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QUALITY OF LIFE IN WOMEN WITH BREAST CANCER AFTER TREATMENT

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ABSTRACT

Relevance: *Breast cancer (BC) is one of the most common oncological diseases among women. Despite advances in treatment methods, factors affecting patients' quality of life and psy-cho-emotional state remain insufficiently studied. In the post-treatment period, changes in physical, emotional, sexual, and social well-being have a significant impact on patients' quality of life (QoL).*

The study aimed to *assess the quality of life of women treated for breast cancer based on the EORTC QLQ-BR23 questionnaire.*

Methods: *Data collection was conducted from January 15, 2024, to January 1, 2025, at the Medical Center of West Kazakhstan Marat Ospanov Medical University (Aktobe, Kazakhstan) using the EORTC QLQ-BR23 questionnaire. A total of 103 women participated in the study. The EORTC QLQ-BR23 is a standardized tool for assessing the QoL in BC.*

Results: *According to the study, 69.9% of patients rated their health status as satisfactory, while 30.1% reported a significant decline in the QoL (p=0.000). Major concerns included physical functioning and body image satisfaction (p=0.000), deterioration of sexual function (p=0.000), and uncertainty about the future (p=0.000). Additionally, systemic therapy side effects (p=0.000), breast symptoms (p=0.000), and hair loss (p=0.000) had a negative impact on the QoL.*

Conclusion: *The study results reaffirm the relevance of this issue and underscore the im-portance of comprehensive support measures in enhancing the QoL for BC survivors. Psychological support, rehabilitation programs, and measures to reduce treatment side effects may contribute to better patient social adaptation. The findings provide a foundation for further improvement of medical and psychological support for BC patients.*

Keywords: *woman, breast cancer (BC), quality of life (QoL), EORTC QLQ-BR23.*

Introduction: Breast cancer (BC) ranks first in cancer incidence in women, with a statistically stable growth [1]. GLOBOCAN 2022 predicts BC to become the second most common cancer in both sexes and the first among women globally. 2.3 million new cases are registered every year. BC accounts for 23.8% of all new cancer cases in women [2]. The BC mortality rate is 7%. BC causes 1 of 4 cancer cases and 1 of 6 cancer deaths, ranking first in incidence even in emerging and transitional economies [3].

Despite a trend of stabilization in overall cancer incidence in Kazakhstan, BC incidence in the country is increasing, in line with global indicators [4]. According to GLOBOCAN 2022, BC accounts for 12.6% of new cancer cases in Kazakhstan, ranking first among all tumor incidences. The mortality from BC is 10.9%, and the 5-year prevalence is 17.9 per 100,000 people [5].

Despite significant advances in BC diagnostics and treatment, it has a significant negative impact on the quality of life (QoL) of affected women [6]. One of the most important areas in medicine is the study of the QoL of patients, which is understood as the satisfaction of a person in physical, social, psychological, and spiritual terms, that is, conditional well-being in all spheres of life, which a person evaluates according to the totality of his subjective experiences [7]. Assessing QoL can help the doctor personalize symptomatic therapy and obtain important information to predict the disease. QoL can serve as the basis for the development of rehabilitation programs for cancer patients. QoL assessment in clinical trials improves the research quality [8].

Although advances in science and medicine in recent years have led to a significant increase in the number of healthy survivors from BC, the physical health of women at risk due to the disease and the side effects of treatment, as well as their social and emotional well-being, still challenge their QoL [9]. BC diagnosis and treatment affect all aspects of women's health: physical, psychological, social, economic, and spiritual [10]. In oncology, the concept of growth is of particular importance due to the peculiarities of pathology and the radicality of treatment methods (surgical, radiation, and chemotherapy) [11]. Various research studies have evaluated differences in the QoL depending on the method of surgery for BC [12].

It is known that different options for surgical treatment of BC can have different effects on post-surgery QoL of women [11]. Surgical treatment of the mammary gland is generally considered very aggressive, considering the aesthetic effect of the treatment. This causes fear, anxiety, and uncertainty of consequences in the context of the underlying disease [6]. Surgical intervention has not only physiological, but also psychological and social consequences, since a woman can lose one of the main signs of femininity – the mammary gland. At the same time, the therapy was long centered on oncological safety, leaving the aesthetic result or assessment of personal well-being without attention [13]. On the one hand, radical surgery for BC helps inhibit the disease progression for several years. However, on the other hand, they lead to functional disorders associated with organ loss, disability, and, as a result, deep emotional disorders that inhibit the process of recovery, adaptation, and re-socialization, which prevents the achievement of a full-fledged therapeutic result [14]. Radical mastectomy for many years will be the only surgical method to treat BC. This intervention is often accompanied by post-mastectomy syndrome and has a permanent traumatic effect on the woman's psyche. The presence of a cosmetic defect after surgery forces a woman to change her usual lifestyle in order to hide her problem from others. This inevitably causes problems in personal life, contributes to the development of disorders in the sexual sphere, emotional isolation, and the emergence of bad habits. According to scientists, the presence of BC is a "very strong stress" for a woman, since she must accept not only the presence of a potentially fatal disease, but also the need to remove the mammary gland [15]. Assumptions about the etiology and course of cancer indicate the importance of studying the interaction of various biological, psychological, and social factors [16].

The study aimed to assess the quality of life of women treated for breast cancer based on the EORTC QLQ-BR23 questionnaire.

Materials and methods: A survey was conducted among patients of the Medical Center of West Kazakhstan Marat Ospanov Medical University (WKMOMU) from January 15, 2024, to January 1, 2025. During the planning of the research work, f2=0.35 and power = 0.8 were calculated based on the estimated impact size for the regression analysis. The sample size was 82 people, with a margin of error of +20 %, resulting in a total sample size of 98 people. The survey involved 103 women.

Inclusion criteria: admission to the WKMOMU Medical Center in the postoperative period; newly detected BC; consent to fill out the questionnaire.

Exclusion criteria: newly diagnosed BC for the first time, but are not subject to surgery; patients who have undergone surgery for a benign tumor; those who do not give consent to filling out the questionnaire.

Data collection consisted of 2 stages:

I – Determination of socio-demographic and clinical data of the survey participants, such as age, marital status, number of children, level of education, place of work, place of residence, method of diagnosis, and type of surgery;

II – The use of the EORTC QLQ-BR23 questionnaire to determine the effect of treatment on the QoL of sick women.

EORTC QLQ-BR23 is a standardized, widely used questionnaire for measuring the QoL of patients with BC, widely used in foreign countries and Russia. In 1996, it was developed by the European Organization for Research and Treatment of Cancer (EORTC) QoL Study Group. The questionnaire consists of 23 questions divided into 4 functional (Body Image, Sexual Functioning, Sexual Enjoyment, Future Perspective) and 4 symptomatic (Systemic Therapy Side Effects, Arm Symptoms, Breast Symptoms, Upset by Hair Loss) scales. Each question is evaluated on a scale from "Not at All" (1) to "A Little" (2), "Quite a Bit" (3), and "Very Much" (4).

According to the EORTC measurement guide, the assessment included summing up the initial scores for the corresponding points and their linear conversion. The given formulas were used to derive the resulting linear scale, ranging from 0 to 100. A high score on functional scales corresponded to a high (good) level of functioning, while a high score on symptomatic scales and for individual symptoms indicated an increase in symptoms and the feeling of discomfort. The remaining points were accounted for according to the survey instructions: a "no answer" on a scale meant the "no data" value [17].

Research ethics. Prior to the study, the local Bioethical Commission of WKMOU approved the scientific research work in strict compliance with all necessary ethical standards and rules (Protocol No. 9, 02.10.2023).

A permission No. 13/8-21-77 was obtained from E. E. Smailov, Head of the Medical Center of WKMOMU, to conduct a study of women undergoing treatment with BC. Each participant was to sign a Personal Data Sharing Consent Agreement in order to participate in the study.

At the beginning of each survey, information was provided about the study's goals and objectives, its importance, and participants' rights to refuse participation at any time. It was also noted that the data would be confidential and that the anonymity of their identity would be preserved.

Statistical methods for processing the results obtained. Descriptive statistics. Statistical processing of results using IBM SPSS Statistics version 25.0. (IBM Corp., Armonk, NY). The normality of distribution of numerical variables was tested using the Shapiro-Wilk test. The main indicators of descriptive statistics were calculated: for numerical variables, the arithmetic mean (M) and standard deviation (SD) ($\mu \pm \sigma$); and for categorical variables, as well as for categorical variables (high/low) after dichotomization according to the mean, frequency (N), and percentage (%). For functional and health status/QoL scales, 0-50 indicated a low level, and 51-100 indicated a high level. For symptomatic scales, a score of 0-50 indicated a high level, while a score of 51-100 indicated a low level. The statistical significance of the difference between the "high" and "low" groups on the functional and symptomatic scales (p-value) was assessed using the Mann-Whitney U test criterion. Differences in values were considered statistically significant at $p<0.05$.

Results: Socio-demographic and clinical characteristics of the respondents in the study are presented in Table 1. The average age of the women was 58.4 (SD=10.89) years; the youngest patient was 25 years old, and the oldest was over 75 years old. By age group, the largest share was 39.8% of respondents aged 56-65 (SD=30.4-49.3), and the smallest group included patients aged 25-35 (SD=-0.3-6.2). Most of the study participants were urban residents (81.6%, SD=74.1-89.0), while the proportion of those living in rural areas was 18.4% (SD = 11.0-25.9). Depending on the level of education, the majority (70.9%) had secondary education (SD=62.1-79.6), and patients with higher education accounted for 29.1% (SD=20.4-37.9). In terms of employment, most patients were employed, at 43.7% (SD=34.1-53.3), and retired, comprising 39.8% (SD=30.4-49.3), while the share of unemployed patients was 16.5% (SD=9.3-23.7). According to marital status, 54.4% of respondents (SD=44.7-64.0) are married, and 45.6% (SD=36.0-55.3) are single. The largest share of children was 65.0% (SD=55.8-74.3) of patients with 2-3 children, 18.4% (SD=11.0-25.9) had 0-1 child, and 16.5% (SD=9.3-23.7) had 4 or more children. Regarding the method of diagnosis, more than half of the respondents identified the disease through screening (52.4%; SD=42.8-62.1), while 47.6% (SD=37.9-57.2) reported feeling symptoms and visiting the doctor on their own initiative. In terms of treatment methods, most patients (70.9%; SD=62.1-79.6) underwent radical mastectomy (RME), the remaining 29.1% (SD=20.4-37.9) underwent organ-saving surgery with extended sectoral breast resection (ESBR).

Table 1 – Socio-demographic and clinical characteristics of women undergoing treatment with breast cancer

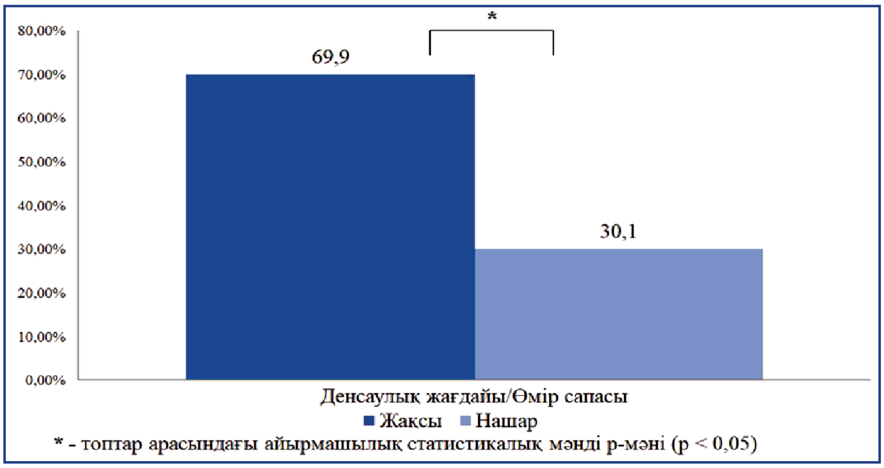
Variables	Number of patients (n=103)	Recurrence rate, %	Confidence interval 95%
Age			
25-35	3	2,9	-0,3-6,2
36-45	11	10,7	4,7-16,6
46-55	21	20,4	12,6-28,2
56-65	41	39,8	30,4-49,3
66-75	22	21,4	13,4-29,3
75 and older	5	4,9	0,7-9,0
Place of residence			
Urban	84	81,6	74,1-89,0
Rural	19	18,4	11,0-25,9
Education level			
Higher Education	73	70,9	62,1-79,6
High School	30	29,1	20,4-37,9
Employment			
Unemployed	17	16,5	9,3-23,7
Employed	45	43,7	34,1-53,3
Retired	41	39,8	30,4-49,3
Marital Status			
Married	56	54,4	44,7-64,0
Single	47	45,6	36,0-55,3
Number of children			
0-1	19	18,4	11,0-25,9
2-3	67	65,0	55,8-74,3
4 and more	17	16,5	9,3-23,7
Diagnosed via			
Screening	54	52,4	42,8-62,1
Visit to a doctor on the patient’s initiative	49	47,6	37,9-57,2
Type of surgery			
RME	73	70,9	62,1-79,6
ESBR	30	29,1	20,4-37,9

The study showed significant differences in the health status and QoL indicators in patients.

The difference between the “high” and “low” groups *on the QoL scale* was statistically significant (p=0.000). 69.9% of the patients who participated in the study assessed their state of health and QoL as high, while the remaining 30.1% considered it to be low (Figure 1).

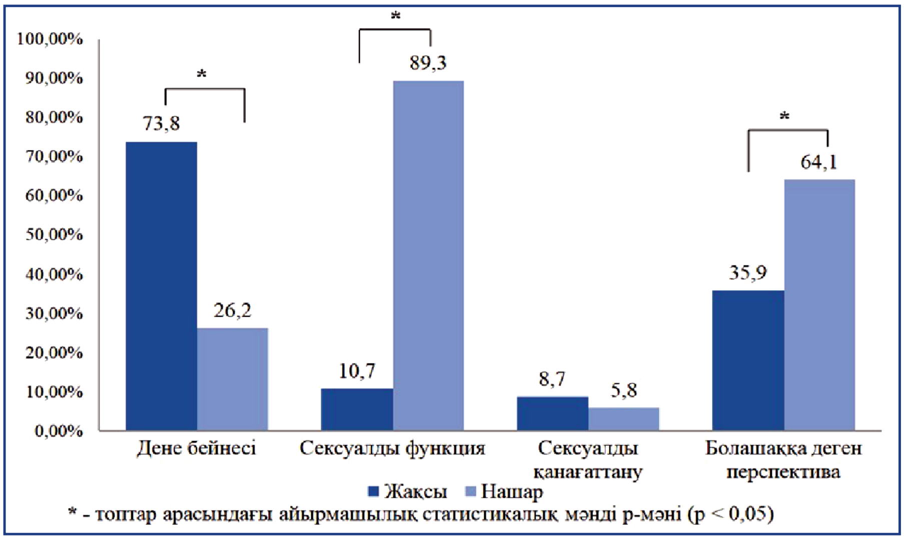
When analyzing the indicators of *functional scales,* a statistically significant difference was found between the groups, primarily in terms of the level of satisfaction with body image (p=0.000). Most patients, 73.8%, reported being satisfied with their body image, while 26.2% expressed dissatisfaction. In addition, there was a decrease in sexual functioning (p=0.000). Only 10.7% of patients rated their sexual functioning as high, and 89.3% considered this indicator to be low or low level. This factor can seriously affect the psycho-emotional state of patients and the QoL in general. Even in terms of a future perspective, there was a significant difference between patients (p=0.000). 35.9% of the study participants expressed confidence in their future, while 64.1% reported reduced hope for the future or felt insecure (Figure 2).

Statistically significant differences were observed between the “high” and “low” groups on both *symptomatic scales*. When evaluating the side effects of systemic therapy, 72.8% of patients reported no adverse effects, while 27.2% noted that these effects were more noticeable (p=0.000).



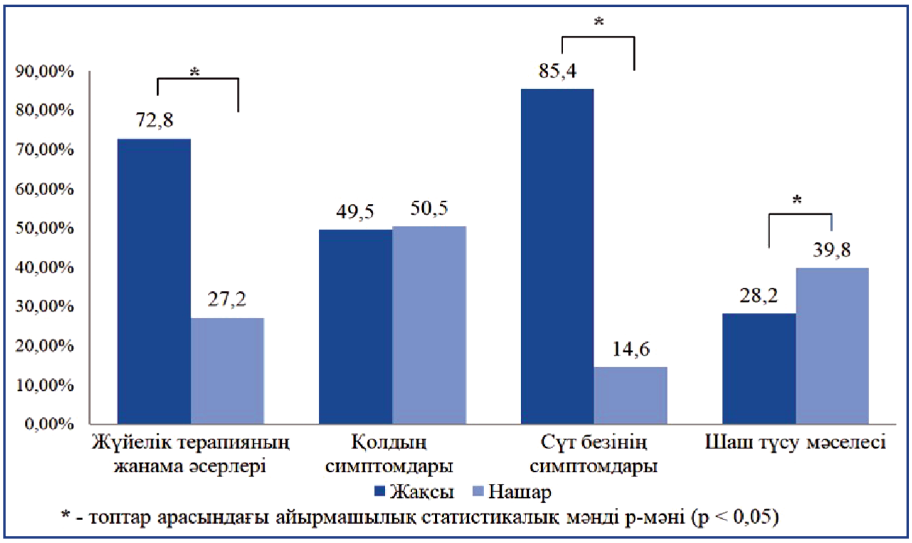
*Legend: Денсаулық жағдайы/Өмір сапасы – Health status / Quality of life; Жақсы – High; Нашар – Low; * - топтар арасындағы айырмашылық статистикалық мәнді p-мәні – The statistical difference between groups was significant (p<0.05)*

Figure 1 – Levels on the Health Status/Quality of Life scale in women being treated for breast cancer



*Legend: Дене бейнесі – Body Image; Сексуалды функция – Sexual Functioning; Сексуалды қанағаттану – Sexual Enjoyment; Болашаққа деген перспектива – Future Perspective; Жақсы – High; Нашар – Low; * - топтар арасындағы айырмашылық статистикалық мәнді p-мәні – The statistical difference between groups was significant (p<0.05)*

Figure 2 – Levels on functional scales in women being treated for breast cancer



*Legend: Жүйелік терапияның жанама әсрелері – Systemic therapy side effects; Қолдың симптомдары – Arm symptoms; Сүт безінің симптомдары – Breast symptoms; Шаш түсу мәселесі – Upset by hair loss; Жақсы – High; Нашар – Low; * - топтар арасындағы айырмашылық статистикалық мәнді p-мәні – The statistical difference between groups was significant (p<0.05)*

Figure 3 – Levels on the symptomatic scale in women being treated for breast cancer

A significant difference was also found between the two groups in terms of breast symptoms (p=0.000). In 85.4% of the patients in the study, these symptoms were not observed, and in 14.6% they showed a pronounced manifestation. The problem of hair loss was also one of the most important factors contributing to the QoL of patients (p=0.000). In 28.2% of patients, this problem was not observed at all, while 39.8% reported significant hair loss (Figure 3).

Discussion: The study results revealed significant differences between QoL levels in patients. The findings show that reconstructive plastic surgery plays an important role in improving the QoL of patients with BC, which is indicated by higher scores on all scales of the questionnaire compared to women after radical mastectomy [1]. The difference between the "high" and "low" groups on the QoL/health status scale was statistically significant (p=0.000). In the results of other scales scores, significant differences were reported between the following sub-scales of the functional scales of the QLQ-BR23 questionnaire: body image (p=0.003), sexual functioning (p=0.007) and sexual enjoyment (p=0.005), and in the case of symptom scales, the differences were related to shoulder-related diseases (p=0.024) [6]. Even in our research, significant differences were observed in the scores on functional scales, especially in terms of satisfaction with body image (p=0.000). In addition, a decrease in sexual functioning is also considered an important factor (p=0.000). This indicates that functional changes affect the psychological state of patients and negatively affect their self-perception. These findings support the results of the previous studies. Worth noting that women had the lowest score during functional assessment was given to sexual functioning (17.49±23.56, Me=0.00). Sexual functioning, sexual enjoyment, and body image were assessed as high by women who underwent organ-saving surgery, while respondents who underwent mastectomy assessed low. In the group of women who underwent mastectomy, decreased libido was often observed, which led to a decrease in their QoL. In these studies, although 80% of patients were satisfied with their appearance, only 54% of them were able to accept their naked bodies [6]. Attitude towards the future is also an important indicator; 64.1% of the participants expressed uncertainty about the future (p=0.000). These scores support the findings of previous studies, which have shown that fear is a common emotion among patients. They are worried about cancer relapse or metastasis. Female patients are also very worried about the likelihood that their daughters will inherit the disease [3].

Significant differences were also found on the symptomatic scales. Side effects of systemic therapy were observed in 27.2% of patients (p=0.000). However, the level of observation of breast symptoms also differed (p=0.000). The problem of hair loss was also identified as an important factor. According to the results of our study, 39.8% of patients experienced significant hair loss (p=0.000). These figures support the data from other research cited in the literature, which states that the duration of adjuvant treatment can last for years after surgery and that patients may experience side effects and late effects during this period. For example, radiation therapy can cause skin changes, systemic chemotherapy and/or endocrine therapy are known to cause polyneuropathy, musculoskeletal pain, hair loss, and fatigue, which can affect cognitive and social functions [18]. In some studies, physical functions, role function, body image, financial difficulties, and symptoms such as fatigue, pain, shortness of breath, as well as symptoms associated with side effects of breast, arm, and systemic therapy, significantly worsened after the completion of treatment [19].

Overall, the results of this study highlight the main factors influencing the QoL of cancer patients. The results obtained are consistent with the data described in the literature and once again confirm the need for comprehensive support to improve the QoL of patients.

Conclusion: BC is a complex disease that has a significant impact on the QoL due to various factors. This study revealed physical and psycho-emotional changes, functional disorders, and side effects of therapy in women who underwent treatment. In the study, women rated their QoL as high ($p < 0.000$). Namely, 73.8% of patients were satisfied with their body image, while 26.2% were dissatisfied (p = 0.000). Decreased sexual functioning (p=0.000) and uncertainty about the future (p=0.000) were found. Side effects of systemic therapy (p=0.000), breast symptoms (p=0.000), and hair loss (p=0.000) were observed on the symptomatic scales.

The results of this study once again confirm the relevance of this problem and emphasize the importance of comprehensive support to improve the QoL of women with BC. Psychological support, rehabilitation programs, and comprehensive medical supervision help patients adapt to everyday life. These aspects of the study play a crucial role in enhancing the effectiveness of early detection, treatment, and rehabilitation of patients with BC. Moreover, scientific research in this area can serve as the basis for improving national and regional strategies to combat cancer. Thus, this study contributes to the formation of important practical and theoretical foundations for improving the QoL of women with BC.

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АНДАТПА

СҮТ БЕЗІ ҚАТЕРЛІ ІСІГІ БАР ЕМДЕУДЕН ӨТКЕН ӘЙЕЛДЕРДІҢ ӨМІР САПАСЫ

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Өзектілігі: *Сүт безі қатерлі ісігі (СБҚІ) – әйелдер арасында кең таралған онкологиялық аурулардың бірі. Бұл derттің емдеу әдістері жетілдірілгенімен, науқастардың өмір сапасы мен психоэмоционалдық жағдайына әсер ететін факторлар толық зерттелмеген. Емдеуден кейінгі кезеңде науқастардың физикалық, эмоционалдық, сексуалды және әлеуметтік жағдайының өзгеруі олардың өмір сапасына елеулі ықпал етеді.*

Зерттеу мақсаты *– сүт безі қатерлі ісігі бар емдеуден өткен әйелдердің өмір сапасын EORTC QLQ-BR23 сауалнамасы негізінде зерттеу.*

Әдістері: *Деректерді жинау 2024 жылғы 15 қаңтар мен 2025 жылғы 1 қаңтар аралығында Марат Оспанов атындағы Батыс Қазақстан медициналық университетінің медициналық орталығында EORTC QLQ-BR23 сауалнамасы арқылы жүргізілді. Сауалнамаға 103 әйел қатысты. EORTC QLQ-BR23 – СБҚІ бар науқастардың өмір сапасын бағалауға арналған стандарттталған құрал.*

Нәтижелері: *Зерттеу нәтижелері бойынша, науқастардың 69,9%-ы өз денсаулық жағдайын қанағаттанарлық деп бағаласа, 30,1%-ы өмір сапасының айтарлықтай төмендегенін атап өтті (p=0,000). Физикалық функциялар мен дене бей-несіне қанағаттану деңгейі (p=0,000), сексуалдық функцияның нашарлауы (p=0,000) және болашаққа деген сенімсіздік (p=0,000) маңызды мәселелер ретінде анықталды. Сонымен қатар, жүйелік терапияның жанама әсерлері (p=0,000), сүт безі симптомдары (p=0,000) және шаш түсу проблемасы (p=0,000) өмір сапасына теріс әсер етті.*

Қорытынды: *Алынған зерттеу нәтижелері мәселенің өзектілігін тағы бір рет растай отырып, СБҚІ емделген науқастардың өмір сапасын арттыру үшін жан-жақты қолдау шараларының маңыздылығын көрсетеді. Психологиялық көмек, оңалту бағдарламаларын дамыту және емдеудің жанама әсерлерін азайтуға бағытталған шаралар пациенттердің әлеуметтік бейімделуін жақсартуға ықпал етуі мүмкін. Алынған мәліметтер науқастарға медициналық және психологи-ялық көмекті одан әрі жетілдіру үшін негіз бола алады.*

Түйінді сөздер: *әйел, сүт безі қатерлі ісігі (СБҚІ), өмір сапасы, EORTC QLQ-BR23.*

АННОТАЦИЯ

КАЧЕСТВО ЖИЗНИ У ЖЕНЩИН С РАКОМ МОЛОЧНОЙ ЖЕЛЕЗЫ, ПЕРЕНЕСШИХ ЛЕЧЕНИЕ

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Актуальность: *Рак молочной железы (РМЖ) — одно из наиболее распространенных онкологических заболеваний среди женщин. Несмотря на усовершенствование методов лечения, факторы, влияющие на качество жизни и психоэмоциональное состояние пациенток, до сих пор недостаточно изучены. В период после лечения изменения физического, эмоционального, сексуального и социального состояния пациенток оказывают существенное влияние на их качество жизни.*

Цель исследования *– изучить качество жизни женщин с раком молочной железы, перенесших лечение, на основе анкеты EORTC QLQ-BR23.*

Методы: *Сбор данных был проведен с 15 января 2024 года по 1 января 2025 года в медицинском центре Западно-Казахстанского медицинского университета имени Марата Оспанова (Актобе, Казахстан) с использованием анкеты EORTC QLQ-BR23. В исследовании приняли участие 103 женщины. EORTC QLQ-BR23 — это стандартизированный инструмент для оценки качества жизни пациенток с РМЖ.*

Результаты: *По результатам исследования, 69,9% пациенток оценили свое состояние здоровья как удовлетворительное, в то время как 30,1% отметили значительное снижение качества жизни (p=0,000). Уровень удовлетворенности физическими функциями и телесным образом (p=0,000), ухудшение сексуальной функции (p=0,000) и неуверенность в будущем (p=0,000) были определены как важные проблемы. Также побочные эффекты системной терапии (p=0,000), симптомы РМЖ (p=0,000) и проблема выпадения волос (p=0,000) оказали негативное влияние на качество жизни.*

Заключение: *Полученные результаты исследования еще раз подтверждают актуальность проблемы и подчеркивают важность комплексной поддержки для повышения качества жизни пациенток, перенесших РМЖ. Психологическая помощь, развитие реабилитационных программ и меры, направленные на снижение побочных эффектов лечения, могут способствовать улучшению социальной адаптации пациенток. Полученные данные могут стать основой для дальнейшего совершенствования медицинской и психологической помощи пациенткам.*

Ключевые слова: *женщина, рак молочной железы (РМЖ), качество жизни, EORTC QLQ-BR23.*

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