Quality of life and nutritional status of patients diagnosed with breast cancer

Qualidade de vida e estado nutricional de pacientes diagnosticadas com câncer de mama

Calidad de vida y el estado nutricional de pacientes con el diagnóstico de cáncer de mama

Sabrina Hodecker (iD)
Regional University of Blumenau (Universidade Regional de Blumenau) - Blumenau (SC) - Brazil

Luciane Coutinho de Azevedo (iD)
Regional University of Blumenau (Universidade Regional de Blumenau) - Blumenau (SC) - Brazil

ABSTRACT

Objective: To assess the quality of life and its relationship with the nutritional status of women diagnosed with breast cancer. **Methods:** Cross-sectional study that evaluated women diagnosed with breast cancer attending a philanthropic program to fight cancer in Brusque, Santa Catarina, between April and June 2018. The exclusion criterion was: cognitive inability to answer the European Organization for Research and Treatment of Cancer questionnaires (QLQ-C30 and QLQ-BR23) or impossibility of collecting anthropometric measurements to classify nutritional status. The total scores of the questionnaires and their scales and domains were analyzed as variables. **Results:** 40 women participated, being 16 overweight (40%), 14 eutrophic (35%) and 10 obese (25%). The mean value of the QLQ-C30 was 72.2 ± 26.3 points, with no difference between the categories of nutritional status. The most affected domains of the functional scale were registered as: emotional, cognitive, and symptoms scale, with insomnia, pain, and fatigue. Overweight women showed worsening in the domains of both scales. The domains' future perspectives, body image, sexual function, and arm symptoms were more compromised. Women who underwent breast reconstruction and those who received nutritional guidance had lower scores in the emotional domain and the symptoms scale, respectively. **Conclusion:** The mean global quality of life score of this sample was satisfactory, although the emotional, symptoms, future perspectives, body image, and sexual function domains were the most affected. Excess weight was associated with worsening in the assessment of emotional aspects and worsening of symptoms.

Descriptors: Breast Neoplasm; Quality of Life; Nutritional Status.

RESUMO

Objetivo: Avaliar a qualidade de vida e sua relação com o estado nutricional de mulheres diagnosticadas com câncer de mama. **Métodos:** Estudo transversal que avaliou mulheres com diagnóstico de câncer de mama frequentadoras de um programa filantrópico de combate ao câncer, em Brusque, Santa Catarina, entre abril e junho de 2018. Adotou-se como critério de exclusão apresentar incapacidade cognitiva de responder aos questionários European Organization for Research and Treatment of Cancer (QLQ-C30 e QLQ-BR23) ou impossibilidade de coleta das medidas antropométricas para classificação do estado nutricional. O total em escores dos questionários e de suas escalas e domínios deram-se como variáveis analisadas. **Resultados:** Participaram 40 mulheres, sendo 16 com sobrepeso (40%), 14 com eutrofia (35%) e 10 com obesidade (25%). O valor médio do QLQ-C30 apresentou-se como de 72,2 ± 26,3 pontos, sem diferença entre as categorias de estado nutricional. Os domínios mais afetados da escala funcional registraram-se como: emocional, cognitivo e escala sintomas, com insônia, dor e fadiga. Mulheres com sobrepeso apresentaram piora nos domínios de ambas as escalas. Os domínios perspectivas futuras, imagem corporal, função sexual e sintomas de braço apresentaram-se mais comprometidos. Mulheres submetidas à reconstrução mamária e as que receberam orientação nutricional apresentaram menores pontuações no domínio emocional e na escala sintomas, respectivamente. **Conclusão:** A pontuação média global da qualidade de vida desta amostra foi satisfatória, apesar dos domínios emocional, sintomas, perspectivas futuras, imagem corporal e função sexual serem os mais afetados. O excesso de peso associou-se à piora na avaliação dos aspectos emocionais e ao agravo de sintomas.

Descritores: Neoplasias da Mama; Qualidade de Vida; Estado Nutricional.

Hodecker S, Azevedo LC

RESUMEN

Objetivo: Evaluar la calidad de vida y su relación con el estado nutricional de mujeres con el diagnóstico de cáncer de mama.
Métodos: Estudio transversal que evaluó mujeres con el diagnóstico de cáncer de mama del programa filantrópico de combate al cáncer de Brusque, Santa Catarina, entre abril y junio de 2018. Se tuvo como criterio de exclusión la incapacidad cognitiva para contestar a los cuestionarios European Organization for Research and Treatment of Cancer (QLQ-C30 e QLQ-BR23) o la imposibilidad de recoger datos de las medidas antropométricas para la clasificación del estado nutricional. El total de puntos de los cuestionarios y de sus escalas y dominios fueron las variables analizadas. Resultados: Participaron 40 mujeres y de ellas 16 tenían sobrepeso (40%), 14 tenían eutrofia (35%) y 10 tenían obesidad (25%). El valor medio del QLQ-C30 fue de 72,2 ± 26,3 puntos sin diferencia entre las categorías del estado nutricional. Los dominios más afectados de la escala funcional fueron: el emocional, el cognitivo y la escala síntomas, con el insomnio, el dolor y la fatiga. Mujeres de sobrepeso presentaron empeoramiento de los dominios de ambas las escalas. Los dominios perspectivas futuras, imagen corporal, función sexual y síntomas del brazo se presentaron peor. Mujeres que han hecho la reconstrucción de las mamas y las que han recibido orientación nutricional presentaron menos puntuaciones del dominio emocional y en la escala síntomas, respectivamente. Conclusión: La puntuación media global de la calidad de vida de esa muestra ha sido satisfactoria, aunque los dominios emocionales, síntomas, perspectivas futuras, imagen corporal y función sexual son los más afectados. El exceso de peso se asoció con el empeoramiento de la evaluación de los aspectos emocionales y el agravio de los síntomas.

Descriptores: Neoplasias de la Mama; Calidad de Vida; Estado Nutricional.

INTRODUCTION

Breast cancer is the highest incidence and mortality in the female population, both in developed and developing countries. In Brazil, it corresponds to 29% of new cancer cases each year. However, prevention, early diagnosis, and types of treatments have prolonged the survival of patients with breast cancer[1].

Despite improvements in the survival rates of breast cancer patients, especially in developed countries, due to the increased awareness of early diagnosis and advances in therapies[2], negative effects of antineoplastic treatment related to physical, emotional, and social aspects are commonly reported by patients, with a consequent reduction in quality of life[3].

Different therapeutic approaches both alone and combined are used in women diagnosed with breast cancer treatment[4]. Fatigue and adynamia contribute to physical inactivity, which is accompanied by changes in body composition, such as loss of muscle mass, functionality, and, consequently, loss of autonomy to perform daily activities[2,4,5]. Antineoplastic treatment also affects nutritional status, especially in the presence of side effects such as dry mouth, nausea, vomiting, changes in the perception of taste and/or smell that result in inappetence[6,7]. Nutritional deficits are related to reduced immunity, as well as lower treatment adherence and emotional distress[5]. On the other hand, it is also possible to observe weight gain after the chemotherapy use, which, when in excess, is associated with reduced quality of life and patient survival[2-4].

Health is the greatest resource for social, economic, and personal development, as well as a relevant dimension of quality of life, as it is understood not as an objective in itself but as a fundamental resource for everyday life. As a set of strategies and ways to produce health at the individual and collective levels, health promotion aims to meet social health needs and ensure an improvement in the population's quality of life[6].

In this context, it is relevant to assess the quality of life and nutritional status of patients diagnosed with breast cancer, to delineate intervention strategies, whether for treatment, prevention, or health promotion, that reduce the appearance of early and late complications to treatment[6,8]. Thus, the present study aims to assess the quality of life and its relationship with the nutritional status of women diagnosed with breast cancer.

METHODS

It is a cross-sectional, quantitative, and descriptive study. To be part of this study, all 64 women with a diagnosis of breast cancer who attended the Women's Network for Fighting Cancer in the municipality of Brusque, Santa Catarina, were intentionally selected during the period of data collection carried out from April to June 2018. The inclusion criteria adopted are: being over 18 years old and accepting to participate in the research by signing the Informed Consent Form. However, cognitive inability to answer the questions in the questionnaires and the impossibility of collecting anthropometric measurements are presented as exclusion criteria adopted for the research.

The collection of sociodemographic data of the participants (age, marital status, and the number of children) and clinical (time of diagnosis, presence and time of neoadjuvant/adjuvant treatment, the time interval from surgery to the time of the interview, presence of breast reconstruction and if received nutritional guidance) was carried out through a guided interview based on a script prepared by the authors for this study. There was also the collection of anthropometric data (current weight and height) of all participants to calculate the body mass index (BMI). The measurement and classification of the nutritional status performed were under the Technical Standard of the Food and Nutritional Surveillance System of the Ministry of Health[9].

To assess the quality of life, two questionnaires were applied: European Organization for Research and Treatment of Cancer - Quality of Life Questionnaire (EORTC-QLQ-30)[10] and EORTC Quality of Life Questionnaire-Breast Cancer-23 (EORTC -QLQ-BR-23)[11]. The application of the questionnaires with the participants was carried out in person by the researcher in a room available exclusively for this purpose in the Women's Network and with an average data collection time of 30 minutes. The questionnaires and the interview script, duly printed and completed, were identified by Arabic numerals and stored until the datasheet was completed.

The EORTC-QLQ-30 questionnaire (version 3.0) is an instrument translated into Portuguese, which contains 30 items, encompassed in 16 domains, and presented in four scales: Global Health Status and Quality of Life Scale (one domain; two items); Functional Scale (five domains; fifteen items); Symptom Scale (nine domains; twelve items) and Financial Difficulties Scale (one domain; one item). Questions 1 to 28 of the questionnaire are placed on a four-point Likert scale, where the answers track the following pattern: no (score value = 1); little (score value = 2); moderately (score value = 3); and a lot (score value = 4). Questions 29 and 30 are presented in a seven-point Likert-type scale, where one corresponds to very bad and seven to excellent. The values in scores range from 0 to 100, and in the Global Health Measure, it is considered that the higher the total score, the closer the patient was to a healthy level of quality of life. The opposite applies to the scales: Functional, Symptoms, and Financial Difficulties, in which the higher the score levels found, the greater the patient's commitment[10].

The EORTC-QLQ-BR 23 questionnaire contains 23 questions divided into two groups: Functional Scale, which includes four items on body image, two items on sexual function, one item on sexual pleasure, and an item on future perspectives; Symptom Scale, which includes seven items about side effects of systemic therapy, four items about breast symptoms, three items about arm symptoms, and one item about hair loss. On both scales, the higher the score obtained, the greater the level of commitment experienced by the participants[11].

All data were tabulated in a spreadsheet in the Microsoft Office Excel® (2003) software and analyzed using the Statistic® program (2008 version). Sociodemographic and clinical data are described in the text in relative and absolute frequency, mean ± standard deviation or median (minimum and maximum), with data from the quality of life questionnaires presented in tables. The normality of the variables was verified by the Kolmogorov test. To compare the categories of nutritional status of the values in scores obtained from the quality of life questionnaires, the ANOVA test was used, with Duncan post-roc, according to the normality of the data. The correlation between continuous variables was performed using Pearson's correlation (parametric data) or Spearman's (non-parametric data). The T-test was used to verify the difference in scores between those who underwent breast reconstruction and received or no nutritional guidance. A 5% error margin was also adopted, with a 95% confidence level, in the statistical analyses.

This research was approved by the Ethics Committee for Research on Human Beings (CEPH) of the Regional University of Blumenau, under Opinion No. 2,440,498.

RESULTS

Of the women selected to be part of this study, 40 met the inclusion and exclusion criteria. The group presented itself as being the majority of married women (82.5%; n=53) and with 3 ± 1 children, with a mean age of 58.7 ± 8.9 years. The average time since the breast cancer diagnosis was six years (1 to 24 years), and the time since the beginning of chemotherapy treatment was three (1 to 18 years). Only 12.5% (n=5) of respondents underwent breast reconstruction and half of them (n=20) received nutritional guidance. As for the nutritional status, most were overweight (40%; n=16), followed by the eutrophic (35%; n=14) and obesity (25%; n=10) category).

Table I presents the mean values of the scores of the quality of life questionnaires, in addition to the mean value of the global health measure of the QLQ-C30 of 72.2±26.3 points, with no difference between the categories of nutritional status. In the functional scale, there is a higher mean value for the emotional domain (39.7±26.8 points), followed by the cognitive (29.1±24.3 points). On this scale, in the emotional domain, overweight women had higher mean values than eutrophic women. On the symptoms scale, the domains with the highest mean values, in descending

order, are insomnia (43.3 ± 31.3 points), pain (25.4 ± 26.1 points), and fatigue (21.9 ± 18.4 points). On this scale, obese women compared to eutrophic women showed a higher mean value for the dyspnea and pain domains. In the fatigue domain, the mean value in the overweight group was higher than that of women with normal weight. There was no difference between the nutritional status categories for the financial difficulty scale.

The QLQ-BR23 questionnaire revealed that, on the functional scale, the future perspectives domain (50.8 ± 41.3 points) had the highest mean score, followed by body image (21.4 ± 26.4 points) and sexual function (20.4 ± 23.1 points). In the symptoms scale, the highest mean value was found in the domain referring to symptoms in the arm (33.0 ± 26.2 points).

Table I - Means ± Standard deviations of the scores of the scales and domains of the quality of life questionnaires, according to the classification of nutritional status. Blumenau, Santa Catarina, Brazil, 2018.

| Variable	Total (n=40)	Eutrophy (n = 14)	Overweight (n=16)	Obesity (n=10)	p
QLQ-C30 (points)					
Global Health Measure	72.2 ± 26.3	71.4 ± 30.2	78.1 ± 19.9	64.1 ± 29.9	0.50
Functional Scale	21.5 ± 15.0	22.8 ± 18.3	18.4 ± 13.6	24.4 ± 12.4	0.57
physical function	14.6 ± 13.1	12.3 ± 11.9	15.8 ± 13.3	16.0 ± 15.4	0.78
Role playing	12.9 ± 21.5	7.14 ± 19.2	13.5 ± 22.1	20.0 ± 23.3	0.23
Emotional function	39.7 ± 26.8	25.5 ± 18.6a	51.0 ± 31.7b	41.6 ± 20.0ab	0.03
Cognitive function	29.1 ± 24.3	26.1 ± 16.9	34.3 ± 28.1	25.0 ± 27.4	0.63
Social role	6.66 ± 16.7	1.19 ± 4.45	10.4 ± 23.4	8.3 ± 14.1	0.34
Symptoms Scale	19.7 ± 13.4	14.6 ± 14.1	19.6 ± 11.5	26.9 ± 13.2	0.08
Fatigue	21.9 ± 18.4	13.4 ± 17.5a	25.6 ± 13.2b	27.7 ± 23.5ab	0.03
Nausea and vomiting	10.0 ± 15.4	5.9 ± 10.5	12.5 ± 18.7	11.6 ± 15.8	0.64
Pain	25.4 ± 26.1	14.2 ± 19.4 a	27.0 ± 30.9 a	38.3 ± 20.8b	0.03
dyspnea	15.0 ± 24.9	7.14 ± 19.2 a	10.4 ± 20.0 a	33.3 ± 31.4b	0.03
Insomnia	43.3 ± 31.3	45.2 ± 33.6	43.7 ± 31.5	40.0 ± 30.6	0.92
loss of appetite	10.8 ± 20.5	11.9 ± 24.8	8.3 ± 14.9	13.3 ± 23.3	0.91
Constipation	20.0 ± 28.0	19.0 ± 28.3	12.5 ± 20.6	33.3 ± 35.1	0.24
Diarrhea	16.2 ± 34.6	17.8 ± 37.2	6.2 ± 17.0	30.0 ± 48.3	0.42
Financial difficulty scale	21.6 ± 30.7	23.8 ± 35.6	22.9 ± 29.1	22.9 ± 29.1	0.83
QLQ-BR23 (points)					
Functional Scale	24.2 ± 17.1	19.3 ± 18.0	26.5 ± 17.6	26.5 ± 17.6	0.41
Body image	21.4 ± 26.4	17.8 ± 27.1	24.4 ± 28.7	24.4 ± 28.7	0.56
sexual function	20.4 ± 23.1	14.2 ± 20.5	22.9 ± 24.2	22.9 ± 24.2	0.46
sexual satisfaction	16.6 ± 23.8	11.9 ± 21.1	18.7 ± 24.2	18.7 ± 24.2	0.66
Future perspectives	50.8 ± 41.3	42.8 ± 42.2	50.0 ± 45.5	50.0 ± 45.5	0.50
Symptoms Scale	23.1 ± 13.6	16.6 ± 13.5	27.2 ± 12.1	27.2 ± 12.1	0.08
Systemic therapy adverse events	20.3 ± 12.9	14.2 ± 10.2	22.9 ± 12.4	22.9 ± 12.4	0.08
breast symptoms	21.4 ± 17.3	17.2 ± 17.4	25.0 ± 17.7	25.0 ± 17.7	0.48
arm symptoms	33.0 ± 26.2	20.6 ± 22.1	41.6 ± 26.7	41.6 ± 26.7	0.07
hair loss	20.0 ± 35.2	19.0 ± 38.5	22.9 ± 37.9	22.9 ± 37.9	0.89

Caption: QLQ-C30: 30-Item Quality of Life Questionnaire; QLQ-BR23: 23-item Breast Cancer Quality of Life Questionnaire; p: level of significance; *: p<0.05; different letters on the lines: difference between nutritional status categories; other values: shown as mean ± standard deviation

Women who underwent breast reconstruction had a lower mean value in the emotional domain (QLQ-C30 functional scale) than those who did not (Figure 1). And women who received nutritional guidance had a lower mean value attributed to the nausea symptom in the symptoms scale than those who did not. (Figure 2).
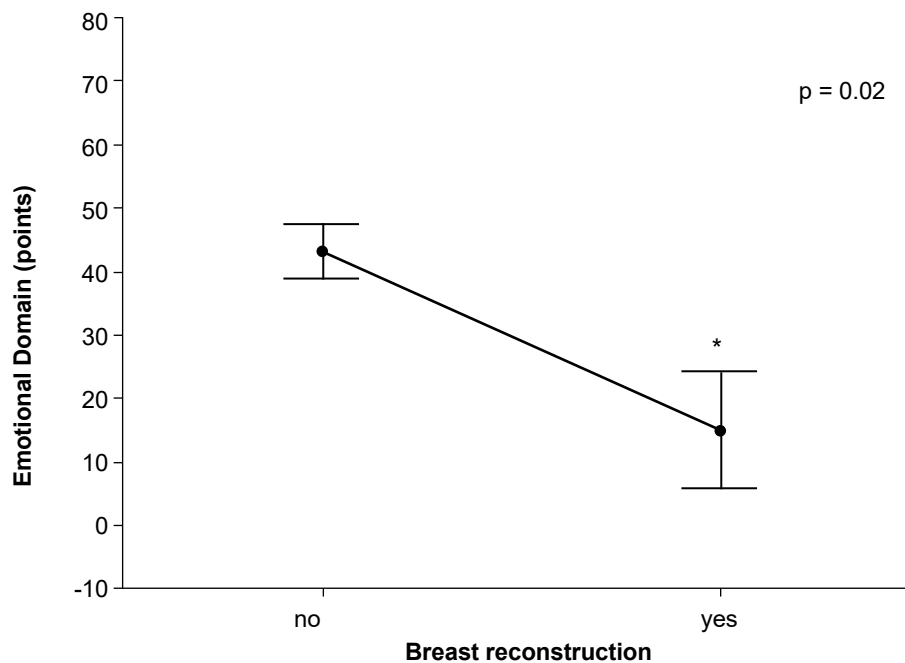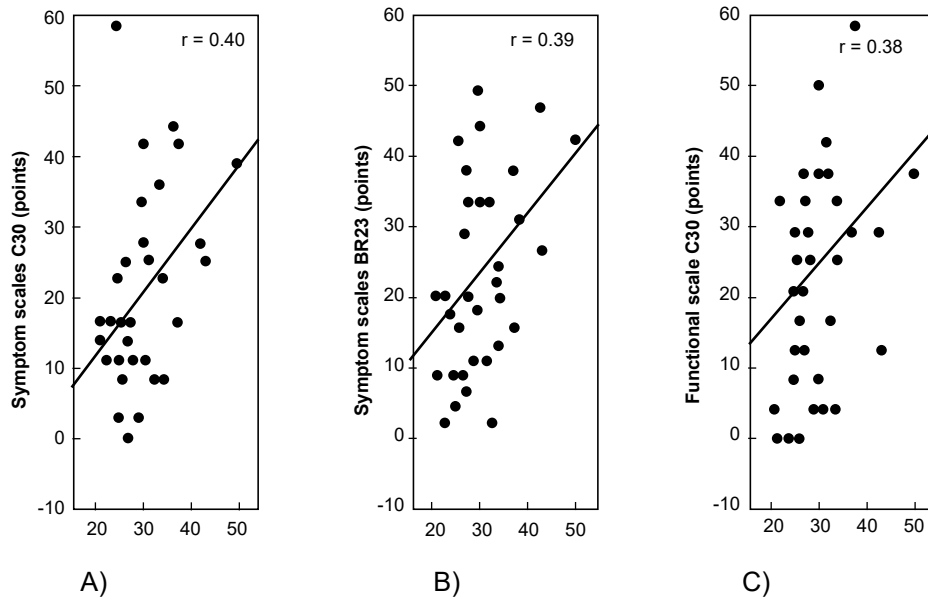

Caption: to: level of significance
Figure 1 - Relationship between breast reconstruction and emotional domain of the functional scale of the QLQ-C30 questionnaire. Blumenau, Santa Catarina, Brazil, 2018.
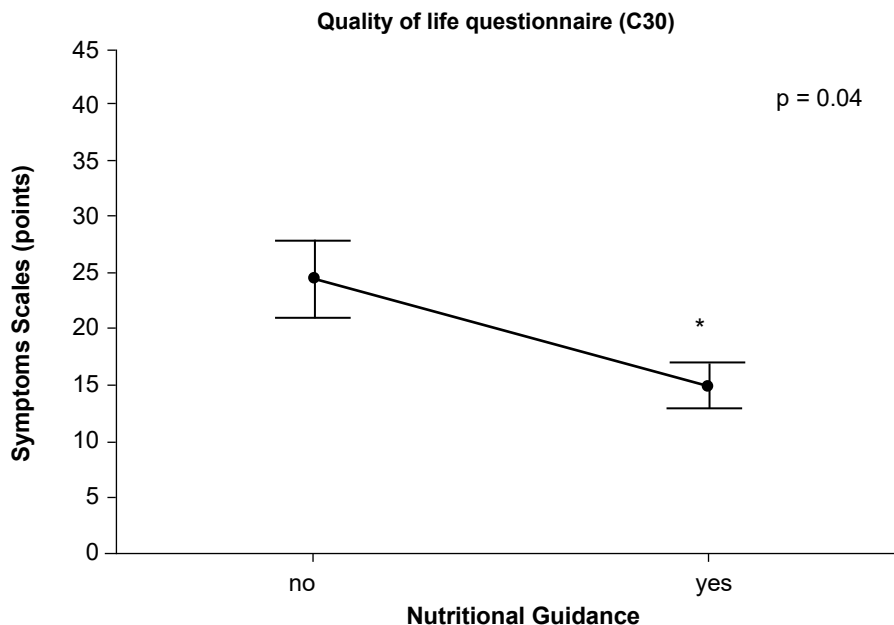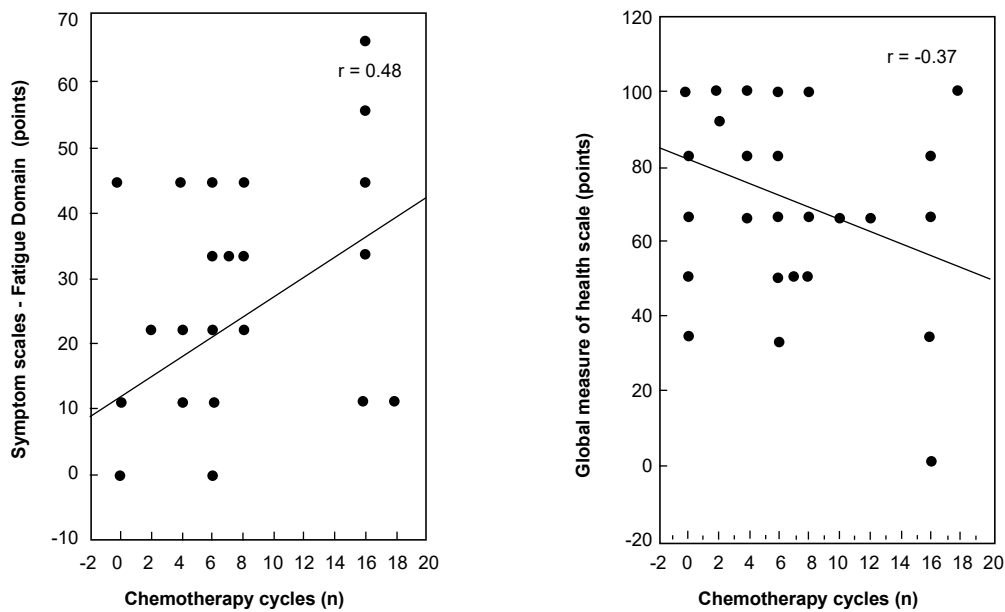

Caption: to: level of significance
Figure 2 - Relationship between receiving nutritional guidance and functional scale score of the QLQ-C30 questionnaire. Blumenau, Santa Catarina, Brazil, 2018.

In addition, there was a positive correlation of BMI with the total score of the symptoms scale of the two quality of life questionnaires and with the functional scale of the QLQ-C30 (Figure 3). A positive correlation was also found between the number of chemotherapy cycles and the fatigue domain of the QLQ-C30 symptom scale (r=0.48) and a negative correlation between chemotherapy cycles and the global health measure scale score (r= -0.37) (Figure 4).

Caption: to: level of significance
Figure 3 - Correlation between BMI (kg/m²) and scores on the QLQ-C30 (A) and BR-23 (B) symptom scales and on the QLQ-C30 (C) functional scale. Blumenau, Santa Catarina, Brazil, 2018.

Caption: to: level of significance
Figure 4 - Correlation between number of chemotherapy cycles and symptom scale scores on the Quality of Life Questionnaire (C30). Blumenau, Santa Catarina, Brazil, 2018.

DISCUSSION

Over the years, the prognosis and survival rate of women with breast cancer have improved significantly worldwide[12]. Studies in the field of oncology have increasingly proposed to assess the quality of life of patients with cancer since the various antineoplastic treatments, despite having added "years to life", may not have added, "life to years"[2]. In this sense, monitoring, monitoring, and evaluating information about health conditions, including the quality of life, of individuals or population groups are strategies to implement health promotion actions, respecting the values, principles, objectives, and guidelines of the National Promotion Program of health[6].

For evaluation and monitoring, satisfactory health and quality of life states are identified in the women diagnosed with breast cancer who participated in this study. Similar results were found in other studies with patients with breast cancer undergoing antineoplastic treatment[13] and without a history of metastases[14]. However, in this group, the emotional and cognitive domains of the functional scale were more compromised. It is mentioned that the worsening of cognitive function and emotional performance are manifestations that usually occur during and after the period of antineoplastic treatment, with a positive correlation between them[15].

In addition to the prolonged psychological suffering and side effects of treatment[15], it is believed that the impairment of the emotional and cognitive domains may be related to the age (half were elderly) and the nutritional status (two-thirds were overweight) of the women evaluated here. Advancing age and the presence of obesity behave as positive risk factors for the development of cognitive alterations, which tend to be related to other comorbidities[16]. Reduction and/or loss of cognitive function and the presence of psychopathologies can cause cognitive decline, compromise autonomy in the practice of daily activities, and impaired social life during aging[17]. In addition, it is mentioned that the decline in cognitive function is related to the pathophysiological mechanisms that determine obesity[13-18].

In this work, overweight women had worse scores in emotional domain scores. Similar results were presented in the study in which most participants had their nutritional status classified as overweight[13]. Possibly, the presence of excess weight impairs emotional aspects related to depression and anxiety, which, alone or together, contribute to worsening the quality of life[19,20]. And, as an aggravating factor for the nutritional condition, difficulties in dealing with negative situations in life can favor the excessive consumption of food as a form of gratification or as a defense mechanism to reduce anxieties and emotional tensions[21].

As for the assessment performed with the QLQBR-23 instrument, future perspectives, body image, and sexual function are the most compromised domains of the functional scale in this study. Low life expectancy is related to the worsening of the quality of life, the advancement of the disease, and the presence of depression[22]. On the other hand, sexual function can be affected by the chemotherapy treatment itself (with loss of vaginal lubrication and drug-induced menopause) or by the patient's age, which, associated with the removal of the breast, contribute to a decrease in libido and the appearance of problems with self-image[23]. Body image, a negative look at one's own body, and low self-esteem are common manifestations experienced by women diagnosed with breast cancer and are directly related to the partial or total removal of the breast, associated with loss of femininity[24,25].

In the present study, women who did not undergo breast reconstruction presented worsening of the emotional domain. It seems that women who undergo delayed breast reconstruction have a worse body image when compared to those with immediate reconstruction[26]. Women undergoing mastectomy and reconstruction also have greater satisfaction with their breast and sexual well-being compared to those undergoing breast-conserving surgery and total mastectomy without reconstruction[27]. On the other hand, the practice of breast conservation may be associated with lower satisfaction with the breasts, lower sexual and physical well-being, mainly due to the presence of discomfort and pain in the region, in addition to the worsening of body image[27].

In the symptoms scale, in this work, the most compromised domains were: insomnia, pain (especially in the arm), and fatigue. The presence of insomnia, pain, and fatigue are also the symptoms most reported by women with breast cancer evaluated in the western region of Saudi Arabia[28] and by women diagnosed with breast cancer and undergoing chemotherapy[29]. Insomnia is one of the symptoms frequently reported by patients with breast cancer, in addition to being aggravated in the presence of depression, anxiety, pain, and fatigue[30]. Fatigue can be related to several factors, including the existence of a cluster of symptoms in oncology (related to the presence of anaemia, pain, and depression)[30]. The worst scores in physical function, pain, functional scale, and symptoms of the arm were presented by patients undergoing radical mastectomy, which can be explained by the impairment caused in shoulder abduction, flexion, and lateral rotation movements concerning the range of motion and muscle strength[31].

In the present study, overweight women also showed worsening of dyspnea and pain domains, positive correlation with worsening functional status, and negative correlation with the overall quality of life. In another study, a positive correlation between BMI values and scores on the quality of life questionnaire was shown in breast cancer survivors, mainly due to physical problems and pain presence[32]. According to the authors, losses in physical function are associated with an increase in C-reactive protein levels, with worsening of the inflammatory state induced by weight gain in women with a BMI greater than 25 kg/m^{2}[32]. On the other hand, in a study on the quality of life and nutritional status of women with breast cancer undergoing chemotherapy, there was no correlation between the variables[33].

In this study, a positive correlation was also found between the number of chemotherapy cycles and the score obtained in the fatigue domain of the QLQ-C30 symptom scale, and a negative correlation between the number of

chemotherapy cycles and the global health measure scale score, both presented by the same questionnaire. Adjuvant treatments for breast cancer, including chemotherapy, surgery, or endocrine therapy, often cause side effects that severely alter patients' quality of life[3]. For some women, this means menopause-like symptoms such as hot flashes and night sweats. Others may lose sleep quality, decrease sexual functioning, and experience psychological distress[34].

In a study evaluating patients being treated for breast cancer with chemotherapy, the mean score on the quality of life questionnaire resulted in 38.04[34], that is, chemotherapy was related to the worsening of the quality of life during treatment, mainly due to the presence of pain, fatigue and emotional changes[15]. On the other hand, symptoms become less frequent and intense after the end of treatment and quality of life tends to improve, except when symptoms related to fatigue, depression, and pain increase after treatment and, inevitably, end up maintaining worse values related to global quality of life[15].

During chemotherapy treatment of women with breast cancer, it is also common to experience changes in the mucosa of the gastrointestinal tract and difficulties in chewing and swallowing, in addition to pre and postprandial nausea and vomiting[35]. Symptoms that negatively influence the nutritional status and quality of life of the patient, particularly in aspects related to physical and emotional characteristics[36]. Therefore, periodic nutritional assessment and monitoring are necessary to guide the patient to take actions that bring greater tolerance to anticancer treatment and lower risk of complications, in addition to helping to prevent or treat nutritional deficiencies, which affect the health condition and the quality of life[2].

In the present study, patients who received nutritional guidance reported less nausea and vomiting. Likewise, nutritional intervention during the first three cycles of neoadjuvant chemotherapy in women with breast cancer proved to be able to preserve the quality of life, reducing the occurrence of nausea, vomiting, and loss of appetite during treatment. These findings reinforce the importance of nutritional interventions during chemotherapy treatments to minimize possible nutritional impacts, consequent clinical involutions during therapy, or even treatment interruption[35].

Monitoring the nutritional status of women diagnosed with breast cancer can be an action strategy within the health promotion proposal, which aims to improve the short- and long-term quality of life related to emotional symptoms and the presence of fatigue, dyspnea, and pain, mainly in the arm. Besides, ensuring the support of a multidisciplinary team to all women before and after diagnosis is relevant to improve well-being and treat adverse effects resulting from treatments. From a clinical point of view, one of the ways to improve the quality of life of breast cancer survivors is to maintain interventions related to physical and psychosocial aspects throughout the treatment[37]. Multidimensional programs have gained increasing emphasis on comprehensive health care for women diagnosed with breast cancer to maximize their quality of life during and after treatment of the disease[12].

Among the limitations found in this study, there is the interpretation of patients regarding the meaning of the word "quality of life", a relevant requirement in the treatment of the chronic diseases; however, subjective, which lacks more detailed monitoring of each patient. Finally, another limitation refers to the small number of research participants, the wide variation in the number of chemotherapy cycles, and treatment time among the women evaluated here.

CONCLUSION

It is concluded that in this group of women diagnosed with breast cancer, the overall quality of life was considered satisfactory. However, dimensions related to emotional and functional aspects were the most compromised, with emphasis on the presence of pain, insomnia, and fatigue, in addition to dimensions that addressed future perspectives, body image, and sexual function. Excess weight in the women evaluated was associated with worsening in the assessment of emotional aspects and worsening symptoms of dyspnea, fatigue, and pain, especially in the arm.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

CONTRIBUTIONS

Sabrina Hodecker contributed to the conception and design of the study, interpretation of results and writing of the manuscript content. **Luciane Coutinho de Azevedo** contributed to the conception and design of the study, data analysis and critical review of the manuscript content. All authors have approved the final version of the manuscript and are responsible for all aspects, including guaranteeing its accuracy and integrity.

REFERENCES

1. Ministério da Saúde (BR); Instituto Nacional de Câncer José Alencar Gomes da Silva. Estimativa 2018- Incidência de câncer no Brasil [Internet]. Rio de Janeiro: INCA; 2017 [accessed on 2021 Maio 25]. Available from: https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//estimativa-incidencia-de-cancer-no-brasil-2018.pdf

2. Shin KNL, Mun CY, Shariff ZM. Nutrition Indicators, Physical Function, and Health-Related Quality of Life in Breast Cancer Patients. Asian Pac J Cancer Prev [Internet]. 2020 [accessed on 2021 Maio 25];21(7):1939-50. Available from: https://pubmed.ncbi.nlm.nih.gov/32711419/

3. Dang CC, Wong KZ, Lim M, Zulkefle N. Health Related Quality of Life (HRQoL) among Breast Cancer Patients Receiving Chemotherapy in Hospital Melaka: Single Centre Experience. Asian Pac J Cancer Prev [Internet]. 2016 [accessed on 2021 Maio 25];17:5121-6. Available from: https://pubmed.ncbi.nlm.nih.gov/28122444/

4. De Cicco P, Catani MV, Gasperi V, Sibilano M, Quaglietta M, Savini I. Nutrition and Breast Cancer: a Literature Review on Prevention, Treatment and Recurrence. Nutrients [Internet]. 2019 [accessed on 2021 Maio 25];11(7):1514. Available from:https://pubmed.ncbi.nlm.nih.gov/31277273/

5. De Vries YC, Boesveldt S, Kelfkens CS, Posthuma EE, Van den Berg MMGA, Kruif JTCM, et al. Taste and smell perception and quality of life during and after systemic therapy for breast cancer. Breast Cancer Res Treat [Internet]. 2018 [accessed on 2021 Maio 25];170:27-34. Available from: https://pubmed.ncbi.nlm.nih.gov/29476290/

6. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Secretaria de Atenção à Saúde. Política Nacional de Promoção da Saúde: PNPS: Anexo I da Portaria de Consolidação nº 2, de 28 de setembro de 2017, que consolida as normas sobre as políticas nacionais de saúde do SUS. Brasília: Ministério da Saúde; 2018.

7. Buch K, Gunmalm V, Andersson M, Schwarz P, Brøns C. Effect of chemotherapy and aromatase inhibitors in the adjuvant treatment of breast cancer on glucose and insulin metabolism - A systematic review. Cancer Med [Internet]. 2019 [accessed on 2021 Maio 25];8:238-45. Available from: https://pubmed.ncbi.nlm.nih.gov/30561133/

8. Sanz EA, Abilés J, Siles GM, Ruíz EP, García JA, Domínguez AR. Impact of weight loss on cancer patients' quality of life at the beginning of the chemotherapy. Support Care Cancer [Internet]. 2021 [accessed on 2021 Maio 25];29:627-34. Available from: https://pubmed.ncbi.nlm.nih.gov/32424642/

9. Ministério da Saúde (BR), Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Orientações para a coleta e análise de dados antropométricos em serviços de saúde: Norma Técnica do Sistema de Vigilância Alimentar e Nutricional – SISVAN. Brasília: Ministério da Saúde; 2011.

10. Aaronson NK, Ahmedzai S, Bergman B, Bullinger M, Cull A, Duez NJ, et al. The European Organization for Research and Treatment of Cancer QLQ-C30: a quality of life instrument for use in international clinical trials in oncology. J Natl Cancer Inst [Internet]. 1993 [accessed on 2019 Abr 15];85:365-76. Available from: https://www.ncbi.nlm.nih.gov/pubmed/8433390

11. Michels FAS, Latorre MRDO, Maciel MS. Validity, reliability and understanding of the EORTC-C30 and EORTC-BR23, quality of life questionnaires specific for breast cancer. Rev Bras Epidemiol [Internet]. 2013 [accessed on 2019 Abr 15];16(2):352-63. Available from: http://www.scielo.br/pdf/rbepid/v16n2/1415-790X-rbepid-16-02-00352.pdf

12. Cheng KKF, Lim YTE, Koh ZM, Tam WWS. Home-based multidimensional survivorship programmes for breast cancer survivors. Cochrane Database Syst Rev [Internet]. 2017 [accessed on 2021 Maio 25];8(8). Available from: https://pubmed.ncbi.nlm.nih.gov/28836379/

13. Lu Shin KN, Mun CY, Shariff ZM. Indicadores de nutrição, função física e qualidade de vida relacionada à saúde em pacientes com câncer de mama. Asian Pac J Cancer Prev [Internet]. 2020 [accessed on 2021 Maio 25];21(7):1939-50. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7573431/

14. Costa WA, Eleutério J Jr, Giraldo PC, Gonçalves AK. Quality of life in breast cancer survivors. Rev Assoc Med Bras [Internet]. 2017 [accessed on 2021 Maio 25];63(7):583-9. Available from: https://www.scielo.br/j/ramb/a/FkFsVzNwHNxNyhcp75Rd85f/?lang=en

15. Binotto M, Schwartsmann G. Qualidade de Vida Relacionada à Saúde de Pacientes com Câncer de Mama: Revisão Integrativa da Literatura. Rev Bras Cancerol [Internet]. 2020 [accessed on 2021 Maio 25];66(1):e-06405. Available from: https://rbc.inca.gov.br/revista/index.php/revista/article/view/405

16. Romera HP. Influência da obesidade sobre a função cognitiva de mulheres pós-menopáusicas [dissertação] [Internet]. Brasília: Universidade Católica de Brasília; 2018 [accessed on 2021 Maio 25]. Available from: https://bdtd.ucb.br:8443/jspui/bitstream/123456789/1248/1/Dissertacaofinalizada.pdf

17. Konflanz F, Costa K, Mendes T. A neuropsicologia do envelhecer: as "faltas" e "falhas" do cérebro e do processo cognitivo que podem surgir na velhice. Psicologia.pt [Internet]. 2017 [accessed on 2021 Maio 25];13(8):1-6. Available from: https://www.psicologia.pt/artigos/textos/A1103.pdf

18. O'Brien PD, Hinder LM, Callaghan BC, Feldman EL. Consequências neurológicas da obesidade. Lancet Neurol [Internet]. 2017 [accessed on 2021 Maio 25];16:465-77. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5657398/

19. Vasques F, Martins F, Azevedo A. Aspectos psiquiátricos do tratamento da obesidade. Arch Clin Psychiatry [Internet]. 2004 [accessed on 2021 Maio 27];31(4):195-8. Available from: https://www.scielo.br/j/rpc/a/3ytf9qn3PYx3HftRSwyng6q/abstract/?lang=pt

20. Paffenbarger RS, Wing AL, Hyde RT. Physical activity and incidence of hypertension in college alumni. Am J Epidemiol [Internet]. 1983 [accessed on 2021 Maio 27];117:245-57. Available from: https://pubmed.ncbi.nlm.nih.gov/6829553/

21. Franques ARM, Arenales-Loli MS. Contribuições da psicologia na cirurgia da obesidade. São Paulo: Vetor Editora; 2006.

22. Batchelor D. Hair and cancer chemotherapy: consequences and nursing care - a literature study. Eur J Cancer Care [Internet]. 2001 [accessed on 2019 Abr 15];10(3):147-63. Available from: https://onlinelibrary.wiley.com/doi/full/10.1046/j.13652354.2001.00272.x?sid=nlm%3Apubmed

23. Zee B, Huang C, Mak S, Wong J, Chan E, Yeo W. Factors related to sexual health in Chinese women with breast cancer in Hong Kong. Asia Pac J Clin Oncol [Internet]. 2008 [accessed on 2019 Abr 15];4(4):218-26. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1743-7563.2008.00214.x

24. Juver J, Verçosa N. Depressão em pacientes com dor no câncer avançado. Rev Bras Anestesiol [Internet]. 2008 [accessed on 2019 Abr 15];58(3):287-98. Available from: http://www.scielo.br/pdf/rba/v58n3/en_12.pdf

25. Lagendijk M, van Egdom LSE, van Veen FEE, Vos EL, Mureau MAM, van Leeuwen N, et al. Patient-Reported Outcome Measures May Add Value in Breast Cancer Surgery. Ann Surg Oncol [Internet]. 2018 [accessed on 2019 Abr 15];(12):3563-71.Available from: https://pubmed.ncbi.nlm.nih.gov/30178391/

26. Teo I, Reece GP, Christie IC, Guindani M, Markey MK, Heinberg LJ, et al. Body image and quality of life of breast cancer patients: Influence of timing and stage of breast reconstruction. Psycho-Oncol [Internet]. 2016 [accessed on 2021 Maio 27];25:1106-12. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4988938/

27. Howes BH, Watson DI, Xu C, Fosh B, Canepa M, Dean NR. Quality of life following total mastectomy with and without reconstruction versus breast-conserving surgery for breast cancer: A case-controlled cohort study. J Plast Reconstr Aesthet Surg [Internet]. 2016 [accessed on 2021 Abr 24];69(9):1184-91. Available from: https://pubmed.ncbi.nlm.nih.gov/27406255/

28. Imran M, Al-Wassia R, Alkhayyat SS, Baig M, Al-Saati BA. Assessment of quality of life (QoL) in breast cancer patients by using EORTC QLQ-C30 and BR-23 questionnaires: a tertiary care center survey in the western region of Saudi Arabia. Plos One [Internet]. 2019 [accessed on 2021 Maio 26];14(7). Available from: https://pubmed.ncbi.nlm.nih.gov/31291302/

29. Charalambous A, Kaite CP, Charalambous M, Tistsi T, Kouta C. The effects on anxiety and quality of life of breast cancer patients following completion of the first cycle of chemotherapy. J Sage Open Med [Internet]. 2017 [accessed on 2019 Abr 15];5:1-10. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5495504/

30. Gehrman P, Garland S, Matura L, Mao J. Insomnia in breast cancer: Independent symptom or symptom cluster?. Palliat Support Care [Internet]. 2016 [accessed on 2019 Abr 15];15(3):369-75. Available from: https://www.ncbi.nlm.nih.gov/pubmed/27917746

31. Boing L, Araujo C, Pereira G, Moratelli J, Benneti M, Borgatto A, et al. Tempo sentado, imagem corporal e qualidade de vida em mulheres após a cirurgia do câncer de mama. Rev Bras Med Esporte [Internet]. 2017 [accessed on 2019 Abr 15];23(5):366-70. Available from: http://www.scielo.br/pdf/rbme/v23n5/1517-8692-rbme-23-05-00366.pdf

32. Imayama I, Alfano CM, Neuhouser ML, George SM, Smith WA, Baumgartner RN, et al. Weight, inflammation, cancer-related symptoms and heath related quality of life among breast cancer survivors. Breast Cancer Res Treat [Internet]. 2013 [accessed on 2019 Abr 15];140(1):159-76. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3772666/

33. Scheibler J, Silva FMM, Moreira TR, Adami FS. Qualidade de vida, estado nutricional e consumo alimentar de mulheres com câncer de mama em tratamento quimioterápico. Rev Bras Promoç Saúde [Internet]. 2016 [accessed on 2021 Maio 25];(4):544-53. Available from: https://periodicos.unifor.br/RBPS/article/view/4421/pdf

34. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. Cancer J Clin [Internet]. 2018 [accessed on 2021 Maio 25];68(6):394-424. Available from: https://pubmed.ncbi.nlm.nih.gov/30207593/

35. Souza APS, Silva LC, Fayh APT. Nutritional Intervention Contributes to the Improvement of Symptoms Related to Quality of Life in Breast Cancer Patients Undergoing Neoadjuvant Chemotherapy: A Randomized Clinical Trial. Nutrients [Internet]. 2021 [accessed on 2021 Maio 25];13(2):589. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7916763/

36. Arends J, Baracos V, Bertz H, Bozzetti F, Calder PC, Deutz NEP, et al. Recomendações do grupo de especialistas ESPEN para ação contra a desnutrição relacionada ao câncer. Clin Nutr. 2017;36:1187-96.

37. Xia J, Tang Z, Deng Q, Yang R, Wang J, Yu J. Predictors of the quality of life in Chinese breast cancer survivors. Breast Cancer Res Treat [Internet]. 2018 [accessed on 2021 Maio 26];167(2):537-45. Available from: https://pubmed.ncbi.nlm.nih.gov/28965272/

First author`s Mailing address:
Sabrina Hodecker
Rua: Luiz Gandolfi, 1702
Bairro: São Pedro
CEP: 88360-000 - Guabiruba - SC - Brazil
E-mail: sabhodecker@gmail.com

Mailing address:
Luciane Coutinho de Azevedo
Rua: São Paulo, 2171
Bairro: Itoupava Seca
CEP: 89030-001 - Blumenau - SC - Brazil
E-mail: lucianec@furb.br