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**MEDICO-SOCIAL SUBSTANTIATION  
OF THE ISSUE OF QUALITY OF LIFE  
IN PATIENTS WITH BREAST CANCER  
AND FINDING WAYS TO IMPROVE IT**

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**Ключові слова:** якість життя, рак молочної залози, психологічна підтримка

**Abstract. Medico-social substantiation of the issue of quality of life in patients with breast cancer and finding ways to improve it. Zub V.O.** The quality of life of patients is one of the indicators of the medical care effectiveness for cancer patients. In order to study the main aspects of the quality of life of patients with breast cancer, a survey of 400 patients at the stage of their inpatient treatment in oncological institutions in nine regions of Ukraine (Chernihiv, Zaporizhia, Dnipropetrovsk, Kyiv, Poltava, Khmelnytsky, Ivano-Frankivsk, Zakarpattia and Lviv) using the EORTC QLQ-C30 and EORTC QLQ-BR45 questionnaires was carried out. In Ukraine, as of the pre-war period (November 2021 – February 2022), the quality of life of breast cancer patients equaled 53.22 on a 100-point scale. The most pronounced impact of breast cancer on the quality of life of the patient was observed in the psycho-emotional sphere (71.26), role functioning (70.48), views on future prospects (30.95). Patients complained of financial difficulties (44.19), fatigue (35.16), sleep disturbances (33.00), hair loss (43.41), as well as decreased sexual function (16.06) and pleasure (18.16 points). Given the low quality of life of breast cancer patients, they need psychological support, which should be aimed at adapting to the manifestations of the disease and future prospects, and the quality of life of patients should be one of the indicators in the course of treatment and providing psychological support. Since patients who have received social and psychological support from their doctors and friends/family have higher quality of life, we consider it necessary to focus on developing a comprehensive program to support breast cancer patients in collaboration with society, family and workplace.

**Реферат. Медико-соціальне обґрунтування проблеми якості життя в пацієнток з раком молочної залози та пошук шляхів її покращення. Зуб В.О.** Якість життя пацієнтів є одним з індикаторних показників ефективності надання медичної допомоги онкологічним хворим. З метою вивчення основних аспектів якості життя хворих на рак молочної залози проведено анкетування 400 пацієнток на етапі їхнього стаціонарного лікування в онкологічних установах дев'яти областей України (Чернігівської, Запорізької, Дніпропетровської, Київської, Полтавської, Хмельницької, Івано-Франківської, Закарпатської та Львівської) з використанням опитувальників EORTC QLQ-C30 і EORTC QLQ-BR45. В Україні станом на довоєнний період (листопад 2021 року – лютий 2022 року) у пацієнток з раком молочної залози показник якості життя становив 53,22 бала за 100-бальною шкалою. Найбільш виражений вплив раку молочної залози на якість життя пацієнта спостерігали в психоемоційній сфері (71,26), рольовому функціонуванні (70,48), погляді на майбутні перспективи (30,95). Пацієнти скаржилися на фінансові труднощі (44,19), втоми (35,16), порушення сну (33,00), втрату волосся (43,41), а також зниження сексуального функціонування (16,06) та задоволення (18,16 бала). Ураховуючи невисокі показники якості життя пацієнток з раком молочної залози, їм необхідно надавати психологічну підтримку, яка має бути спрямованою на адаптацію до проявів захворювання та майбутніх перспектив, а якість життя пацієнтів має бути одним з індикаторних показників при лікуванні та забезпеченні психологічної підтримки. Оскільки пацієнти, що отримували соціальну та психологічну підтримку від своїх лікарів та друзів/сім'ї, мають вищі показники якості життя, вважаємо за потрібне акцентувати увагу на розробці комплексної програми підтримки пацієнток з раком молочної залози у співпраці із суспільством, сім'єю та трудовим колективом.

Breast cancer (BC) in women remains the most common type of cancer in Europe – 21 cases per 100,000 people [1]. Malignant breast tumors are one

of the main causes of death in gynecological oncology practice. About 1.9 million new cases of breast cancer are registered annually, and more than

609 thousand women die from this disease every year in the world. According to the American Cancer Society [2], in the US, every eighth woman suffers from breast cancer – about 5,000 new episodes of the disease and more than 1,600 deaths are registered daily. In Ukraine, the incidence of breast cancer ranks first among all malignant tumors found in women, according to the Public Health Center of the Ministry of Health of Ukraine [3].

There are certain successes in providing oncological care to patients, yet not only the technique of surgical, radiation therapy and chemotherapy is important, but also the search for approaches [4] that ensure the proper quality of life for patients. At the ASCO (American Society of Clinical Oncology) conference in 1990, quality of life was declared the second most important criterion for the effectiveness of patient treatment after overall survival and more significant than the objective response to treatment.

The aim of the study is to determine the main problems in the quality of life of patients with breast cancer (C50) in order to optimize medical care for them.

#### MATERIALS AND METHODS OF RESEARCH

The sociological study was conducted by surveying 400 patients at the stage of their inpatient treatment according to a unified research protocol, which involved the use of questionnaires developed by the European Organization for Research and Treatment of Cancer (EORTC). The questionnaire consisted of a general questionnaire for determining the quality of life in oncology EORTC QLQ-C30 and a special module QLQ-BR45, determining the quality of life of patients with breast cancer [5]. Permission to use questionnaire data from the "EORTC Quality of Life Group" was obtained in November 2021.

The research took place in oncological institutions of nine regions of Ukraine: Chernihiv, Zaporizhzhia, Dnipropetrovsk, Kyiv, Poltava, Khmelnytskyi, Ivano-Frankivsk, Zakarpattia and Lviv. Primary data collection was carried out from November 2021 to February 2022. The average age of patients who took part in the study was  $56.97 \pm 13.33$  years.

All participants gave written consent to participate in the study. The study was approved by the commission on biomedical ethics of the P.L. Shupyk NHU of Ukraine and conducted according to the principles of bioethics set forth in the Helsinki Declaration "Ethical Principles of Medical Research Involving Humans" and the "Universal Declaration on Bioethics and Human Rights (UNESCO)".

Calculations were made according to the EORTC QLQ-C30 Scoring Manual and EORTC QLQ-BR45 Scoring Manual [6]. Three main indicators were analyzed: functional scale (FS), symptom scale (SS) and quality of life (QoL). First of all, the average

score (Raw Score – RS) was evaluated for each indicator, which is presented as  $M \pm SD$ .

Since the structure of the questionnaire enables the questions to have a 4 or 7-point scale, the developers proposed a unified approach by using a 100-point scale for each of the parameters. Thus, the value of the functional scale (FS) per 100 points was calculated by the following formula:

$$FS = \left(1 - \frac{RS-1}{range}\right) * 100$$

Where RS is the average score of the scale, range is the range of the scale, which is determined by the difference between the possible maximum and minimum values of the scale.

Meanwhile, the symptom scale (SS) and quality of life (QoL) by 100 points were calculated by the following formula:

$$SS = ((RS-1)/range) * 100$$

Where RS is the average score of the scale, range is the range of the scale, which is determined by the difference between the possible maximum and minimum values of the scale.

Interpretation of the obtained results was performed according to the traditional approach: a high level of functional scale (FS) indicated a high (healthy) level of functioning on this indicator. Similarly, a high level of quality of life scale (QoL) indicated a high quality of life, but a high level of the symptom scale (SS) indicated a high level of existence of this problem or symptom.

For scales consisting of 2 or more questions, Cronbach's alpha was calculated as an indicator of consistency of the scale.

Statistical calculations were performed using Rstudio v. 1.1.442 and R Commander v.2.4-4 software.

#### RESULTS AND DISCUSSION

According to the findings, the quality of life of GLOBAL HEALTH STATUS/QoL of patients with breast cancer amounted to 53.22 points on a 100-point scale. It should be noted that the answers of the respondents were of the same type, as indicated by the very high consistency, which was determined by the method of & Cronbach and is 0.87.

It was established that according to the questionnaire data, within the framework of the QLQ-C30 functional scale, all the demonstrated indicators were higher than 50 points out of 100 possible. The lowest indicators were found in the "Role functioning" item of the scale, which amounted to 70.48 points on a 100-point scale, and the average score is  $1.89 \pm 0.88$ . This group includes questions about limitations in performing one's work, daily activities, hobbies or leisure activities.

Somewhat better indicators were demonstrated in the "Emotional functioning" item of the scale, which amounted to 71.26 points on a 100-point scale. Such a result may indicate a significant negative impact on the psycho-emotional background of patients, an important role of emotional problems in limiting the life activities of a woman with breast cancer. It is likely that the suppression of the psycho-emotional component is caused by the awareness of a serious illness, long-term treatment, the threat of death, a change in self-esteem, a lack of acceptance and a change in the usual standards and values, dissonance with the usual stereotypes of behavior acquired during life.

Higher indicators were obtained in the "Physical functioning" item, the score amounted to 75.60 on a 100-point scale. Therefore, there are inherent physical problems that limit the vital activities of female patients. They are affected by increasing fatigue, pain, and sleep disturbances.

The highest results in the above-mentioned scale were obtained in "Cognitive functioning" and "Social functioning" items, among other subscales, with their score on a 100-point scale amounting to 84.28 and 78.54, respectively. Since the indicators of "Social functioning" were lower, the physical condition/treatment of the patients affected their family life

and communication with people to a greater extent. As for cognitive functioning, patients were better able to remember and concentrate compared to other kinds of functioning.

Cronbach's alpha index for the items of the QLQ-C30 functional scale was in the range from 0.76 to 0.84, which indicates sufficient and high consistency of the patients' answers, except for the "Social functioning" item, where the value amounted to 0.63, which corresponds to questionable consistency.

Symptoms such as fatigue (FA), nausea and vomiting (NV), pain (PA), insomnia (SL), dyspnoea (DY), appetite loss (AP), constipation (CO), diarrhea (DI). Financial difficulties (FI) were also assessed during the survey.

The patients were most worried about financial difficulties, which amounted to 44.19 points on a 100-point scale (Table 1), the average score was  $2.33 \pm 1.02$ . In the scale of symptoms, fatigue is on the second place. It accounts for 35.16 out of 100 possible points. The patients also complained of insomnia, which corresponds to 33.00 points on a 100-point scale. To a lesser extent, patients were bothered by pain and dyspnoea, with scores of 26.64 and 18.46 on a 100-point scale, respectively.

Table 1

## Scores on the QLQ-C30 symptom scale

Scale items	Directory code	Score on a 100-point scale	& Cronbach
Financial difficulties	FI	44.19	-
Fatigue	FA	35.16	0.80
Insomnia	SL	33.00	-
Pain	PA	26.64	0.74
Dyspnoea	DY	18.46	-
Constipation	CO	18.17	-
Appetite loss	AP	15.12	-
Diarrhea	DI	9.15	-
Nausea and vomiting	NV	8.70	0.84

According to the evaluation of the questionnaire data, the lowest scores – gastrointestinal tract problems that bothered the patients to a lesser extent: constipation (18.17 points on a 100-point scale), appetite loss (15.12 points), diarrhea (9.15 points), nausea and vomiting (8.70 points).

Cronbach's alpha index for the items on the QLQ-C30 symptom scale was in the range from 0.74 to

0.84, which indicates sufficient and high consistency of the patients' answers.

The mammary gland has long been perceived as a symbol of beauty and femininity. Probably, this is one of the factors that cause discomfort in women, constant emotional stress, it is a "cosmetic" factor that affects self-esteem and affects the feeling of loss of attractiveness and female sexuality. According to the

data of the QLQ-BR45 questionnaire, it was the "Sexual functioning" item that had the lowest results of 16.06 points out of 100 possible (Table 2). The indicators in the "Sexual pleasure" subscale were slightly better, amounting to 18.16 points.

The results regarding "Future prospects" turned out to be low, the average value was  $3.07 \pm 0.88$ , which corresponds to 30.95 points on a 100-point scale. It is clear that this is primarily due to the awareness of the threat for life, because breast cancer is a potentially fatal disease that provokes increased depressive reactions and psychological problems in patients.

To a certain extent, the indicators of the subscale "Satisfaction with breasts" were higher, amounting to 55.50 points on a 100-point scale. The questions of the questionnaire were related to satisfaction with the cosmetic result of the operation and the appearance of the skin of the affected mammary gland.

The indicators of the "Body perception" item were the highest in the QLQ-BR45 functional scale, they amounted to 63.85 out of a possible 100 points. The questions were related to the patients' perception of their attractiveness and femininity, satisfaction with their bodies.

Table 2

### Scores on the QLQ-BR45 functional scale

Scale items	Directory code	Score on a 100-point scale	& Cronbach
Sexual functioning	SX	16.06	0.94
Sexual pleasure	SE	18.16	-
Future prospects	FU	30.95	-
Satisfaction with the breasts	BS	55.50	0.89
Body image	BI	63.85	0.87

The patients were unanimous in their answers to the questions under the item "Sexual functioning", Cronbach's alpha is 0.94, which indicates a very high consistency. In other items of the QLQ-BR45 functional scale, Cronbach's alpha was equal to 0.89 and 0.87, which indicates a high consistency of the patients' answers.

In the questionnaire "QLQ-BR45, scale of symptoms" among all symptoms, the item "Worries about hair loss" stands out with its maximum indicator among others. It amounted to 43.41 points on a 100-point scale.

The "Symptoms of the upper limbs" indicator was somewhat lower, amounting to 28.06 points on a 100-point scale. This item includes questions about arm movement, pain in the arm, shoulder, and hand.

The patients were also concerned about the side effects of the therapy, the score for this item was 24.62 on a 100-point scale. "Symptoms of the glands" caused less disturbances, amounting to 22.97 points out of 100. This item describes skin problems (itching, dryness, peeling), swelling, hypersensitivity in or around the affected breast.

"Symptoms of hormone therapy" score amounted to 21.40 points on a 100-point scale. This item includes excessive sweating, changes in the mood of patients, dizziness, stiffness and pain in the joints, pain in muscles and bones, problems with weight

gain. "Symptoms of the mucous membrane and skin" subscale had 14.07 points on a 100-point scale. In this category, patients complained of numbness, tingling, redness of the skin of the hands/feet, redness and soreness in the mouth. "Symptoms of sex hormones" were the least disturbing for patients, and this item consisted of questions related to discomfort and pain during intercourse, the score amounted to 7.46 on a 100-point scale.

The Cronbach's alpha index of the QLQ-BR45 symptom scale items was in the range from 0.72 to 0.86, which indicates sufficient and high consistency of the patients' answers, except for the "Symptoms of sex hormones" scale index, where the Cronbach's alpha is 0.66, which corresponds to questionable consistency.

According to our results, the GLOBAL HEALTH STATUS/QoL quality of life in patients with breast cancer, which amounted to 53.22 points on a 100-point scale, was lower than the value described by other authors (77.5) [7]. In comparison, the average QoL score in women immediately after completion of primary treatment for breast cancer was 97.23 [8].

It was established that the quality of life indicator correlates with the stage of treatment: in patients with breast carcinoma who underwent radiation therapy, QoL was 32.36 at the end of the course of radiation

therapy and 68.16 at 3 months after the end of treatment [9].

This fact is confirmed by the research of Raquel Rey Villar et al. [10], according to which the quality of life of 181 patients with breast cancer in Spain was estimated at 69.2 points before treatment and 72.0 points after its completion, which is also higher than the indicator obtained in our study.

However, in a study by Magdalena Konieczny et al. regarding the impact of socio-demographic factors on the quality of life of women with breast cancer, the Health status and quality of life indicators are commensurate with the data we received. In particular, QoL in patients with breast cancer who are single is 52.1 points, and in those who are in a relationship – 54.8 points; women with vocational-technical education – 51.9 points, secondary education – 53.2 points, higher education – 56.5 points [11].

A decrease of the quality of life of an oncological patient in the process of accepting the malignant nature of the disease is not a surprise: patients experience mental suffering. The detrimental effect on the psycho-emotional sphere was presented in this study (subscale "Emotional functioning" amounting to 71.26 on a 100-point scale) and in studies of other authors. For example, Carolyn Finck et al obtained a value of 76.8 points [7], and Raquel Rey Villar et al – 74.4 points [10] for this subscale, which is commensurate with the data of the patients interviewed by us. On the other hand, in a cross-sectional study focused on the impact of radiation therapy on psychological, financial and sexual aspects in patients with breast carcinoma by Indian scientists Sharma N. and Purkayastha A., the average score of emotional functioning after the end of treatment was 63.75 [9], which is below the data received by us.

Financial difficulties in our study amounted to 44.19 points, which is significantly higher than the indicators obtained by foreign researchers: 16.1 points [7] and 10.7 points [10]. This is evidence that the problem of financial support is acutely expressed among Ukrainian patients with breast cancer.

The value obtained by us for the "Physical functioning" indicator is 75.60 points. Instead, Finck C. describes this item with 88.5 points [7], which is again higher than our indicators. One of the possible explanations for this fact is that the aforementioned author notes in the research that optimism was positively correlated with quality of life, and most patients wanted and received social support from their doctors and friends/family.

Patients often note chronic pain as one of the most important criteria for assessing the quality of life, associating it with difficulties in everyday life,

concern about the loss of independence and freedom of movement. In this study, Pain scored 26.64 on a 100-point scale, respectively, while Fatigue bothered female patients with a higher score of 35.16 out of a possible 100. These indicators are significantly worse than the points obtained in other studies (pain – 17.9 points, fatigue – 23.3 points [7], fatigue – 26.57 points [9], fatigue – 26.4 points [10]), as well as worse indicators of patients with breast cancer, who underwent treatment and observation at the King Salman Armed Forces Hospital in Tabuk, Saudi Arabia [12].

The findings of the study by Sharma N. and Purkayastha A. established in women with carcinoma of the mammary gland after completion of radiation therapy are comparable to our results. Thus, according to the results of our study, in the scale of symptoms, the item "Pain" amounts to 26.64 points, the item "Sleep disturbance" – 33.00 points, and in the study of Indian scientists – 23.05 and 29.99 points, respectively [9]. Similar are the results obtained by Spanish scientists regarding the "Sleep disturbance" subscale in patients with breast cancer after completion of treatment – 29.3 points [10].

Many women with breast cancer experience side effects from treatment that affect their sexual functioning. This is evidenced by the data of the "Sexual functioning" subscale in our study – 16.06 points and 11.66 points in patients with breast carcinoma 3 months after the end of radiation therapy [9].

The impact of the breast cancer diagnosis on the future prospects of patients is more significant in our study (30.95 points on the QLQ-BR45 functional scale) than in the study of Indian scientists (57.22 points before the start of treatment and 50.55 points after its completion [9]) and Spanish scientists (46.0 points and 54.6 points before and after the treatment, respectively) [10].

Hair loss is a major concern for women with breast cancer. Anxiety about this problem is stronger in Ukrainian patients (43.41 points on the symptom scale) than in Spanish patients (26.4 points) [10].

Quality of life is the second most important criterion for evaluating the results of anticancer therapy after survival. Isolation from the usual environment, permanent or temporary loss of working capacity, long-term treatment, disability are often factors of stress and maladaptation. Lack of timely psychological help can lead to psychopathological changes in a patient's personality.

## CONCLUSIONS

1. In Ukraine, patients with breast cancer had a quality of life index of 53.22 points on a 100-point scale. This indicator is lower than in European countries.

In Ukrainian patients, the psycho-emotional sphere (71.26), role functioning (70.48), view of future prospects (30.95), financial difficulties (44.19), fatigue (35.16), insomnia (33.00), hair loss (43.41), as well as decreased sexual functioning (16.06) and pleasure (18.16 points) are the most impressive.

2. Given the low quality of life indicators of breast cancer patients at the stage of their inpatient treatment, they should be provided with standardized psychological support at all stages of diagnosis, treatment and rehabilitation in the process of complex

treatment. We consider it necessary to emphasize the development of a comprehensive program of support for patients with breast cancer in cooperation with civil society; development of recommendations for rehabilitation of cancer patients during and after treatment, interaction with society, family and work.

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