

Quality of life of women after mastectomy with and without breast reconstruction

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ABSTRACT

Introduction: Breast carcinoma is the 2nd most common cause of female death resulting from malignant neoplasms in Poland. Breast cancer occurs in younger and younger women, and often develops in professionally active persons. It is usually diagnosed at an advanced stage. A current method for the surgical removal of breast cancer involves an excision of the whole tumour with an adequate margin of healthy tissue while retaining the gland parenchyma and skin. A noticeable tendency recently observed in medicine is a complex approach to the patient, combining the treatment of the physical condition with mental considerations. Nowadays, the assessment of the quality of life of a patient is an essential element of clinical trials.

The study objective is to assess the quality of life and social support for patients after breast surgery, differentiating between those who underwent breast reconstruction and those who did not.

Materials and methods: Only female patients were enrolled in the study. In total, responses from 57 (100%) women were obtained. Of this group, 28 women (49%) underwent breast reconstruction. The mean age of the group was 55.09 years. The study was based on a survey prepared by the authors of this study and included socio-demographic data. The support provided by various people and organisations as experienced by the women participating in the study was also assessed. Another

tool used was a questionnaire assessing the quality of life after mastectomy (EORTC QLQ-BR23) This provided the basis for an analysis of how symptoms or problems typical for patients with breast carcinoma affected quality of life. The Cantril Ladder was used to assess general life satisfaction.

Results: The analysis of the results showed that more than 70% of the respondents received a substantial amount of support from their families. The patients with reconstruction assessed the level of mental support received from their family as slightly higher than the patients without reconstruction. The number of participants with breast reconstruction was 29 (50.88%), and without reconstruction was 28 (49.12%). The study showed no statistically significant differences in any aspects of the quality of life between the 2 study groups. The respondents assessed their quality of life as higher before the procedure than now. Thus, the surgery decreased their quality of life. However, the assessment of future quality of life (in 3 years' time) is better than the assessment of the present quality of life.

Conclusions: 1. Women who had undergone a mastectomy claimed that the biggest support came from their families. 2. There is no statistically significant difference between women with and without breast reconstruction regarding general quality of life or in the specific areas of the quality of life.

Keywords: quality of life; mastectomy; reconstruction; support.

INTRODUCTION

Breast carcinoma is currently one of the most common neoplasms – not only in Poland, but in the world. It is the 2nd most common cause of female death resulting from malignant neoplasm in Poland [1]. The risk of neoplasm typically occurs in females around 50 years of age. Undergoing prophylactic tests enables a quick diagnosis, which increases the chances of successfully treating the breast carcinoma. A delayed diagnosis may result in higher malignancy of the neoplasm and lead to metastases in other organs. Subjects with breast carcinoma very often experience emotional disorders, including depression.

Patients with this type of cancer usually experience various stages of “adaptation” to the disease. This period usually lasts about 6 months, but there are also some situations where the patient is not able to accept the disease at any of its stages.

In response to this, emotional disorders may appear, often in the form of neurosis or even psychotic disorders such as clinical depression. The patients then focus their attention on the neurotic and depressive symptoms, and in this way, repress symptoms of the neoplastic disease. Patients may also develop defence mechanisms involving acceptance of the disease, or developing a positive model of life, focusing on social activity or family [2].

An increase in breast carcinoma morbidity, as well as the negative consequences of the disease have an effect not only on the physical or social functioning of the patient and his/her family, but also on the healthcare system and the economy. Therefore, public authorities prioritise preventive and therapeutic activities regarding breast cancer. Breast cancer comes from the type of neoplasms which are often genetically determined. Therefore, patients with a family history of these kinds of neoplasm understand that they may have inherited certain

factors or mutations of neoplastic cells. These people should undergo annual preventive screening in order to ensure early diagnosis and get optimal treatment. The recognised benefits of screening tests, wider knowledge of prophylactic activities and improved diagnostics, together with a growing number of therapeutic possibilities, have increased treatment efficacy, which is characteristic for this type of cancer.

Breast cancer occurs in younger and younger women, and it often develops in professionally active persons. It is usually diagnosed at an advanced stage. This primarily refers to countries with a relatively low level of health awareness. Breast cancer remains to be one of the most progressive diseases in the world despite ongoing progress in the field of prevention, diagnosis and treatment. However, thanks to economic progress and medical advances, the course of the disease may be controlled and each patient may receive individualised treatment [3].

For some time, basic treatment for breast cancer has involved a surgical procedure aimed at removing effected tissue through the excision or removal of the tumour and its surroundings [4]. A current method of surgical removal of breast carcinoma involves excision of the whole tumour with an adequate margin of healthy tissue while retaining the gland parenchyma, skin (to such an extent where it is safe in the event of disease relapse), and all structures. This allows for a quick and effective improvement in the function of the upper limb and shoulder, and prevention of lymphoedema [5].

A noticeable tendency recently observed in medicine is a multidisciplinary approach to the patient, combining treatment of the physical conditions with mental status. A challenge that contemporary medicine faces, other than prolonging life, is improving the quality of life. A simplification exclusively combining physical improvement with improvement in the quality of life should not take place, since numerous studies have shown that disease advancement (in a clinical aspect) is not directly proportional to a reduced quality of life [6].

Conducting a quality of life assessment during medical care facilitates the relationship between the patient and medical personnel. It also facilitates a better diagnosis of symptoms and their subsequent treatment. Nowadays, the assessment of the quality of life is an essential element of clinical trials, as important as the assessment of survival [7].

The process of adaptation to the disease involves the restoration of well-being. This is the so-called phoenix effect. It has been proven in a group of females that the feeling of happiness, which was significantly reduced after a diagnosis of breast cancer, returned to pre-diagnosis levels after 1 year. It seems rational and justified if one assumes that the assessment of the quality of life together with sense of happiness depend on the comparison standard. If that standard changes, which each individual strives for, the sense of happiness is also adequately changed. The above-mentioned females initially identified their happiness with external factors: material situation, professional situation, health, etc. During the progression of the disease, most of them have adapted their perception of

happiness from external to internal, according to the principle: "the source of happiness is in me" [8].

During the first few days after surgery, patients mostly revealed somatic symptoms which persist for some time and often require long rehabilitation. Surgical treatment, although involving some negative physical and mental consequences, is the method relatively best tolerated by oncological patients. This model of treatment is widely known and closer to the experiences of other people. Therefore, it decreases social distance and causes interest and compassion towards others. Moreover, a surgical procedure is associated with a full recovery after removal of the neoplastic lesions. Despite concerns related to a hypothetical relapse, most patients reveal an optimistic approach. With disease progression, manifested as increased physical and mental problems and increasing apathy and indifference, the undertaken activities should be directed towards improvement in the quality of life. They should include adequate control of physical symptoms, providing the patient with peace and quiet, as well as providing a caring and unobtrusive presence allowing for meeting the patient's needs without them being articulated [9].

The study objective is to assess the quality of life and social support for patients after breast surgery who underwent breast reconstruction and those who did not undergo such a procedure.

MATERIALS AND RESEARCH METHODS

The study was conducted in February and March 2019 in a Provincial Specialist Hospital in Słupsk (Wojewódzki Szpital Specjalistyczny w Słupsku). Due to a specific problem, only female patients were enrolled in the study. The study was anonymous and voluntary. In total, responses from 57 (100%) women were obtained. Of this group, 28 women (49%) underwent breast reconstruction. The mean age of the whole group was 55.09 years.

The study was based on a survey prepared by the authors. The 1st part included socio-demographic data, i.e., place of residence, education, job status, marital status, number of children and financial situation. The 2nd part consisted of 5 questions referring to the assessment of the support the participants received from various people and organisations. The participants indicated the level of support they received – ranging from a lack of support (score 1) to a high level of support (score 5).

Another tool was a questionnaire assessing the quality of life in patients after mastectomy. The EORTC QLQ-BR23 provided the basis for an analysis of the effect of symptoms or problems typical for patients with breast carcinoma on their quality of life. The questionnaire includes 5 scales with multiple questions: 2 scales refer to the functional status – body image and sexual functioning, and 3 scales allow for an assessment of symptoms – side effects of therapy, breast symptoms, and shoulder symptoms. Moreover, 3 specific questions refer to interest in sexual life, prognosis and concerns related to hair loss [6].

The Cantril Ladder was used to assess general life satisfaction. This is in the form of a graphic ladder with steps numbered 0–10. Next to the ladder, there is text explaining that the number 10 represents the best possible life, and 0 represents the worst life. The respondents' task was to assess their current life and place an "X" at the appropriate position on the ladder. It is assumed that a score of 5 or lower means one is dissatisfied with life, while scores of 6 and over indicate a satisfaction with life [10].

Methods of statistical analysis

The study results were analysed statistically with the use of a computer programme – Statistica for Windows PL v.10.

A statistical description of variables was performed with the use of central tendency measures: arithmetic mean and median, whereas result dispersion was described by means of standard deviation and minimum and maximum values.

Inferential statistics were based on non-parametric tests. Simple characteristics of qualitative variables were shown in the form of sizes and percentages.

The inferential statistics of data expressed on order scales regarding differences between the variables were verified with the use of the non-parametric Kolmogorov–Smirnov test and Mann–Whitney U-test. A correlation between socio-demographic data and whether the patient undertook the reconstruction procedure was analysed with the use of the χ^2 test of independence.

For qualitative variables, contingent tables were used and inferential statistics regarding correlations between the study variables were estimated with the use of the non-parametric χ^2 test of independence.

In order to verify the formulated hypotheses, the criteria for the rejection of a null hypothesis was determined and the level of asymptotic significance was set at – 0.05.

RESULTS

Socio-demographic and clinical characteristics of the participants

The mean age in both groups differed by 2%. Among women with reconstruction, more than 60% had a secondary education. In the group without reconstruction, there were slightly more women with higher education. The financial situation was assessed as bad by 10% of women in the group without reconstruction. None of the patients assessed their financial situation as "very bad". The other variables showed comparable results. The groups did not show statistical differences regarding socio-demographic data at the assumed significance level of 0.05.

The analysis of the results showed that more than 70% of the respondents received high levels of support from their families. It is worth mentioning that this is the only support group where "lack of support" was not indicated by any participant.

Following this, support from friends was assessed as a "5" by almost half of the respondents and 42% for physicians. Slightly more than 30% of the patients assessed support from nurses as very high (5) and nearly 30% as "4". No support from organisations was indicated by 25 (42%) of the women (Tab. 1).

TABLE 1. Socio-demographic data

Variable	With reconstruction (%)	Without reconstruction (%)	Significance level
Number of subjects	29 (100)	28 (100)	$p < 0.05$
Mean age	54.14	56.07	$p^* = 0.565$
Place of residence			
country	6 (20.69)	6 (21.43)	$p = 0.694$
city/town	23 (79.31)	22 (78.57)	
Education			
primary	0	0	$p = 0.345$
vocational	2 (6.90)	5 (17.86)	
secondary	18 (62.08)	13 (46.43)	
higher	9 (31.02)	10 (35.71)	
Financial situation			
very good	1 (3.45)	4 (14.28)	$p = 0.080$
good	11 (37.93)	12 (42.86)	
average	17 (58.62)	9 (32.15)	
bad	0	3 (10.71)	
very bad	0	0	
Marital status			
married	21 (72.41)	17 (60.71)	$p = 0.757$
divorced	2 (6.90)	2 (7.14)	
single	2 (6.90)	4 (14.28)	
widow	4 (13.79)	5 (17.87)	
Offspring			
none	3 (10.35)	1 (3.57)	$p = 0.508$
1 child	10 (34.48)	9 (32.15)	
2 or more children	16 (55.17)	18 (64.28)	
Employment status			
employed	10 (34.48)	11 (39.23)	$p = 0.874$
unemployed	5 (17.25)	4 (14.28)	
disability pension	5 (17.25)	4 (14.28)	
old age pension	9 (31.02)	10 (35.71)	

p^* – Student's t-test; p – Pearson's χ^2 test of independence

For the whole group of respondents, the mean time from breast amputation to the day of the study was 54.26 months. Of this group, 28 (49%) patients underwent breast reconstruction, where the mean time from reconstruction until the study was 22.07 months.

Comparison of the quality of life between patients with and without breast reconstruction

A further part of the study focused on verifying if there is a difference in the assessment of various areas of life quality between patients with and without breast reconstruction. There were 29 (50.88%) patients with reconstruction and 28

(49.12%) patients without reconstruction. For this purpose, the Mann–Whitney U-test was used with correction for continuity.

The obtained values indicate a lack of statistical difference in all aspects of the quality of life between the 2 study groups. It may be claimed with caution that the highest differentiation of responses in the 2 study groups occurred in the context of the “Symptoms – breasts” variable, and the lowest in the context of side effects (Tab. 2).

TABLE 2. Characteristics of mental support felt by the respondents

	Felt mental support from				
	family	nurses	physicians	friends	organisations, e.g. The Amazons
	number (%)				
1 (no support)	0	5 (8.77)	3 (5.26)	2 (3.51)	25 (42.86)
2	3 (5.26)	4 (7.02)	8 (14.04)	6 (10.52)	7 (12.28)
3	3 (5.26)	13 (22.81)	8 (14.04)	7 (12.28)	5 (8.77)
4	11 (19.30)	17 (29.82)	14 (24.56)	16 (28.07)	9 (15.79)
5 (high level of support)	40 (70.18)	18 (31.58)	24 (42.11)	26 (45.61)	11 (19.30)

The Cantril Ladder was used to verify changes in the perception of the quality of life of the participants after the procedure and the perception perspectives. Analysing the presented data, it can be seen that the participants assessed their quality of life higher before the procedure than after. Thus, the surgery decreased their quality of life. However, the assessment of future quality of life (in 3 years' time) is better than the assessment of the present quality of life. Additionally, in the assessment of the future quality of life, the lowest value shown in the questionnaire was 3, while the lowest value before the surgery was 1 (Tab. 3).

Comparison of the satisfaction of life (Cantril Ladder) between patients with and without breast reconstruction

The values from before the disease are similar in both groups but the group without reconstruction gave a slightly higher score for quality of life before the procedure. The assessment of the current quality of life is, again, similar in both groups but a slightly higher differentiation was observed in the group without reconstruction. For the period 'in 3 years' time, the results are again similar in both groups. In the group of women with reconstruction, the mean and differentiation of responses is slightly higher. It is interesting that the patients with reconstruction assess their

life satisfaction in 3 years' time as higher than before the procedure, and the patients without reconstruction assess it lower (Tab. 4).

TABLE 3. Areas of the quality of life between the study groups

Variable	Mann–Whitney U-test ($p = 0.05$)
Perception of body image	$p = 0.76$
Sexual functions	$p = 0.86$
Satisfaction from sexual life	$p = 0.83$
Evaluation of the future	$p = 0.65$
Side effects of treatment	$p = 0.90$
“Symptoms – breasts”	$p = 0.32$
“Symptoms – shoulders”	$p = 0.69$
“Symptom – hair loss”	$p = 0.56$
General quality of life	$p = 0.74$

TABLE 4. Basic descriptive statistics for the Cantril Ladder scores

Cantril Ladder scores	Mean	SD	Minimum	Maximum
Before disease	7.61	2.05	1	10
At present	5.91	2.18	1	10
In 3 years' time	7.51	2.10	3	10

SD – standard deviation

Comparison of the social support received by patients with and without breast reconstruction

The patients with reconstruction assessed the level of mental support received from their family as slightly higher than the patients without reconstruction. However, the differentiation of responses in patients without reconstruction was twice as high as in the group with reconstruction. The mean values in the assessment of support from nurses were similar in both groups. Again, response differentiation (standard deviation) was higher among patients with reconstruction. Regarding support from physicians, slightly higher mean values were observed in the group without reconstruction, and a higher differentiation of responses was observed in the group with reconstruction. The mean score for support from friends was minimally higher in the group of women with reconstruction. And finally, regarding support received from organisations, lower mean values were observed in the group without reconstruction. Nevertheless, the Kolmogorov–Smirnov test ($p > 0.10$) shows no statistically significant difference between the analysed groups (Tab. 5 and 6).

TABLE 5. Comparison of statistical data for the Cantril Ladder in females with and without reconstruction

Variable	Kolmogorov–Smirnov test regarding the variable “mastectomy”				
	p	mean with reconstruction	mean without reconstruction	SD with reconstruction	SD without reconstruction
Cantril Ladder before disease	>0.10	7.31	7.92	2.10	1.98
Cantril Ladder at present	>0.10	5.96	5.85	2.00	2.38
Cantril Ladder in 3 years' time	>0.10	7.68	7.32	2.17	2.03

SD – standard deviation

TABLE 6. Comparison of statistical data for support felt by females with and without reconstruction

Variable	Kolmogorov–Smirnov test regarding the variable “breast reconstruction”						
	maximum negative difference	maximum positive difference	p	mean with reconstruction	mean without reconstruction	SD with reconstruction	SD without reconstruction
Feeling mental support from the family 1–5	0.00	0.18	>0.10	4.75	4.32	0.51	1.02
Feeling support from the nursing staff 1–5	–0.10	0.05	>0.10	3.62	3.75	1.37	1.10
Feeling support from the physician 1–5	–0.10	0.00	>0.10	3.72	3.96	1.41	1.10
Feeling support from friends 1–5	–0.08	0.14	>0.10	4.06	3.96	0.96	1.34
Feeling support from organisations 1–5	0.00	0.23	>0.10	2.82	2.25	1.60	1.62

SD – standard deviation

Socio-demographic situation of patients with and without breast reconstruction

All the analysed correlations between socio-demographic data revealed no statistical correlation with the decision to undertake the reconstruction procedure (for the assumed significance level $p = 0.05$). However, taking into account the critical values of particular tests, one might try to indicate which data has the lowest and which the highest effect on the decision to perform the reconstruction procedure. It seems that the most significant effect on the decision regarding reconstruction is exerted by the assessment of financial situation ($p = 0.08$), then education ($p = 0.35$) and children ($p = 0.51$). The least important factors were: place of residence ($p = 0.95$), job status ($p = 0.87$) and marital status ($p = 0.76$).

DISCUSSION

Breast cancer is considered to be a disease which has a great impact on the physical and mental sphere. Bothersome

treatment, concerns for the future, and changes in life rhythm and social function are numerous problems that each patient receiving oncological treatment faces. Neoplastic diseases create a sense of uncertainty and bring many unknowns, giving rise to a fear of disability and suffering, and often, a fear of death.

Numerous studies undertaken by researchers across the world have shown that women with breast cancer often experience symptoms of permanent tension, worrying, feeling constant discomfort and body stigma caused by oncological treatment [11, 12, 13].

In another study, Koçan and Gürsoy showed that patients who underwent mastectomy described their appearance using many more negative statements than positive. The authors concluded that breast removal causes a reduction in the self-esteem of women and creates a need to hide the deficit, e.g. by changing the style of dress [14].

The subject of the study was a comparison of the quality of life of women after mastectomy who underwent breast reconstruction with those who did not. The study results revealed

the quality of life of women after mastectomy but did not show a statistically significant difference between women with reconstruction and those without. A study by Stanisław et al. indicates that reconstruction procedures have a positive effect on the quality of life [15].

Further parts of the study focused on verifying if there was a difference in the assessment of various areas of quality of life between patients with and without breast reconstruction. For the assumed significance level $p = 0.5$, the achieved values turned out to be statistically insignificant ("p" value between 0.32–0.90). Therefore, it may be concluded that the level of life quality in specific areas is not significantly affected. On the basis of the Mann–Whitney U-test, the highest response differentiation in the 2 analysed groups occurred for the variable "symptoms – breasts". Here, the p value was 0.32. Therefore, it may be concluded that the quality of life in specific areas was not significantly affected. This means that complaints related to the breast which had been operated on, or the breast reconstruction procedure, affect handling of the activities of daily living. Earlier, a study by Musiał et al. also confirmed that radical breast excision limits physical activity and causes general fatigue while performing everyday tasks [16].

Our study on life satisfaction based on the Cantril Ladder showed that the assessment of the current situation was at an average level (5.8 and 5.9); higher values were observed for the assessment regarding the period before the disease and in the future. However, it is worth pointing out that patients with reconstruction assess their life satisfaction in 3 years' time as higher than what it was before the procedure, and patients without reconstruction assess it as lower. Studies by other authors also show a lower life satisfaction among women with breast cancer [17, 18].

In its clinical section, the questionnaire analysed the level of support from various people and organisations. A vast majority of the respondents assessed support from the family as very high (70.18%). This was the only group where the assessment "no support" did not occur. The organisation of the Amazons were perceived by women after mastectomy as being the least supportive. However, the study does not clearly show how many women participated in meetings organised by the Amazons.

The analysed group was quite varied; some of the women were patients of the oncological surgery after breast reconstruction, others were patients of the general surgery outpatient clinic who were under the constant care of the clinic, and then there were those who regularly attending rehabilitation. This last group could have received support from the Amazons. However, the study does not show the percentage of these respondents in relation to the whole analysed group. Therefore, this does not mean that the group of Amazons received the lowest score as a group of support for women after mastectomy. Higher scores were given to nurses, physicians and friends. The present study, similar to a study by Wrońska et al., showed that participants gave their highest score to the support they received from their families [19]. Another study

conducted by a research team supervised by Stadnicka et al. showed that, for the majority of the analysed women, the highest amount of support during the disease was provided by the husband and then the children, Amazons and friends. Lower scores were given to the psychologists, nurses and physicians. Studies show that the support provided by the family has a significant effect on the process of adaptation following breast amputation. Actual support from family and friends was felt by 61.7% of patients, and less from the hospital staff [20].

To sum up, the assessment of the quality of life among women after mastectomy with and without breast reconstruction did not reveal statistically significant differences. This is likely to be caused by the small size of the analysed group. The analysed literature also demonstrates that there are no significant differences in this aspect between the women with breast reconstruction and women who only underwent mastectomy. Considering the discrepancy of the results concerning the effects of breast reconstruction on the self-perception of the patient, there is a justified need to undertake wider studies in this area. These studies should also account for specific cultural differences. This issue is especially important in view of the opinion of psychologists' emphasising that the image of one's physical and mental features determines the quality of life. Breast reconstruction may constitute a strategy of symbolic psychological defence against existential concerns caused by the fear of losing health, which is used by women and supporter, or even promoted, by physicians. Breast reconstruction may help in the process of forgetting about the disease, returning to normal life and increasing self-assurance which is confirmed by the studies of Rubin and Tanenbaum [21].

The presented study has certain limitations that must be mentioned. The size of the study group was too small ($n = 57$) to make generalisations about the results. However, the presented subjective and objective measurement of the quality of life is a valuable means to study the quality of life of patients after mastectomy with and without breast reconstruction. This type of multidimensional approach is also important for the assessment and control of efficacy of the treatment process among women diagnosed with breast cancer.

CONCLUSIONS

The vast majority of participants came from the city, had secondary education and enjoyed a good financial situation.

The women claimed that the biggest support came from their families after mastectomy.

There is no statistically significant difference between women with and without breast reconstruction regarding general quality of life, and specific areas of the quality of life.

Patients with or without reconstruction did not statistically differ regarding socio-demographic data at the assumed significance level.

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