabilitation program for patients with breast cancer. The group included patient representatives, researchers, and a research assistant, who provided greater mutual understanding and increased relevance of the program. Involving patients in the design and implementation of the study brought significant benefits, despite the additional costs associated with this approach [29].

***Discussion:*** Current trends in the field of rehabilitation treatment of patients with breast cancer confirm the need for a comprehensive multidisciplinary approach in developing medical rehabilitation programs for this group of patients. The rehabilitation period can and should begin with breast cancer prevention before a malignant tumor can appear (for example, during the treatment of fibrocystic mastopathy or other benign tumors of the female reproductive system) [30]. This is because patients with breast cancer develop both functional and organic somatic disorders, along with emotional, mental, and behavioral reactions that arise against the background of the disease. Together, these factors lead to severe psychosocial disorientation, impaired work activity and social adaptation, which requires comprehensive and targeted rehabilitation measures. Such an integrated approach will encompass all key aspects of patients' lives and help address the primary goal of medical rehabilitation: improving the quality of life. The implementation of a comprehensive medical rehabilitation program for women who have undergone treatment for breast cancer will ensure optimal recovery of their physical and psychosocial condition and support the process of their full reintegration into society, which is a prerequisite for achieving sustainable recovery.

***Conclusion:*** An analysis of studies devoted to the rehabilitation of patients with breast cancer demonstrates the significant impact of this disease on their psycho-emotional state and overall quality of life. Breast cancer is accompanied by pronounced psychological reactions, including anxiety, depressive disorders, decreased concentration, a feeling of hopelessness, and emotional burnout. These factors determine the need for timely psychiatric diagnosis and therapy.

Women perceive the diagnosis of cancer as a threat to their physical condition and identity, and the consequences of the disease and the treatment often lead to complex functional and organic disorders. In this regard, patient rehabilitation should integrate an interdisciplinary approach that integrates oncological, psychiatric, and restorative medical care. Comprehensive rehabilitation is designed to minimize the negative consequences of treatment, restore lost functions, reduce the level of disability, enhance the quality of life, and prolong patients' active participation in social and professional spheres.

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**АҢДАТПА**

## СҮТ БЕЗІ ОБЫРЫМЕН АУЫРАТЫН НАУҚАСТАРДЫ ОҢАЛТУ ІС-ШАРАЛАРЫН ҰЙЫМДАСТЫРУ: ӘДЕБИЕТКЕ ШОЛУ

***А.А. Хожаев[1], А.Ж. Абдрахманова[2], Т.Г. Гончарова[2], Ә.С. Қаженова[2], Н.С. Хван[2]***

[1]«С.Ж. Асфендияров атындағы Қазақ Ұлттық Медицина Университеті» КЕАҚ, Алматы, Қазақстан Республикасы;
[2]«Қазақ онкология және радиология ғылыми-зерттеу институты» АҚ, Алматы, Қазақстан Республикасы

***Өзектілігі:*** *Әлемде сүт безі обырымен ауыратын әйелдердің жоғары пайыз мүгедектігіне әкеп соғатын жоғары сырқаттану ерте диагностикалау мен емдеудің жаңа технологияларын дамытуды ғана емес, сондай-ақ оңалту іс-шараларын жүргізу кезінде тиімді тәсілдерді құруды да талап етеді, бұл олардың әлеуметтік-маңызды сипатын білдіреді.*

***Зерттеу мақсаты*** *– әдеби деректерді талдау негізінде сүт безі обырымен ауыратын науқастарды медициналық оңалтудың ерекшеліктерін анықтау.*

***Әдістері:*** *Алға қойылған мақсатты іске асыру үшін онкологиялық пациенттерді оңалту саласындағы қазіргі заманғы ғылыми жетістіктерге баса назар аудара отырып, Springer Link, PubMed және Embase қоса алғанда, жетекші электрондық дерекқорлардағы қол жетімді әдеби көздерге талдау жүргізілді. Ғылыми жарияланымдарды іріктеу мынадай негізгі терминдер бойынша жүзеге асырылды: «сүт безінің қатерлі ісіктері», «оңалтудың медициналық стратегиялары», «онкологиялық пациенттердің өмір сүру сапасы».*

***Нәтижелері:*** *Ғылыми дереккөздерді жүйелендірілген талдау РМЖ-мен емдеуден өткен пациенттерді медициналық оңалту бағдарламаларын қалыптастыру және іске асыруға мультидисциплинарлық тәсілді енгізу қажеттігін растады. Науқастардың осы санаты олардың бейімделуі мен әлеуметтік жұмыс істеуіне елеулі әсер ететін көптеген физиологиялық, соматикалық және психологиялық бұзылуларға тап болатыны дәлелденді. Дене және психоэмоционалдық жағдайдағы айқын өзгерістер көбінесе кәсіби және әлеуметтік рөлдерді жоғалтуға әкеп соғады, бұл кешенді оңалту стратегияларын енгізуді талап етеді. Оңалтудың кешенді сипаты пациенттердің өмір сүру сапасын және әлеуметтік интеграциясын арттыруды қамтамасыз ете отырып, оларды жан-жақты қалпына келтіруге ықпал етеді.*

***Қорытынды:*** *РМЖ-ға шалдыққан пациенттерді медициналық оңалтудың интеграцияланған бағдарламаларын қолдану пациенттердің жоғалтқан функцияларын қалпына келтіруге және/немесе оңтайландыруға және олардың табысты әлеуметтік бейімделуіне ықпал етеді.*

***Түйінді сөздер:*** *сүт безінің қатерлі ісігі, оңалту іс-шаралары, өмір сүру сапасы.*

**АННОТАЦИЯ**

# ОРГАНИЗАЦИЯ РЕАБИЛИТАЦИОННЫХ МЕРОПРИЯТИЙ БОЛЬНЫХ РАКОМ МОЛОЧНОЙ ЖЕЛЕЗЫ: ОБЗОР ЛИТЕРАТУРЫ

***А.А. Хожаев[1], А.Ж. Абдрахманова[2], Т.Г. Гончарова[2], А.С. Каженова[2], Н.С. Хван[2]***

[1]НАО «Казахский национальный медицинский университет им. С.Д. Асфендиярова», Алматы, Республика Казахстан;
[2]АО «Казахский научно-исследовательский институт онкологии и радиологии», Алматы, Республика Казахстан

***Актуальность:*** *Высокая заболеваемость раком молочной железы (РМЖ) в мире, приводящая к высокому проценту инвалидизации женского населения, требует не только развития новых технологий ранней диагностики и лечения, но и призывает к созданию эффективных подходов при проведении реабилитационных мероприятий, что обозначает их социально-значимый характер.*

***Цель исследования*** *– выявление особенностей медицинской реабилитации больных раком молочной железы на основе анализа литературных данных.*

***Методы:*** *Для реализации поставленной цели был проведен анализ литературных источников, представленных в ведущих электронных базах данных, включая Springer Link, PubMed и Embase, с акцентом на современные научные достижения в области реабилитации онкологических пациентов. Отбор научных публикаций осуществлялся по следующим ключевым терминам: «злокачественные новообразования молочной железы», «реабилитационные медицинские стратегии», «качество жизни онкологических пациентов».*

***Результаты:*** *Систематизированный анализ научных источников подтвердил необходимость внедрения мультидисциплинарного подхода к формированию и реализации программ медицинской реабилитации пациенток, перенесших лечение РМЖ. Доказано, что данная категория больных сталкивается с множеством физиологических, соматических и психологических нарушений, которые оказывают значительное влияние на их адаптацию и социальное функционирование. Выраженные изменения в физическом и психоэмоциональном состоянии нередко приводят к утрате профессиональных и социальных ролей, что требует внедрения комплексных реабилитационных стратегий. Комплексный характер реабилитации способствует всестороннему восстановлению пациенток, обеспечивая повышение их качества жизни и социальной интеграции.*

***Заключение:*** *Применение интегрированных программ медицинской реабилитации у пациенток, перенесших РМЖ, способствует восстановлению и/или оптимизации утраченных функций пациенток и их успешной социальной адаптации.*

***Ключевые слова:*** *рак молочной железы (РМЖ), реабилитационные мероприятия, качество жизни.*

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***Information about the Authors:***
**A.A. Khozhayev (corresponding author)** – Doctor of Medicine, Professor at the Department of Oncology named after S.N. Nugmanov, Asfendiyarov Kazakh National Medical University, Almaty, Kazakhstan, tel. +77017601595, email: arman@mail.ru, ORCID: 0000-0002-0499-5258;
**A.Zh. Abdrakhmanova** – Doctor of Medicine, Head of the Breast Tumor Center, Kazakh Institute of Oncology and Radiology, Almaty, Kazakhstan, tel. +77017117379, email: aabdrahmanova66@gmail.com, ORCID: 0000-0003-0986-1328;
**T.G. Goncharova** – Doctor of Biology, Scientific Secretary, 1Kazakh Institute of Oncology and Radiology, Almaty, Kazakhstan, tel. +77052071214, email: goncharova.2004@mail.ru, ORCID: 0000-0003-2524-8750;
**A.S. Kazhenova** – oncologist-mammologist, Kazakh Institute of Oncology and Radiology, Almaty, Kazakhstan, tel. +77756031702, email: aruzat1995@gmail.com, ORCID: 0009-0002-8548-7710;
**N.S. Khvan** – doctor mammologist, Kazakh Institute of Oncology and Radiology, Almaty, Kazakhstan, tel. +77019765700, email: nikolai.khvan@gmail.com, ORCID: 0009-0006-4971-1956.

***Address for Correspondence:*** A.A. Khozhayev, Kazakh Institute of Oncology and Radiology JSC, Abay Ave. 91, Almaty 050022, the Republic of Kazakhstan.