

**THE INFLUENCE OF LIFESTYLE ON PREVENTION, TREATMENT AND PROGNOSIS OF BREAST CANCER: LITERATURE REVIEW****Gabriela Cristina Gomes Rodrigues<sup>1</sup> and Ana Laura Remédio Zeni Beretta<sup>2\*</sup>**

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**ABSTRACT**

Breast cancer appears as a major cause of mortality worldwide. In Brazil, it presents itself as the most prevalent malignancy among women, 59,700 new cases for the coming years. It is a fact that habits of the current modern scenario such as excessive alcohol consumption, poor diet, obesity, physical inactivity and smoking are triggers for the appearance of breast cancer. In addition to preventing, a lifestyle that prioritizes good habits contributes in a very positive way to people with the disease, improving the conditions for carrying out the treatment and decreasing the chances of recurrences. The study aimed, through a literature review, raise data that demonstrate how much a healthy lifestyle can positively influence the prevention, treatment and prognosis in cases of breast cancer. For data collection, articles

published on the Medical Literature Analysis (Medline), Latin American and Caribbean Literature in Health Sciences (Lilacs) and Scientific Electronic Library Online (SciELO) websites were selected using the keywords: breast cancer, quality of life and prevention. The study suggests that there are countless benefits of adequate nutrition, regular physical activity and control of excessive weight gain to achieve a good outcome in the fight against breast cancer and prevention. Given the relevance of the topic, it is expected that more studies will be carried out so that it is gradually possible to spread in our society the importance that the adoption of a healthy lifestyle has to promote health.

**KEYWORDS:** Breast cancer, lifestyle, prevention breast cancer.



## INTRODUCTION

Breast cancer appears as a major cause of mortality worldwide. In Brazil, breast cancer is the disease that most affects women since 1979, as the most prevalent malignancy, with 59,700 new cases in the coming years, which represents a major national and worldwide public health problem. Breast cancer represents the most common malignancy that affects women worldwide.<sup>[1]</sup> Epidemiological data collected over the past 50 years show us the close relationship between lifestyle, environmental factors and the appearance of cancer.<sup>[2]</sup>

The etiology of breast cancer is multifactorial, among the main risk factors for the development of this pathology are advanced age, reproductive characteristics, family and personal history, lifestyle and environmental influences, stressing that the influence of smoking is still controversial.<sup>[3]</sup>

Lifestyle includes social and cultural ways of living, which are expressed by behavior and habits, some of these habits can have a negative or positive influence on the prevention, treatment and prognosis of various diseases.<sup>[4]</sup> Among the negative habits it can be mentioned excessive caloric diet, physical inactivity, chronic stress, alcohol consumption, smoking; and positive habits, regular physical activity and a balanced diet.<sup>[4]</sup>

It is known that adopting a lifestyle that focuses on healthy eating, rich in whole foods, vegetables, fruits and greenery associated with regular physical activity, in order to combat sedentary lifestyle and obesity, can be an important target of prevention strategy primary for breast cancer.<sup>[5]</sup>

The scientific literature reports that eating habits, in the form of specific dietary factors, have a direct and determining influence on carcinogenesis, either as a way of preventing or triggering tumors.<sup>[6,7]</sup>

Sedentary lifestyle accounts for some types of tumors even in people with adequate body weight, regular physical activity is associated with a decreased risk for breast cancer, and during adolescence, physical activity can offer additional protection against it.<sup>[8]</sup>

Epidemiological studies show that obesity, overweight and weight gain in women increase the incidence of breast cancer, and the high body mass index (BMI) is considered one of the predictors of breast cancer in postmenopausal women.<sup>[9]</sup> Obesity is also seen as an important negative factor for the survival of women with breast cancer and has been linked to the



progression or relapse of the disease.<sup>[10]</sup> Studies with women who had breast cancer showed that weight and weight gain after diagnosis are also related to relapses, thus increasing mortality, additionally it was observed that the increase in BMI in addition to making treatment difficult is associated with a bad prognosis.<sup>[11]</sup>

The present study aimed, through a literature review on national and international bases, to gather data that demonstrate how certain lifestyle habits can positively or negatively influence the prevention, treatment and prognosis in cases of breast cancer. The search was carried out through the portal of the Regional Library of Medicine (Bireme), the electronic databases Medical Literature Analysis (Medline), Latin American and Caribbean Literature in Health Sciences (Lilacs) and Scientific Electronic Library Online (SciELO).

## DISCUSSION AND CONSIDERATIONS

Of great public health importance, breast cancer, considered to have the highest incidence, is the most commonly detected neoplasia and the main cause of cancer death in the female population worldwide.<sup>[2]</sup>

From the present bibliographic survey, it was verified the magnitude of breast cancer and how much lifestyle factors can influence its occurrence; with the increase in the number of evidences in the literature regarding this theme, it is possible to infer that there is an intimate relationship between changes in life behavior and the survival of patients after the diagnosis of the disease.<sup>[12]</sup> It is important to note that even research involving oncogenesis shows epigenetic factors as responsible for methylation errors in certain chromosomes, where again the relevance of a healthy lifestyle becomes important, as it minimizes these metabolic and/or genetic errors.<sup>[13]</sup>

There is a lot of evidence in the literature that declares the benefits of changing the lifestyle of cancer patients, among which the recommendations proposed by the World Cancer Research Fund (WCRF) stand out, which guides cancer patients to follow prevention guidelines disease, such as diet suggestions, physical activity, body weight reduction measures. These recommendations have a brief informative profile and aim to improve the behavior of people diagnosed with cancer, including breast cancer, through the theory of habit and the provision of advice on a healthy lifestyle based on evidence.<sup>[14]</sup>



Discussing the preventive aspects of breast cancer is quite complex, since it involves multiple risk factors, which make it difficult to control the disease. The risk factors are divided into non-modifiable factors: genetic predisposition, advanced age, reproductive and hormonal characteristics, and modifiable factors, which are related to behavioral and / or lifestyle issues such as sedentary lifestyle, dietary option, smoking and alcoholism.<sup>[15]</sup>

Dietary factors are responsible for 30% to 40% of breast cancer cases, and therefore the need to observe eating habits and encourage health professionals to increase the consumption of fruits, vegetables, greenery and decrease consumption of processed foods, refined flours, bad fats and sugar.<sup>[16]</sup>

The bioactive compounds present in foods of vegetal origin in the majority, can act in all the stages of the carcinogenesis process playing a chemopreventive role, remembering that an adequate diet with several antioxidant and anti-inflammatory nutrients is considered the first weapon in the fight against cancer.<sup>[16]</sup> Among the bioactive compounds present in food, polyphenols are the most comprehensive class and have numerous beneficial properties to health, being one of the biggest research topics.<sup>[17]</sup>

Some prospective studies provide information on the antioxidant properties of carotenoids (bioactive compounds), vitamin E, and the role of vitamin A in cell differentiation, stating that their use may be associated with a reduced risk of breast cancer. Bearing in mind that the reduction of antioxidant defenses or the damage caused by free radicals in the body may be involved with the development of neoplasms, this effect being potentially prevented through the consumption of antioxidants, which are found mostly in fruits and vegetables.<sup>[16]</sup>

For patients undergoing chemotherapy, it is already known that some antioxidant nutrients, such as vitamins A, E and C, minimize the toxicity produced by antineoplastic drugs and make it possible to control tumor growth, but this control is less efficient than drugs antineoplastic.<sup>[16]</sup> By associating the consumption of these vitamins with chemotherapy, the expected effect can be achieved with fewer side effects.<sup>[18]</sup>

However, it is worth mentioning that studies do not demonstrate the efficacy and safety of these antioxidant substances, when used in isolation, but in conjunction with food, which establishes synergism between them; and that during chemotherapy, the use of capsules with these assets should not be encouraged, since in high doses they may have an action contrary



to that of chemotherapy, whose objective is to induce oxidative stress in cancer cells to destroy the tumor; therefore, interfering with this mechanism of action of the drugs will damage the response of the treatment.<sup>[18]</sup>

There is much evidence that links obesity with the development of breast cancer, this is because this condition increases the production of pro-inflammatory cytokines produced by adipose tissue, which favors activation of cell proliferation, inhibits apoptosis and induces angiogenesis; in addition, the obese state can alter the metabolism of sex hormones, producing aromatases that act in the conversion of androgen hormones into estrogens, noting that the increase in circulating estrogen is a direct risk factor for the development of breast cancer.<sup>[19]</sup>

There are several equations to estimate the individualization of chemotherapy doses, which are generally based on the current body mass, ideal body mass and/or body surface area (BSA), the latter being the most suggested by studios, since it establishes a standard dose able to minimize variations between patients.<sup>[20,21]</sup> Some authors warn that using the current weight to calculate the dose of chemotherapy in obese patients can result in wide toxicity, and it is necessary to adapt the doses in this type of patient with high frequency, especially in case of drugs with a narrow therapeutic index. In clinical practice, it is common for obese patients to start treatment with a dose and in the course of it have severe dose reduction due to toxicity, which can compromise the response of the therapy.<sup>[22]</sup>

Regular physical activity is related to reducing the risk of breast cancer by up to 30%, in addition to helping the control of overweight and physical inactivity, which are risk factors for the development of numerous diseases and also favor the control of hormones that act in the development of breast cancer.<sup>[23]</sup>

For patients undergoing breast cancer treatment, regular physical activity can reduce the chances of relapse, in addition to preserving physiological, metabolic and psychological functions. During the treatment phases (surgical and/or chemotherapy) it helps in maintaining weight, neuromuscular function, combats states of fatigue and cachexia,<sup>[24]</sup> also collaborating to improve mood, well-being and mental health.

The triad healthy eating, regular practice of physical activity and obesity control determines a very good prognosis for patients who had the disease or who are undergoing treatment,



showing that in addition to collaborating as a preventive factor, they benefit the treatment and act in an excellent way in the control of relapses and in the quality of life of these patients, greatly increasing their survival rate.

The study suggests that at the expense of the rush brought by modernity, bad lifestyle habits are becoming more and more present and contribute to diseases such as breast cancer taking on an epidemic character, corroborating the daily increase in the number of confirmed diagnosis cases. Thus, it becomes evident that conscious eating, regular physical activity and weight gain control are positive aspects in the prevention, treatment and prognosis of breast cancer.

In view of the relevance of the topic, it is expected that more papers will be published on it, so that it is gradually possible to spread in our society the importance of adopting a healthy lifestyle in our society to promote health and guarantee a better quality of life in the most diverse aspects.

### **Competing interests**

All the authors declare that do not have any competing interest which can interfere in their judgement of analysis and interpretation of results of this study.

### **Authors contributions**

All the authors participated in the design of the study, execution of the research and writing of the article.

Ana Laura Remédio Zeni Beretta – Participated in the conception, design and implementation of research, writing the article and final approval of the version to be published.

All authors read and approved the final manuscript.

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