



Quality of life during and after neoadjuvant chemotherapy in patients with breast cancer

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Abstract: Breast cancer is a leading malignant disease in women, accounting for 25% of all cancers. In 2020, 2.3 million women were diagnosed with breast cancer. However, it has the highest survival rate in the world, with 7.8 million women surviving 5 years after diagnosis. The research aimed to assess the quality of life of breast cancer patients during and after neoadjuvant chemotherapy using a questionnaire and data from 100 patients in a hospital and 25 in an association, with results presented in tables and analyzed using descriptive statistics, Chi-square and Mann Whitney tests, and Cronbach's alpha. The study found that breast cancer patients who received support from family and friends, as well as those who were part of a support association, reported better quality of life, better sleep, and fewer side effects from therapy, highlighting the importance of emotional support and education about the disease and prevention. The conclusion highlights the importance of motivating patients to speak about their disease, education about cancer prevention, and emotional support from partners, family, and friends. It also emphasizes the impact of reduced quality of life on cancer patients and the importance of support programs and forms of support in improving their quality of life and treatment process.

Keywords: *breast cancer, chemotherapy, quality of life*

I. INTRODUCTION

Breast cancer is the leading malignant disease in the female population. According to World Health Organization (WHO) reports, there were 684,996 deaths as a result of breast cancer in 2020 [1]. It is estimated to make up approximately 25% of all cancers diagnosed in women. In 2020, 2.3 million women were diagnosed with breast cancer. At the same time, an important fact is that 7.8 million women survived 5 years from the diagnosis of this disease, thus making breast cancer the cancer with the highest survival rate in the world [2]. Although five-year survival is an important statistic, scientists believe that the quality of life, after the diagnosis and treatment of breast cancer, is equally important [3].

The aim of research in this paper is the quality of life of patients with breast cancer during and after neoadjuvant chemotherapy. The aim of this research was to assess the quality of life of breast cancer patients within 5 years

of neoadjuvant therapy and to identify therapeutic, psychological, physical and social factors that affect their quality of life.

II. PATIENTS AND METHODS

The research used data from sick and treated women from the association "Help for women suffering from breast cancer - Bistrica Association" from Livno, and data from the oncology department at the Cantonal Hospital in Livno. The number of patients in the hospital is 100, and in the association 25.

A survey questionnaire containing demographic data was used as a research instrument, and a modified standard EORTC QLQ - BR23 questionnaire (European Organization for Research and Treatment of Cancer). The questionnaire consists of a total of 21 questions that assess the impact of socio-emotional factors (8 questions), physical-mental factors (6 questions) and the effects of therapy (7 questions) on the quality of life of test subjects suffering from breast cancer. The participants were allowed to stop the survey at any time. This research was entirely voluntary and non-commercial. The research was conducted in accordance with the Helsinki Declaration.

1.1. Statistical analysis

The data are presented in the form of tables, using classic methods of descriptive statistics. The normality of data distribution was tested by Shapiro-Wilk and Kolmogorov-Smirnov tests. The non-parametric Chi-square and Mann Whitney tests were used in the paper. A value of $p < 0.05$ for all tests was considered statistically significant. The internal consistency of the questionnaire was tested with Cronbach's alpha (α).

III. RESULTS

In the group of patients from the hospital the average age was 57.4 years ($n=100$), and in the group of patients from the association 56.2 years ($n=25$). The percentage of female patients according to professional qualifications is similar between the two examined groups. Of the total surveyed population, 44 (35.2%) patients are single, 75 (60.0%) are married, and 6 (4.8%) live in a cohabitation. In the group of patients from the hospital, 107 (85.6%) patients have children and 18 (14.4%) do not. According to the Chi-Square test (X^2); there is no difference in the age structure between the examined groups; there is no difference in professional training between the examined groups; an equal number of patients in both groups have offspring. According to the Chi-Square test (X^2); there is a difference between patients from the hospital and the association according to marital status, $p=0.001$. Much more patients from the hospital live with a partner compared to patients from the association (71% vs. 40%, respectively).

The internal consistency of the questionnaire represented by Cronbach's alpha (α) was 0.82 for the total questionnaire. Cronbach's Alpha for individual parts of the questionnaire is satisfactory and acceptable (Table 1).

Table 1. Reliability statistics, consistency of questionnaire questions

Parts of the questionnaire	Cronbach's Alpha	N
Socio-emotional factors	0.748	8
Physical and mental factors	0,929	6
Negative effects of therapy	0.785	7
Complete questionnaire	0,820	21

Considering socio-economic factors, and according to the X^2 test (table 2), statistically significantly more patients from the hospital receive support from family ($p=0.016$) and friends ($p=0.001$), while statistically significantly more patients from the Association believe that they were helped experiences of women from the

environment with the same disease ($p=0.003$). Compared to patients from the hospital, statistically significantly more patients from the Association are satisfied with their lives ($p=0.001$) and have better sleep ($p=0.046$). According to the X2 test, there is no significant difference in the number of patients from the hospital and the Association whose family accepts their illness ($p=0.089$), in the number of patients who consider themselves able to work ($p=0.819$), nor in the number of patients who enjoy their hobbies ($p=0.719$).

Table 2. Differences in answers to the first part of the questionnaire (socio-emotional factor) between patients from the hospital and the association

QUESTION	Pearson X ² value	df	p - value
Emotional family support?	10.279 ^a	3	0.016
Emotional support from a friend?	15.554 ^a	3	0.001
Acceptance of the illness by the family?	6.511 ^a	3	0.089
The benefit of the experiences of women with the same disease?	13.890 ^a	3	0.003
Satisfaction with one's own life	16.932 ^a	3	0.001
Feeling able to work?	0.925 ^a	3	0.819
Quality of sleep?	8.021 ^a	3	0.046
Enjoying your own hobbies?	1.341 ^a	3	0.719

Considering physical and mental factors, and according to the X2 test (table 3), statistically significantly more patients from the Association do not feel sick ($p<0.001$) and state that they are not bothered by the side effects of therapy ($p<0.001$) compared to patients from the hospital. Statistically significantly more patients from the Association do not worry about the worsening of their health condition ($p=0.001$) compared to patients from the hospital. According to the X2 test, there is no significant difference in the number of patients from the hospital and the Association who lack energy ($p=0.096$), who have nausea ($p=0.081$), nor in the number of patients who lose hope in the fight against their illness ($p=0.453$).

Table 3. Differences in the answers to the 2 parts of the questionnaire (physical and mental factors) between patients from the hospital and the association

QUESTION	Pearson X ² value	df	p - value
Lack of energy?	6.334 ^a	3	0.096
Feeling of nausea?	6.723 ^a	3	0.081
Coping with the side effects of therapy?	18.501 ^a	3	<0.001
Feeling sick?	25.262 ^a	3	<0.001
Losing hope in the fight against disease?	2.627 ^a	3	0.453
Worried about getting worse?	16.831 ^a	3	0.001

Considering the negative effects of the therapy, and according to the X2 test (table 4), statistically significantly more patients from the hospital believe that the therapy caused them a feeling of sadness compared to the patients from the Association ($p=0.012$). According to the X2 test, there is no significant difference in the number of patients from the hospital and the Association whose physical appearance was affected by the therapy

($p=0.648$), whose physical changes affected their body perception ($p=0.632$), whose fear of hair loss, whose therapy and the disease itself caused financial difficulties ($p=0.648$), for which the therapy caused an attack of depression or affected the quality of life ($p=0.391$).

Table 4. Differences in answers to the 3 parts of the questionnaire (negative effects of therapy) between patients from the hospital and the association

QUESTION	Pearson X ² value	df	p - value
A feeling of sadness caused by diagnosis and therapy?	6.305 ^a	1	0.012
Effect of treatment on physical appearance?	0.208 ^a	1	0.648
The impact of physical changes on the perception of your body?	0.230 ^a	1	0.632
Fear of hair loss?	0.000 ^a	1	1.000
Financial difficulties due to illness and therapy?	0.208 ^a	1	0.648
Episodes of depression after therapy?	0.000 ^a	1	1.000
Effect of therapy on quality of life?	0.736 ^a	1	0.391

IV. DISCUSSION

More patients from the hospital receive support from family ($p=0.016$) and friends ($p=0.001$). The influence on the obtained result can have a higher proportion of test subjects in the hospital. More interviewees from the association believe that the experiences of women from the environment with the same disease helped them ($p=0.003$). More patients from the association are satisfied with their lives ($p=0.001$) and have better sleep ($p=0.046$). More patients from the association do not feel sick ($p<0.001$) and state that they are not bothered by the side effects of therapy ($p<0.001$) compared to patients from the hospital. More patients from the association do not worry about the deterioration of their health condition ($p=0.001$) compared to patients from the hospital. From these results, we can conclude that the interviewees from the association have significant support from women who are fighting the same disease, and that they mutually exchange experiences and provide support to each other in the fight against this disease.

More patients from the hospital believe that the therapy caused them a feeling of sadness compared to patients from the association ($p=0.012$). Also, to assume that the reason for such an answer could be insufficient communication with people who struggle with the same problems or with experts. Specialists such as doctors, psychologists, psychotherapists, clergymen and nurses play a major role in the rehabilitation and assistance of patients with such conditions and their resolution.

Patients who are married or live together have better results in the area of social and family relations. The family, as the basic unit of the community, is an important institution in all societies and occupies a great value in life. The health or illness of an individual affects the family and vice versa. The basic and most important task of the family is to support the healthy development of all its members. The support of the family gives the patient the necessary strength. For a patient who is discouraged and afraid, the presence of a close person and a conversation can help more than a sedative. Other authors also talk about greater satisfaction with the quality of life associated with demographic factors, in the period after breast cancer therapy [4].

A longitudinal study conducted in Atlanta and New York on a sample of 129 subjects monitored the quality of life before surgical treatment and one year after surgical treatment. Satisfaction with general health was determined even after one year, but the quality of the psychological, social and environmental domains was statistically significantly reduced [5].

Sibeoni et al. (2018) examined the quality of life of oncology patients during treatment [6]. They analyzed two topics: what negatively affects the quality of life of patients in everyday life and what positively affects the quality of life during treatment. On the subject of the negative effect of malignant disease on the quality of life, the patients cited side effects of treatment and adverse effects of antitumor treatments that are difficult to live with. First, they were afraid of the effect of the therapy, and second, they reported that the side effects affect their daily quality of life because they are unable to perform daily tasks. They also complained of sensory difficulties such as loss of taste, and those that affected their confidence, as well as hair loss. Then the patients reported what enabled them to maintain a quality life every day during the treatment. First, they stated that the support object was of great importance to them during the treatment. Some stated that regular physical activity and team sports helped them. The relationship with experts was also very important to them. It was useful for them to establish a confidential relationship with the team of experts. They also reported the positive effects of a pleasant and sympathetic environment, and expressed that relationships with other patients were perceived as very useful when they provided hope, mutual help and friendship [6].

The results of our research and the results of other research are very similar. The quality of life of breast cancer patients after neoadjuvant therapy is significantly reduced, and the poor quality of life is conditioned by impaired psychological, physical and social living conditions. It is evident that there is a difference in the perceptive quality of life of the patients from the association, who rated all aspects of the quality of life significantly better compared to the patients from the hospital.

V. CONCLUSION

Our data indicate the need to motivate patients and provide them with the opportunity to speak publicly about their disease, as well as the importance of education about this disease and its prevention. The emotional support of partners, family and friends has a significant impact on the quality of life. With reduced quality of life, people suffering from cancer have difficulties in objective and subjective well-being, making decisions important for treatment, maintaining social roles, coping with the malignant disease and daily functioning. By introducing different support programs and forms of support, the quality of life can be greatly influenced, as well as the treatment process itself.

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