

Impact of mastectomy and breast-conserving surgery on quality of life of women after breast cancer

Impacto da mastectomia e da cirurgia conservadora na qualidade de vida de mulheres pós-câncer de mama

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Artigo Original • Original Paper
O Mundo da Saúde, São Paulo - 2017;4(14):703-710

Abstract

Breast cancer is public health problem, in Brazil, it is estimated 57,960 new cases for the biennium of 2016/2017. Conservative surgery is considered the procedure of choice in the initial stage, including tumor removal involving a border of normal tissue, with preservation of breast tissue. While mastectomy, or non-conservative surgery, includes the removal of the entire breast tissue, with the removal of the pectoralis major and minor. Surgical interventions performed in women with breast cancer can cause physical, emotional/psychological, social and sexual repercussions that generate negative impact in their life. Considering that, this study was conducted over the hypothesis: what is the impact of breast cancer removal surgery in quality of life of women from São José dos Campos and Jacareí cities, aiming to recognize the variables that affect their quality of daily life, and to improve the assistance offered during physical therapy. Therefore, this study aimed to analyze the quality of life among women underwent mastectomy and breast-conserving surgery for breast cancer and how it could impact their socio-demographic aspects. This was a transversal descriptive study with exploratory character. The sample consisted of 105 women post breast cancer with mean age of 55.4 ± 11.1 years old, divided into two groups according to the kind of surgery performed. It was used the quality of life questionnaire SF-36 "Short-Form Health Survey" and a socio-demographic questionnaire. The statistical analysis of variance was performed with Kruskal-Wallis test, considering the significance level ($p \leq 0.05$). There was no significant difference between the groups evaluated in relation to domains: functional capacity ($p=0.56$), limitations on physical aspects ($p=0.40$), pain ($p=0.69$), General State of health (0.70), vitality ($p=0.25$), social aspects ($p=0.23$), limitations on emotional aspects ($p=0.78$), mental health ($p=0.28$). In conclusion, mastectomy and breast-conserving surgery do not show statistical difference in relation to quality of life; however, both techniques associated to the socio-demographic aspects can negatively affect the quality of life of women after breast cancer.

Keywords: Breast Cancer. Mastectomy. Breast-conserving Surgery. Quality of Life.

Resumo

O câncer de mama é um problema de saúde pública, no Brasil, as estimativas para o biênio de 2016/2017, apontam para 57.960 novos casos. A cirurgia conservadora é considerada o procedimento de escolha no estágio inicial, incluindo a remoção do tumor envolvendo uma borda de tecido normal, com preservação do tecido mamária, enquanto a mastectomia (ou cirurgia não-conservadora) inclui a remoção de todo o tecido mamário, com a remoção do peitoral maior e menor. As intervenções cirúrgicas realizadas em mulheres com câncer de mama podem causar repercussões físicas, emocionais, psicológicas, sociais e sexuais que geram impacto negativo em sua qualidade de vida. Levando isso em consideração, a hipótese deste estudo foi baseada na questão: qual é o impacto das cirurgias de remoção do câncer de mama na qualidade de vida de mulheres das cidades de São José dos Campos e Jacareí. Portanto, este estudo teve como objetivo analisar a qualidade de vida entre mulheres submetidas à mastectomia e cirurgia conservadora da mama após o diagnóstico de câncer de mama e como isso poderia ser impactado pelos aspectos sócio demográficos. Este foi um estudo descritivo cruzado com caráter exploratório. A amostra consistiu em 105 mulheres pós-câncer de mama com idade média de $55,4 \pm 11,1$ anos, divididas em dois grupos de acordo com o tipo de cirurgia realizada. Foi utilizado o questionário de qualidade de vida SF-36 "Short-Form Health Survey". A análise estatística de variância foi realizada com o teste de Kruskal-Wallis, considerando o nível de significância ($p \leq 0,05$). Condição geral da saúde ($p=0,70$), vitalidade ($p=0,66$), física ($p=0,6$), física ($p=0,25$), aspectos sociais ($p = 0,23$), limitações nos aspectos emocionais ($p = 0,78$), saúde mental ($p = 0,28$). Foi possível concluir que, tanto a mastectomia quanto a cirurgia conservadora não apresentam diferença estatística em relação à qualidade de vida. No entanto, ambas as técnicas, assim como os aspectos sócio demográficos, podem influenciar negativamente na qualidade de vida das mulheres após cirurgia de remoção do câncer de mama.

Palavras-chave: Câncer de Mama. Mastectomia. Cirurgia Conservadora da Mama. Qualidade de Vida.

DOI: 10.15343/0104-7809.20174104703710

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INTRODUCTION

Breast cancer is a public health problem. This malignant neoplasm presents high incidence in women, therefore, became the focus of worldwide attention due to the high level of morbidity. In Brazil, the estimates for the biennium of 2016/2017, pointing to 57,960 new cases of breast cancer, excluding non-melanoma skin cancer.¹

A medical specialist, such as a physician expert in breast cancer will conduct the treatment after clinical evaluation of the histologic type and stage of the tumor, which are decisive factors in the choice of conservative or not conservative surgical procedure.²

Conservative surgery, considered the procedure of choice in the initial stage of the tumor, including tumor removal involving a border of normal tissue, when usually the size reduces with the aid of neoadjuvant therapy. In this intervention, there is a preservation of breast tissue and can be carried out using the techniques of quadrantectomy (segmental resection) or Lumpectomy (removal of the tumor with free breast tissue margin of neoplasia around), but with a disadvantage of the high risk of local recurrence because of conservation of breast tissue.^{2,3}

Non-conservative surgical techniques, as radical mastectomy, involve the removal of the entire breast tissue, with the removal of the pectoralis major and minor. On the other hand, the modified radical mastectomy presents preservation of one or two chest muscles. According to the literature, both surgical techniques are commonly accompanied by axillary lymph node dissection, and survival rates among patients undergoing conservative surgery or mastectomy are similar.^{4,5}

Although the surgical procedure results in physical disabilities, the combination of factors such as radiotherapy, chemotherapy and axillary dissection increases the incidence of morbidities, as neuropathy and decreased the range of motion of the shoulder, generate considerable impact in the short and long term on the physical function and quality of life of women.⁶

Beyaz et al.⁷ stated that the post-mastectomy

syndrome, characterized by chronic neuropathic pain after surgery in women who performed breast-conserving surgery or mastectomy, in which the main factor is the removal of axillary lymph nodes, causing pain and change in the quality of life.

The therapeutic response after the surgical procedure depends on not only the physiological conditions, but also psychological, social, physical and cultural conditions of each woman, which directly influence their quality of life.⁸

Breast cancer is the disease most feared disease in the female population, as it provides a psychological trauma due to fear of mutilation and loss of femininity, which contributes to the distortion of self-image. Stages of depression, anxiety and fear are frequent, causing behavioral and psychosocial problems.⁹

According to the World Health Organization (WHO) to the quality of life is the perception of an individual's life in the cultural context and values in which one lives in relation to the goals, expectations, and concerns. The evaluation of the quality of life of post-breast cancer women discusses how they experience changes caused by the disease, as well as the negative or positive influence that provides treatment in their lives.⁸

The behavior analysis and understanding of disease is an important aspect of the combat against cancer in relation to quality of life of the patient, which can be accomplished through the quality of life questionnaire SF-36 (Medical Outcomes Study 36-Item Short-Form Health Survey). We can use this questionnaire in research in the area of health, in order to document the impact of the overall health of individuals with different diagnoses. The severity of the disease or the effectiveness of interventions over time, this is considered a valid generic and concise instrument, which provides quantitatively the health status of an individual in determining their quality of life.^{10,11}

There is a complex correlation between surgical techniques, physical and psychological symptoms post breast cancer as anxiety, cognitive fatigue, sleep disorders and depression, which can occur both in women who underwent breast-conserving surgery and in those who performed a mastectomy, both interfering negatively with quality of life and

contributing to morbidity. In this sense, the evaluation of the quality of life of women post breast cancer becomes crucial for the patient's care management, in order to intervene and modify as soon as possible this situation.^{8,12}

Considering the above, the question that guided this study was: what is the impact of breast cancer removal surgery in the life of women, aiming to recognize the variables that affect their quality of daily life of women, and to improve the assistance offered during physical therapy. Thus, the objective was to analyse the quality of life of women who had undergone mastectomy and to conservative surgery for breast cancer, using a health survey instrument and how it could impact their socio-demographic aspects.

METHODS

This is a descriptive cross-sectional study with exploratory character, performed in the laboratory of Sensory Motor Rehabilitation Engineering of the University of Vale do Paraiba (UNIVAP), after approval by the Research Ethics Committee (CEP) of Univap CAAE 41887715.0.0000.5503 and Protocol and record in Clinical Trials (NCT01893944). After receiving information about the study, all the volunteers signed an informed consent.

We considered as a factor of inclusion women in the age group from 30 to 90 years old, who had undergone a surgical procedure, conservative or not conservative for removal of breast cancer. As a factor of exclusion, we considered women who did not agree with the term of free and informed consent.

The first approach to the women after their breast cancer removal surgery was through telephone contact, after receiving a list given by the specializes centers for cancer treatment of São José dos Campos and Jacaré cities located in São Paulo, Brazil, from February to December (2015).

At that moment, the interviewer presented the objectives of the study and the operation of the data collection. Then, the invitation to participate in the study was made and after her acceptance, the date, time and place to the

interview was scheduled.

Altogether, we selected 105 volunteers for convenience, with an average age of 55.4 ± 11.1 years. The fact that the sample was for convenience is justified by the ease of access to interview researchers and the concentration of the same cancer centers.

These women were distributed according to their specific typo of surgery into two groups: Group 1 (G1), consisting of 48 women who underwent a mastectomy due to breast cancer; and Group 2 (G2), composed of 57 women who underwent breast-conserving surgery due to breast cancer.

Procedures

The instruments used for collecting data was a socio-demographic questionnaire regarding the characterization of the sample and the application of quality of life questionnaire SF-36 "Short-Form Health Survey".

The socio-demographic questionnaire was composed by questions regarding to the characteristics of the sample (categorized into two age groups), were: age (30-59 years old and 60-90 years old), marital status (single, married, divorcees or widows), schooling (1st grade, 2nd grade, 3rd grade or illiterate) occupation (employed, from home or retired) and time of surgery (categorized into five classes ranging from zero to 23 years).

As the characteristics related to quality of life, we used the quality of life questionnaire SF-36 "Short-Form Health Survey", in which the physiotherapist began with the clear and objective explanation of the questionnaire to better understanding, allowing the volunteers free answers, in a private and confidential environment.

The questionnaire consists of 36 questions grouped into 8 domains:

1. functional capacity: composed of 10 questions assessing the limitations related to physical capacity;
2. physical aspects: composed of 4 related questions the limitations that hinder daily activities and work;
3. pain: composed of 2 questions that evaluates the painful intensity and its influence on daily life activities;

4. general health: composed of 4 questions that evaluates how the patient feels about their overall health;

5. vitality: composed of 4 questions that evaluates the level of fatigue and energy;

6. social aspects: composed of 2 questions that evaluates an individual's integration in the social activity;

7. emotional aspects: composed of 3 questions that assess the well-being in relation to psychological aspects;

8. mental health: composed of 5 questions that assess psychological well-being, anxiety, depression, behavior and emotional disarray.

The questionnaire score is based on the answer of each participant, with each answer being converted to a previously assigned value (Table 1), and then they were scored according to pre-established standards through specific equation (Figure 1) for each domain by getting

the value of the questions separately, whose score ranges from zero to 100 in Raw Scale, representing the worst and the best quality of life, respectively. The result is called "Raw Scale" because the final value presents no unit measure.

The result obtained for each item of the questionnaire was applied to the formula described below (Figure 1).

We tabulated the data obtained in a spreadsheet, which we organized and analyzed by mean, standard deviation and percentage for sample characterization. Then, the statistical analysis of values obtained in the fields of the questionnaire, through the software BioEstat® version 5.3. First it was applied D'Agostino Pearson Normality test, but the distribution was non-parametric, which conduct us through the analysis of variance test of Kruskal-Wallis, considering the significance level of $p \leq 0.05$.

$$\frac{(\text{score from questions} - \text{lowest score possible})}{\text{variation}} \times 100$$

Figure 1 – Equation applied to the calculation of each domain of the Short Form (36) Health Survey. São José dos Campos/SP, Brazil, 2015.

Table 1 – The lower limit reference values and variation (Score Range) for obtaining the value of each domain of the quality of life questionnaire SF-36. São José dos Campos/SP, Brazil, 2015.

Domain	Score from questions	Lowest Score Possible	Variation
Functional Capacity	03	10	20
Limitation for physical aspects	04	4	4
Pain	07 + 08	2	10
General health	01 + 11	5	20
Vitality	09 (a + e + g + i)	4	20
Social aspects	06 + 10	2	8
Limitation on emotional aspects	05	3	3
Mental health	09 (b + c + d + f + h)	5	25

Caption: item nine is divided into eight sub questions, and the group a, e, g, i corresponds to the vitality and the Group b, c, d, f, h corresponds to the mental health domain.

Source: Pepper et al. (2008).

RESULTS

One hundred and five women after breast cancer removal surgery accepted to participate in this study, they were distributed into two groups according to their surgery: mastectomy (Group 1) and conservative surgery (Group 2). Their socio-demographic characteristics are presented in Table 2, according to the variables age, marital status, schooling, occupation and time of surgery. Figure 2 represents the results

pertaining to the 8 domains of quality of life questionnaire SF-36 for the groups (G1 and G2). It is possible to observe that there was no significant difference in the fields: functional capacity ($p = 0.56$), limitations on physical aspects ($p = 0.40$), pain ($p = 0.69$), General State of health (0.70), vitality ($p = 0.25$), social aspects ($p = 0.23$), limitations on emotional aspects ($p = 0.78$), mental health ($p = 0.28$).

Table 2 – Socio-demographic Data of the volunteers who participated in the study. São José dos Campos/SP, Brazil, 2015.

Variables	Group 1 (n = 57)	Group 2 (n = 48)
Age		
30-59 years	66.7% (n = 38)	60.4% (n = 29)
60-90 years	33.3% (n = 19)	39.6% (n = 19)
Marital status		
Single	15.8% (n = 9)	12.5% (n = 6)
Married	59.6% (n = 34)	72.9% (n = 35)
Divorcees	12.3% (n = 7)	4.2% (n = 2)
Widows	12.3% (n = 7)	10.4% (n = 5)
Schooling		
1st grade	36.8% (n = 21)	50% (n = 24)
2nd grade	40.4% (n = 23)	29.2% (n = 14)
3rd grade	22.8% (n = 13)	18.7% (n = 9)
Illiterate	-	2.1% (n = 1)
Occupation		
Of home	43.9% (n = 25)	45.8% (n = 22)
Working	49.1% (n = 28)	6.3% (n = 3)
Retired	7.0% (n = 4)	47.9% (n = 23)
Time of surgery		
0-1 year	10.5% (n = 6)	33.3% (n = 16)
1-5 years	54.4% (n = 31)	37.5% (n = 18)
6-11 years	28.1% (n = 16)	20.8% (n = 10)
12-17 years	7.0% (n = 4)	6.3% (n = 3)
18-23 years	-	2.1% (n = 1)

Caption: item nine is divided into eight sub questions, and the group a, e, g, i corresponds to the vitality and the Group b, c, d, f, h corresponds to the mental health domain.

Source: Pepper et al. (2008).

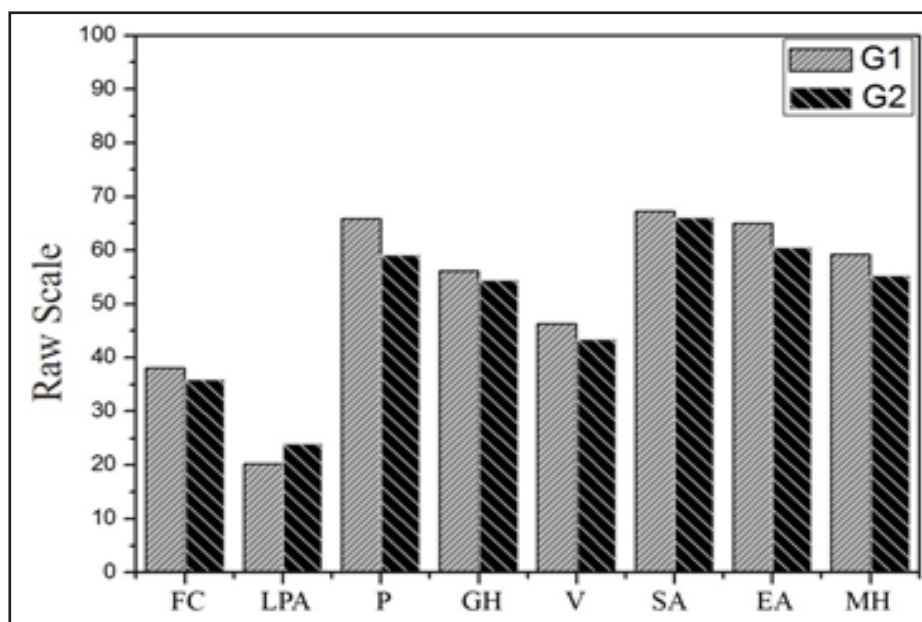


Figure 2 – Raw Scale of each domain of the quality of life questionnaire SF-36 among the study groups (G1 and G2). The acronyms represent the areas, including FC-functional capacity; LPA-Limitations on physical aspects; P-Pain; GH-general health; V-Vitality; SA-Social Aspects; EA-Emotional Aspects; MH-Mental Health. São José dos Campos/SP, Brazil, 2015.

DISCUSSION

The quality of life refers to the physical, mental, emotional and social well-being of the individual. Numerous treatments provide improvements in quality of life; however, a range of side effects can emerge and generate physical and psychological sequelae for women over time.^{13,14}

The breasts are important parts of the body of the woman, in which breast abnormality can lead to low self-esteem, depression, and fear. The removal of the breasts can influence on physical attraction, the appearance of women, which affects the emotional stability, alters body image, and it threatens the mental health of women, showing that the individual is a combination of psychosocial and physiological dimensions, and any change in these dimensions can affect each other.¹⁵

In relation to age group, we observed the increased incidence of breast cancer in younger women, which corroborates with the study of Schlichting et al.¹⁶, which reported increased incidence of breast cancer with more aggressive features in young women. These authors stated that some factors contribute to

the aggressiveness of the tumor, as high rates of proliferation, increased tumor size, poor cellular differentiation, positive lymph nodes, estrogen and progesterone receptors negative, abnormal expression of DNA, and the reason that young women are not selected for early detection, which contributes to the diagnosis¹⁷.

Evidence shows that social and demographic aspects influence on depression and anxiety of women is independent of type, for example, age, education and marital status.²¹ Khademi et al.¹⁸ stated that the level of education correlates with increased symptoms of depression. In our study it was possible to observe that G1 was composed mostly of young (67%), working (49%) women who declared had completed the 2nd, while G2 was also mostly composed by young women (60%) who declared being retired (47%) and working of home (45%) and that had concluded only the 1st grade. However, when we analyze the results from quality of life questionnaire SF-36, we found no statistic significance between both groups.

In the study of Manne and Badr¹⁹ they observed that the participation of the spouse

in steps of cancer treatment has contributed positively in relation to psychological, sexual and social aspects. Nowichi et al.²⁰ stated that single women have reported psychological problems such as depression, compared to those who were married. In our study, we found that both Group 1 and 2 were mostly composed of married women, about 59% in G1 and 72% in G2, corroborating the literature founds cited.

Post-breast cancer women can suffer significant changes in physical appearances, such as loss or defacement tits, scars, and skin changes related to radiation therapy and weight gain, often due to chemotherapy. These changes are closely related to the physical appearance and body image of women, which directly influence the quality of life.²¹

In our study, we could observe that there was no significant difference on the domains of quality of life questionnaire, proving that women, who performed a mastectomy or breast-conserving surgery due to breast cancer, had declined in all aspects relating to the quality of life. These results show that regardless of the surgical aggressiveness, women present worse quality of life due to persistent morbidities global over time.

Accord to Rippy et al.²² conservative surgery presents advantages over mastectomy, especially in the aesthetic result, with lower levels of psychological morbidities, better body image, sexuality, and self-esteem. On the other hand, Aerts et al.²³ reported that women conservative surgery post feature countless

negative emotions, such as depression and anxiety, concerns about recurrences of the disease, change in femininity and decreased sexual attraction.

Fernández-Lao et al.²⁴ held a blind study, in which they observed hyperalgesia pressure on women who performed Lumpectomy at (partial removal) and those who performed a mastectomy (removal), suggesting that central sensitization is present regardless of the type of surgery. We could observe in this study that the breast cancer and its treatment had numerous short- and long-term consequences, which affect negatively the quality of women's lives, mostly in LPA-Limitations on physical aspects and FC-functional capacity domains, regardless of whether the patient performed a mastectomy or breast-conserving therapy, thus, it is important to recognize the factors that affect the daily life of the patient and provide appropriate treatment.

Evidence state that integrative rehabilitation became part of clinical care post-breast cancer, through fundamental exercises in motor and improved in aspects related to the quality of life during treatment and recovery period post-cancer treatment.²⁵ So we recommend the accompaniment of women by physical therapy, in the short and long term, allowing better therapeutic management of emotional symptoms and the development of coping skills for the fight against cancer, which can contribute to the improvement of global perspective and sense of well-being.¹⁴

CONCLUSION

Conservative surgery and mastectomy generate physical, psychological and social limitations in large proportion, which exert the negative influence on the quality of life of women in the overall context. In our study, it was observed that both groups, regardless of the surgical aggressiveness, women presented compromised quality of life due to persistent morbidities global over time, mostly in limitations in physical aspect and functional capacity.

Therefore, the impact of socio-demographic data on the quality of life of women after breast cancer removal surgery could be considerate vital to the health professional, to recognize the variables that affect the quality of daily life of women after breast cancer removal surgery, as age, marital status, schooling and kind of working, in order to evaluate and continuously improve the quality of life through consultations, education, and rehabilitation.

Acknowledgment: Specialized cancer treatment centers. The Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Finep and the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), and Fundação de Amparo à Pesquisa do Estado de Minas Gerais, for financial support for this project.

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