

## Quality of Life Outcomes in Patients with Breast Cancer in an Amazon City: The Impact of Breast Reconstruction

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### Abstract

**Introduction:** Malignant neoplasms are considered a public health problem due to the high rates of morbidity and mortality presented worldwide, particularly those associated with breast cancer.

**Methods:** This is a qualitative exploratory study that included 32 volunteers affected by breast cancer who were followed up at a public Brazilian hospital in Macapá city. The volunteers were divided into two groups: group 1 (n=16) consisting of mastectomized volunteers and group 2 (n=16) by mastectomized volunteers with breast reconstruction; both groups were evaluated using the SF-36 (Medical Outcomes Study 36).

**Results:** The results showed that mastectomized women without breast reconstruction presented a very low level of quality of life and those who did breast reconstruction presented better mean scores in all aspects evaluated when compared to the group without reconstruction (except in the social aspect,  $p>0.05$ ). However, even those with breast reconstruction had an important impact in all areas of the quality of life questionnaire.

**Conclusions:** The domains analysis made it possible to understand the negative impact that mastectomy and breast reconstruction have on the woman's life, besides noting that the maintenance of an esthetic state closer to normality is determinant for the quality of life of these women. However, new studies must be carried out to obtain statistically more relevant values.

**Keywords:** Breast neoplasms; Mastectomy; Quality of life

### Introduction

Malignant neoplasms are considered a public health issue due to the high morbidity and mortality indexes presented worldwide, particularly those associated with breast cancer, and the number of registered cases grows abruptly each year [1,2].

For Brazil, in 2016, 57,960 new cases of breast cancer were expected, with an estimated risk of 56.2 cases per 100 thousand women. Without considering the non-melanoma skin tumors, this type of cancer is also the most frequent in the women from the South (74.3/100 mil), Southeast (68.08/100 mil), Midwest (55.87/100 mil) and Northeast (38.74/100 mil) regions. In the North region, it is the second most frequent tumor (22.26/100 mil) [3].

In the State of Amapá, 340 new cases of cancer in women were estimated for the year 2016, among which were 50 new cases of breast cancer, with an estimated risk of 14.93 cases per 100 thousand people, occupying, therefore, the second place when it comes to the most common type of cancer in women. Cervical cancer is still the most common, with an estimate of 80 new cases for 2016, and estimated risk of 22.14 cases per 100 thousand people [3].

Breast Carcinoma is caused by the rapid and disordered multiplication of breast cells, genetically modified by a mistake in the cell multiplication, and that can reach various regions of the breast or even migrate to other body tissues, such as bones, lungs, pleura, liver and central nervous system [4].

An important factor that influences the breast cancer prognosis is the early diagnosis. When detected in the initial stage, the tumor has high cure rates [2]. Age is the main risk factor, and the number of cases increases rapidly after age 50, with its occurrence being related to the urbanization process of society [5].

Breast cancer treatment is performed through surgical procedure and supporting techniques, among which radiotherapy, chemotherapy, and hormone therapy are included. Those are aggressive procedures that cause physical and emotional deleterious consequences to the woman's life, such as: muscle injuries, brachial plexus nerve injuries, hemorrhage, scarring complications, changes in sensibility, axillary-pectoral fibrosis, postural changes, pain, decrease or total loss of range of joint motion, decrease in muscle strength, respiratory capacity impairment, loss or reduction of functional capacity, and lymphedema of the homolateral arm [6,7].

What defines who will and who will not develop breast cancer is still not clear in the academia, and it is impossible to unlink cancer from quality of life (QOL) and self-esteem. Oftentimes, the non-acceptance

of the disease will cause extremely serious and irreparable psychological damages, particularly among the women who went through the surgical intervention, leaving her partially or totally without the breast, a structure that is culturally a part of her sensuality and sexuality [8].

The World Health Organization (WHO) defines quality of life as: “the individuals’ perception of their position in life, in the context of culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns” [8,9].

The term Quality of Life is related to the impact of the health status on the individual’s capacity of living fully, however, a potential variety of conditions that affect this perception are included in this definition, their feelings and behaviors related to their daily functioning, as well as their health conditions and medical interventions [10].

The Quality of Life assessment considers the subjective perception of the patient, that is, an important step towards a more comprehensive and humanist approach for cancer treatment. This trend is well documented in literature, due to the increasing number of studies on breast cancer that register the results from quality of life assessments [11].

Considering such aspects, the aim of this study was to investigate the quality of life of women who suffer from breast cancer and go through medical follow-up in a hospital of the Unified Public Health System (SUS) in the city of Macapá-AP, using the SF-36 questionnaire (Medical Outcomes Study 36 – Item Short – Form Health Survey), and to compare the data gathered from the mastectomized women who had breast reconstruction surgery and those who did not have breast reconstruction surgery.

## Methods

The present study was approved by the Research Ethics Committee of the Federal University of Amapá (UNIFAP) and by the Research Ethics Committee of the Dr. Alberto Lima Clinical Hospital, in the city of Macapá-AP. All the participants were informed of the characteristics of the study and signed the Informed Consent Form, which ensures the anonymity of the information.

It is an exploratory qualitative study, about quality of life and epidemiological profile that included 32 voluntary participants. The patients were divided into two groups, where group 1 (n=16) was formed by mastectomized women and group 2 (n=16) by mastectomized women who had breast reconstruction. The SF-36 and a brief epidemiological questionnaire were applied.

The SF-36 questionnaire was created with the intention of being a generic model for health assessment and was validated and translated to Portuguese language by Ciconelli. This questionnaire is used to assess the QOL in eight scales: physical aspect, body pain, physical capacity, general health status, vitality, emotional aspects, mental health and social aspects. It has a final score that goes from zero to 100, where zero corresponds to a worse state of health and 100 corresponds to a better state of health [12].

The assessments were made at the High Complexity Oncology Care Unit in the period that went from January to May, 2017. The assessments were scheduled with the volunteers, through telephone calls.

The eligibility to participate in the study was assessed according to the following criteria:

- Inclusion: Female sex, surgically treated with mastectomy, with and without breast reconstruction performed more than 6 months before the study.
- Non-inclusion: Men and women who had breast conserving surgery, such as ectorectomy and quadrantectomy, and women who had mastectomy or breast reconstruction less than 6 months before the date of the questionnaire application. This inclusion is due to the fear that women experience after the mastectomy without having finished their treatment yet.

The statistical procedure was based on the descriptive and comparative analysis of the data. For the quantitative data, this analysis was made through the observation of minimum and maximum values, and the calculation of mean, standard deviation, and median. For the qualitative variables, relative and absolute frequencies were calculated.

For the comparison between the means of two groups, Student’s t-test was utilized; when the assumption of data normality was rejected, Mann-Whitney’s non-parametric test was utilized.

In order to test the homogeneity between the proportions, the chi-square test or Fisher’s exact test was utilized [13].

The significance level used for the tests was 5%.

## Results

A total of 32 women with ages between 23 and 75 years were assessed (mean of 51.81 years, with standard deviation of 10.24 years and median of 52.5 years).

In Table 1 we show the comparison of the reconstruction groups in relation to the demographic data, which analyzes the participants’ profile, according to age, ethnicity, marital status, education level, family income, tobacco and alcohol consumption, physical activity practice, family history and BMI, collected through the characterization questionnaire.

Higher percentages of mixed-race women were found in both groups, (87.4%). Regarding marital status, in group 1 there was a predominance of single women, 8 volunteers (50%) while in group 2, there was greater number of married women, totalizing 7 patients (43.8%).

As to their origin, eighteen (56.3%) were from Amapá, 13 (40.6%) from Pará and one (3.1%) from Piauí. Fifteen (46.9%) were unemployed, 8 (25.0%) were retired, 7 (21.9%) formally employed and 2 (6.2%) informally employed.

Regarding education level, there was predominance of patients with incomplete elementary school in group 1, with 6 volunteers (37.5%), and predominance of volunteers with complete higher education in group 2, with 6 volunteers (37.5).

When it comes to the surgical procedure, sixteen (50.0%) patients had breast reconstruction after the mastectomy and 16 did not (50.0%).

In 12 (75.0%) volunteers the reconstruction was performed with the mastectomy, and in 4 (25.0%) cases it was performed 1 to 2 years later.

We observe in Table 1 that the reconstruction groups showed significant difference regarding tobacco use. Group 2 shows higher percentage of ex-smokers, while group 1 shows higher percentage of smokers.

Variables		General	Reconstruction		p
			No (n=16)	Yes (n=16)	
Age		51.81 ± 10.24	53.25 ± 13.1	50.38 ± 6.39	0.439(b)
Ethnicity	White	2 (6.3%)	1 (6.2%)	1 (6.2%)	0.733(d)
	Mixed-race	28 (87.4%)	15 (93.8%)	13 (81.3%)	
	Black	2 (6.3%)	0 (0.0%)	2 (12.5%)	
Marital Status	Single	14 (43.8%)	8 (50.0%)	6 (37.5%)	0.702(d)
	Married	14 (43.8%)	7 (43.8%)	7 (43.8%)	
	Divorced	4 (12.4%)	1 (6.2%)	3 (18.7%)	
Education Level	Illiterate	2 (6.3%)	1 (6.2%)	1 (6.2%)	0.871(d)
	Incomp. Elem.	9 (28.1%)	6 (37.5%)	3 (18.8%)	
	Comp. Elem.	2 (6.3%)	1 (6.2%)	1 (6.2%)	
	Comp. Second.	8 (25.0%)	3 (18.8%)	5 (31.3%)	
	Comp. Higher Ed	11 (34.3%)	5 (31.3%)	6 (37.5%)	
Family Income	Until 1 salary	13 (40.6%)	8 (50.0%)	5 (31.3%)	0.653(d)
	1 - 3 salaries	8 (25.0%)	4 (25.0%)	4 (25.0%)	
	3 - 5 salaries	7 (21.9%)	3 (18.8%)	4 (25.0%)	
	More than 5 sal.	4 (12.5%)	1 (6.2%)	3 (18.7%)	
Smoker	No	25 (78.1%)	12 (75.0%)	13 (81.3%)	0.024(d)
	Yes	4 (12.5%)	4 (25.0%)	0 (0.0%)	
	Ex	3 (9.4%)	0 (0.0%)	3 (18.7%)	
Alcohol Consumption	No	22 (68.8%)	10 (62.5%)	12 (75.0%)	0.446(c)
	Yes	10 (31.2%)	6 (37.5%)	4 (25.0%)	
Physical Activity	No	23 (71.9%)	10 (62.5%)	13 (81.3%)	0.433(d)
	Yes	9 (21.1%)	6 (37.5%)	3 (18.7%)	
Family History	No	26 (81.3%)	15 (93.8%)	11 (38.8%)	0.172(d)
	Yes	6 (18.7%)	1 (6.2%)	5 (31.2%)	
BMI	Normal	11 (34.4%)	5 (31.3%)	6 (37.5%)	0.339(d)
	Overweight	16 (50.0%)	8 (50.0%)	8 (50.0%)	
	Obes. I	1 (3.1%)	0 (0.0%)	1 (6.2%)	
	Obes. II	3 (9.4%)	3 (18.8%)	0 (0.0%)	
	Obes. III	1 (3.1%)	0 (0.0%)	1 (6.2%)	
Breast(a)	Right	16 (51.6%)	7 (43.8%)	9 (60.0%)	0.366(c)
	Left	15 (48.4%)	9 (56.2%)	6 (40.0%)	

(a) One patient without information; (b) Probability descriptive level of Student's t test; (c) Probability descriptive level of the chi-square test; (d) Probability descriptive level of Fisher's exact test

**Table 1:** Descriptive values of the demographic variables, according to the reconstruction group.

The groups do not show significant difference in the other variables showed in this table.

In Table 2 we show the descriptive values of the Quality of Life domains of SF-36.

The percentages for the assessed domains vary between 21.77% and 75.75%, with Physical Aspect being the most compromised domain among the patients, with and without breast reconstruction. The domains that showed the lowest scores were: Physical Aspect (21.77%), Emotional Aspect (35.48%) and Pain (49.61%) regardless of breast reconstruction, while the domains that showed the best scores were: Mental Health (75.75%), Social Aspect (71.77%) and Vitality (62.81%).

In Table 3 we show the descriptive values of the Quality of Life domains of SF 36 according to the reconstruction group. We observed in Table 3 that there is significant difference between the reconstruction groups in the Mental Health domain. The group with reconstruction shows significantly higher score in this domain when compared to the group without reconstruction.

Domain	n	Mean	sd	Median	Minimum	Maximum
Functional Capacity	31	56.61	28.06	65	5	100
Physical Aspect	31	21.77	34	0	0	100
Pain	31	49.61	24.99	51	0	100
General Health Status	31	62.29	26.29	67	10	97
Vitality	32	62.81	20.55	67.5	20	100
Social Aspect	31	71.77	23.71	75	25	100
Emotional Aspect	31	35.48	37.45	33.33	0	100
Mental Health	32	75.75	24.15	80	0	100

**Table 2:** Mean, standard deviation, median, minimum and maximum of the SF36 domains.

Domain	Reconstruction	n	Mean	sd	Median	Minimum	Maximum	p*
Functional Capacity	No	16	54.38	26.07	65	5	90	0.404
	Yes	15	59	30.78	75	10	100	
Physical Aspect	No	16	18.75	26.61	0	0	75	0.910
	Yes	15	25	41.19	0	0	100	
Pain	No	16	45.94	25.37	41	0	100	0.242
	Yes	15	53.53	24.83	62	10	100	
General Health Status	No	16	56.19	21.14	56	17	92	0.096
	Yes	15	68.8	30.24	77	10	97	
Vitality	No	16	60	16.73	65	25	85	0.289
	Yes	16	65.63	24.01	72.5	20	100	
Social Aspect	No	16	73.44	23.66	81.25	25	100	0.628
	Yes	15	70	24.46	75	25	100	
Emotional Aspect	No	16	35.42	37.45	33.33	0	100	0.967
	Yes	15	35.55	38.76	33.33	0	100	
Mental Health	No	16	68.5	22.14	72	0	100	0.009
	Yes	16	83	24.55	96	12	100	

(\*) Probability descriptive level of Mann-Whitney's non-parametric test.

**Table 3:** Mean, standard deviation, median, minimum and maximum of SF36 domains, per reconstruction group.

In the other SF-36 domains, we did not observe significant difference between the groups, however, the quality of life is reduced in all the domains. In the Physical Aspect, the patients who did not have breast reconstruction surgery show a score of 18.75% in quality of life, while the patients who had breast reconstruction show a score of 25% in this domain. The Emotional Aspect, similarly, also had one of the worst quality of life evaluations, varying from 35.42% to 35.55%.

## Discussion

Through the evaluation of the groups it was clearly observed that mastectomized women who had breast reconstruction (group 2) showed better average scores in all the assessed aspects, when compared to women who did not have reconstruction surgery (group 1), except in the social aspect, in which women who did not have breast reconstruction showed better scores, but not statistically significant.

Although the analysis of the domains does not allow to directly associate the best quality of life scores with the body image perception, it can be concluded that, the less mutilating the surgery consequences are, the more quality of life the woman will enjoy, what was also observed by other authors [14-19].

From the analysis of Table 3 it was verified that the “Functional Capacity” and “Pain” domains did not demonstrate statistically significant differences between groups 1 and 2, but showed an average of 56.61 regarding functional capacity, and pain with an average of 49.61 in both groups, with group 1 presenting worse scores (45.94) [20].

In another study, that also used SF-36, it was verified that women reported negative impact on quality of life in the Physical Aspects, Pain and Vitality domains [12] and the mastectomized women showed worse quality of life scores, with statistical significance in the domains Functional Capacity and Pain, in relation to those subjected to quadrantectomy [21].

In a cross-sectional study with a sample of 75 Brazilian women assessed through SF-36, the authors showed that there was a decline in the Physical Aspects of quality of life because they frequently referred to pain, altering their perception of well-being [22].

In a study performed in Fortaleza-CE, that assessed the impact of breast reconstruction in mastectomized women's quality of life, one of the most relevant findings of the study, with practical implications, was the small impact of breast reconstruction in the physical aspects and the independence level of the woman. Such effects would be plausible, because important anatomic manipulations occur as consequences of the reconstruction, that, in theory, could cause physical discomforts [23].

Some authors, when comparing different types of surgical procedures, also did not find significant alterations in the physical aspects in women submitted to breast reconstruction [24,25].

Although it was not observed a statistically significant difference in the Limitation by Physical Aspects domain (Table 3), this domain showed the lowest average scores among all 8 domains, for groups 1 and 2, what is an evidence of the negative impact that mastectomy brings physically to the woman, even to those who had breast reconstruction.

The Limitation by Physical Aspects domain was compromised, with the lowest score among all assessed domains, due to problems such as lymphedema, pain, paresthesia, decrease in muscle strength and reduction of the range of joint motion (ROM) in the involved limb, which are frequently observed and reported by breast operated women, and deserve attention, since they interfere in their quality of life [12,25].

In the analysis of the General Health Status domain (Table 3), no significant difference was found between the analyzed groups. However, in the group of patients that were not submitted to breast reconstruction there was greater prejudice in regards to this domain, with an average score of 56.19. Such results disagree with a study where all scores were found around 63, regardless of breast reconstruction [26].

In Table 3, where is the vitality domain, statistically significant difference was not found ( $p < 0.05$ ) between groups 1 and 2, and group 1 has an inferior score when compared to group 2. Such aspect is directly related to vigor, energy, disposition, and strength, that is, a

direct correspondence with the physical aspects, that, as previously discussed, impact women who went through a mastectomy or quadrantectomy, which is the reason why the literature associates these aspects, as, for example, the relation between the positive sexual performance of surveyed women and vitality [27].

Still in table 3, in the “Limitation by Social Aspects” domain, statistically significant difference between groups 1 and 2 was not found, with both groups having scores above 70 and group 1 showing a score slightly higher than group two, the only domain where there was a higher score for group 1 in comparison to group 2. It is observable that in this domain there is a strong influence of the aesthetic results of the surgery that cause problems with body image, as well as preoccupations with financial aspects and future health, what can bring greater emotional stress, compromising social life [26].

Two other studies confirm that mastectomized women, when compared to other groups submitted to different surgeries, had problems with body image and avoided going to the beach, manifesting a tendency towards social isolation [23,28].

In a Brazilian study, the answers to the social aspects had higher scores than the physical aspects. Such condition could be attributed to the fact that the interviewed women belonged to the Support Group “Amigas do Peito” (Breast Friends), that works as a support for continuing the process of recovery and adaptation to the new condition, and also as a psychophysical and psychosocial transformation environment [26].

These Groups are a way to instrumentalize independence, self-esteem, the identity of being citizen and the quality of life of those women who are part of them, as they are source of social support to women with breast cancer [29,30].

The analysis of the Emotional Aspects domain demonstrates that there was homogeneity in the mean scores, with a mean of 35.48. This result differs from the one found in other studies where values higher than 70 were found in the group of women with breast reconstruction and 54.5 in the group of women without breast reconstruction – a value higher than the one found in this study, but still translates the lower quality of life of women who did not have breast reconstruction [26].

Other studies that compared groups of mastectomized women who did and did not have reconstruction observed greater satisfaction in the group that had reconstruction, emphasizing that women who did not have reconstruction surgery tend to want to do the aesthetic surgery, aiming the recognition of their own body as whole again, with posterior consequences for the emotional aspects [19,31].

Analyzing Table 3, it was verified that in the “Mental Health” domain there is statistically significant difference ( $p < 0.05$ ) between groups 1 and 2, in which the patients submitted to mastectomy without breast reconstruction showed lower quality of life scores. Mental health can be understood as the sensation of being well with oneself and others, and the capacity of dealing positively with adversities, being influenced by the social and physical aspects, spirituality, and results similar to these were found in some studies in which women who had conservative surgery did not show negative impact on Mental Health [32].

Through the usage of a scale of satisfaction with life and the analysis of its domains, it was identified that Mental Health represents 70.8% of the positive variation between the studied groups of women with

breast cancer [33], a data that differs from what was found in this study.

## Conclusion

Maintaining an aesthetic state closer to normality is determinant for the quality of life of these women. The analysis of the domains made it possible to understand the impact on quality of life, on the analyzed dimensions, that mastectomy and breast reconstruction bring to the woman's life. However, new studies should be performed to obtain statistically more relevant values.

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