

# Health-Related Quality of Life of Women with Breast Cancer Undergoing Radiotherapy: Integrative Literature Review

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*Qualidade de Vida Relacionada à Saúde de Mulheres com Câncer de Mama em Tratamento Radioterápico: Revisão Integrativa da Literatura*

Calidad de Vida Relacionada con la Salud de Mujeres con Cáncer de Mama Bajo Tratamiento con Radioterapia: Revisión Integrativa de la Literatura

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## ABSTRACT

**Introduction:** Breast cancer is the leading cause of death by cancer in Brazilian women. Radiotherapy is a therapeutic modality frequently used in the treatment of breast cancer. Although little invasive, it causes side effects, interfering in the Health-Related Quality of Life (HRQoL). **Objective:** To investigate the evidence about the HRQoL of women with breast cancer undergoing radiotherapy treatment. **Method:** Integrative review of the literature. The search for studies took place in August 2020 in the electronic databases: CINAHL and MEDLINE (PubMed). **Results:** The studies analyzed addressed the side effects of radiotherapy treatment and presented evidence of effective practices to minimize them and improve the HRQoL. The final sample consisted of 16 articles, from which three categories which influenced the Quality of Life were selected: adverse effects of radiotherapy (75%), integrative and complementary therapies (19%) and physical activity (6%). **Conclusion:** It is expected that the synthesis of the studies analyzed are instrumental to improve the professionals' clinical practice who provide care for women with breast cancer undergoing radiotherapy.

**Key words:** Quality of Life; Breast Neoplasms; Women; Radiotherapy.

## RESUMO

**Introdução:** O câncer de mama é a principal causa de morte por câncer em mulheres no Brasil. A radioterapia é uma modalidade terapêutica frequentemente utilizada no tratamento do câncer de mama. Apesar de pouco invasiva, causa efeitos colaterais, interferindo na Qualidade de Vida Relacionada à Saúde (QVRS). **Objetivo:** Investigar as evidências sobre a QVRS de mulheres com câncer de mama em tratamento radioterápico. **Método:** Trata-se de uma revisão integrativa da literatura. A busca dos estudos ocorreu no mês de agosto de 2020 nas bases eletrônicas de dados: CINAHL e MEDLINE (PubMed). **Resultados:** Os estudos analisados abordaram os efeitos colaterais do tratamento radioterápico e apresentaram evidências de práticas efetivas para amenizá-los e melhorar a QVRS. A amostra final foi constituída por 16 artigos, dos quais foram selecionadas três categorias que influenciavam a Qualidade de Vida: efeitos adversos da radioterapia (75%); terapias integrativas e complementares (19%); e atividade física (6%). **Conclusão:** Espera-se que a síntese dos estudos analisados forneça subsídios para a melhoria da prática clínica dos profissionais que prestam assistência às mulheres com câncer de mama em tratamento radioterápico.

**Palavras-chave:** Qualidade de Vida; Neoplasias da Mama; Mulheres; Radioterapia.

## RESUMEN

**Introducción:** El cáncer de mama es la principal causa de muerte por cáncer en mujeres en Brasil. La radioterapia es una modalidad terapéutica de uso frecuente en el tratamiento del cáncer de mama, aunque poco invasiva, provoca efectos secundarios, interfiriendo en la Calidad de Vida Relacionada con la Salud (CVRS). **Objetivo:** Investigar la evidencia sobre la CVRS de las mujeres con cáncer de mama sometidas a tratamiento de radioterapia. **Método:** Se trata de una revisión integradora de la literatura. La búsqueda de estudios se realizó en agosto de 2020 en las bases de datos electrónicas: CINAHL y MEDLINE (PubMed). **Resultados:** Los estudios analizados abordaron los efectos secundarios del tratamiento con radioterapia y presentaron evidencia de prácticas efectivas para paliarlos y mejorar la CVRS. La muestra final estuvo conformada por 16 artículos, de los cuales se eligieron tres categorías que influyeron en la Calidad de Vida: efectos adversos de la radioterapia (75%); terapias integradoras y complementarias (19%); y actividad física (6%). **Conclusión:** Se espera que la síntesis de los estudios analizados proporcione subsidios para mejorar la práctica clínica de profesionales que brindan asistencia a mujeres con cáncer de mama sometidas a radioterapia.

**Palabras clave:** Calidad de Vida; Neoplasias de la Mama; Mujeres; Radioterapia.

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## INTRODUCTION

Breast cancer is the most common type diagnosed and the leading cause of death by neoplasm among women, its incidence is second only to non-melanoma skin cancer<sup>1</sup>. Typically, the choice of the treatment for this pathology is based in the anatomopathological characteristics, tumor staging, age, clinical conditions, preferences of the patient<sup>2,3</sup>.

Among the most common modalities of breast cancer treatment, adjuvant radiotherapy accounts for 49%<sup>4</sup>. Although little invasive, it causes adverse events, the most recurrent are: radiodermatitis, skin darkening, pruritus, desquamation, local pain, axillary discomfort, and fatigue. These symptoms impact the overall health, affecting physical, emotional, psychosocial aspects and the Health-Related Quality of Life (HRQoL)<sup>5-9</sup>.

Quality of life (QoL) is defined as “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, expectation, standards and concerns”<sup>10</sup>. It involves multidimensional aspects related to physical well-being in addition to social, spiritual, psychological, and subjective angles<sup>11</sup>.

Therefore, the study was carried out to summarize the knowledge able to offer elements to improve the clinical practice of the professionals providing care to women with breast cancer in radiotherapy treatment with potential positive impact in their HRQoL.

The aim of the study, therefore, is to investigate the available evidences on the national and international scientific literature about HRQoL of women with breast cancer in radiotherapy treatment.

## METHOD

An integrative review of the literature with the following steps: elaboration of the research question, investigation of the literature, evaluation of the studies included, categorization, interpretation and synthesis of the results<sup>12</sup>. The strategy PICO was utilized to elaborate the research question, where “P” stands for the population of the study (women with breast cancer); “I”, intervention investigated or variable of interest (radiotherapy); “C”, comparison with another intervention (not applicable in this study) and “O”, outcome of interest (change of HRQoL). Thus, the guiding question was: what are the available evidences in the national and international literature about HRQoL of women with breast cancer in radiotherapy treatment?

The search took place on August 2020 in the electronic databases: CINAHL and MEDLINE (PubMed). The

key words were selected and checked in the databases following MeSH Database indexation: “quality of life”, “women’s health”, “breast neoplasm” “solid tumors” “radiotherapy”; “femininity”; “Chronic disease”; “adverse effects” and the non-controlled descriptor “solid tumors” for the database CINAHL. The Boolean operator AND was utilized to ensure the broad search of the articles and a new descriptor was introduced as a rule for cross-checking to refine it when the search revealed more than 200 articles<sup>13</sup>. With this strategy, all possible combinations among the descriptors in each database were addressed.

Two independent reviewers analyzed fully and selected the articles in compliance with pre-defined criteria of articles related to HRQoL of women with breast cancer in radiotherapy treatment in English, Portuguese and Spanish, and addressing the construct QoL in general: “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, expectation, standards and concerns”<sup>10</sup>, or encompassing one of these three aspects: fatigue, sexuality or body image, considering that overall are the most affected domains during radiotherapy treatment. The case-report studies were excluded due to low methodological rigor.

The instrument of Nicolussi<sup>14</sup> consisting of identification of the publication, evaluation criteria of studies of QoL and methodological characteristics was utilized to extract the data of the selected studies. The studies evaluation and identification of strength and evidence followed the classification proposed by Melnyk and Fineout-Overholt<sup>15</sup>.

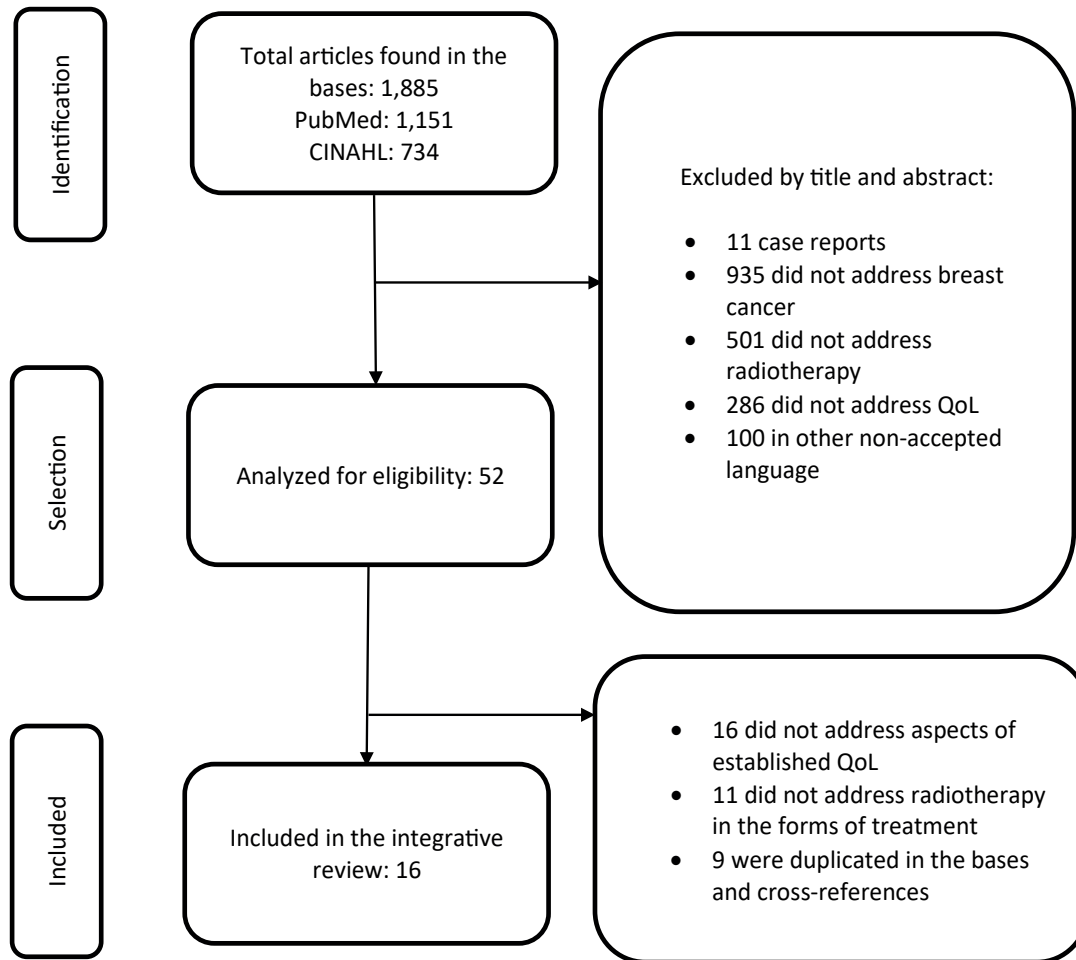
## RESULTS

Upon the search, 1,885 articles were found, resulting in the final sample of 16 articles. Figure 1 shows the process of selection of articles of this integrative review according to the methodology of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)<sup>16</sup>.

The characterization of the 16 studies included in the sample is shown in Chart 1.

All the 16 studies of the sample (Chart 1) are in English. Among the countries where the investigation took place, stand out the United States with predominance of three (18.8%) of the researches, followed by Brazil with two (12.5%) publications and Poland, United Kingdom, Egypt, Singapore, Korea, Canada, Austria, Turkey, Iran, Morocco, and Australia (11) with one study each, accounting for 68.7% of the rest of the sample. All the continents are represented which shows the relevance of this theme.

Even without limitation of the period during the selection regarding the year of publication, studies between



**Figure 1.** Flowchart of the studies included in the integrative review according to the databases  
**Caption:** QoL = Quality of life.

2004 and 2019 were found, with great concentration in 2017 and 2018 (18.8%) each. Six studies (37.5%) were conducted in 2006, 2009 and 2012, being two (12.5%) in each year. For the other years, one article per year was published, totaling the remaining 25%.

Six studies (37.5%) were cross-sectional, analytic, observational, two (12.5%) were controlled and randomized, two systematic reviews and two prospective exploratory, representing 25% of the sample, the remaining 25% consisted of one non-controlled and non-randomized, one pilot-study, one literature review and one cohort study.

Four studies had strong evidences, being two systematic reviews (level I) and two studies were controlled and randomized with experimental design (level II). One study had moderate level (level III), being one study well designed without randomization. Weak evidences were found in 11 well designed cohort and case-control studies: three (level IV) and eight (level VI) from a single descriptive study.

Most of the studies attempted to investigate the HRQoL determinant factors and targeted to some type of intervention to improve it or to minimize the symptoms. Chart 2 presents the synthesis of the data about the objective, main results and conclusions of the articles analyzed.

## DISCUSSION

The themes of the articles were subdivided in three categories for better understanding of the results: “adverse events of radiotherapy”, accounting for 75% of the total; “integrative and complementary therapies” (19%) and “physical activity” (6%). The batch of English articles show the interest of making accessible the knowledge produced.

### CATEGORY 1. ADVERSE EVENTS OF RADIOTHERAPY

The studies of this category address the adverse events of radiotherapy treatment broadly and their impact on HRQoL; 12 (75%) of the studies analyzed

Chart 1. Characterization of the articles analyzed, Alfenas, Brazil, 2019

Authors/year	Title	Country	Language	LE
Senkus-Konefka e Jassem, 2006 <sup>17</sup>	<i>Complications of breast-cancer radiotherapy</i>	Poland	English	VI
Gulluoglu et al., 2006 <sup>18</sup>	<i>Factors related to post-treatment chronic pain in breast cancer survivors: the interference of pain with life functions</i>	Turkey	English	IV
Alicikus et al., 2009 <sup>19</sup>	<i>Psychosexual and body image aspects of quality of life in Turkish breast cancer patients: a comparison of breast conserving treatment and mastectomy treatment and mastectomy</i>	United Kingdom	English	VI
Sbitti et al., 2011 <sup>20</sup>	<i>Breast cancer treatment and sexual dysfunction: Moroccan women's perception</i>	Morocco	English	IV
Alcântara-Silva et al., 2013 <sup>21</sup>	<i>Fatigue related to radiotherapy for breast and/or gynaecological cancer: a systematic review</i>	Brazil	English	I
Begovic-Juhant et al., 2012 <sup>22</sup>	<i>Impact of body image on depression and quality of life among women with breast cancer</i>	USA	English	VI
Sundaresan et al., 2015 <sup>23</sup>	<i>Patients' perceptions of health-related quality of life during and after adjuvant radiotherapy for T1N0M0 breast cancer</i>	Australia	English	VI
Shandiz et al., 2017 <sup>24</sup>	<i>Investigating the quality of life and the related factors in iranian women with breast cancer</i>	Iran	English	IV
Oberguggenberger et al., 2017 <sup>25</sup>	<i>Self-reported sexual health: Breast cancer survivors compared to women from the general population - an observational study</i>	Austria	English	VI
Rim et al., 2017 <sup>26</sup>	<i>An assessment of quality of life for early phase after adjuvant radiotherapy in breast cancer survivors: a Korean multicenter survey (KROG 14-09)</i>	Korea	English	III
Cheng et al., 2018 <sup>27</sup>	<i>Quality of life of elderly patients with solid tumours undergoing adjuvant cancer therapy: a systematic review</i>	Singapore	English	I
Mortada et al., 2018 <sup>28</sup>	<i>Comparing health-related quality of life among breast cancer patients receiving different plans of treatment, Egypt</i>	Egypt	English	VI
Cook et al., 2004 <sup>29</sup>	<i>Healing touch and quality of life in women receiving radiation treatment for cancer: a randomized controlled trial</i>	USA	English	II
Sturgeon et al., 2009 <sup>30</sup>	<i>Effects of therapeutic massage on the quality of life among patients with breast cancer during treatment</i>	USA	English	VI
Alcântara-Silva et al., 2018 <sup>31</sup>	<i>Music therapy reduces radiotherapy-induced fatigue in patients with breast or gynecological cancer: a randomized trial</i>	Brazil	English	II
Abed et al., 2019 <sup>32</sup>	<i>Impact of self-reported exercise on recounted levels of fatigue and anxiety in early-stage breast cancer radiation therapy patients</i>	Canada	English	VI

**Caption:** LE = Level of evidence.

were included<sup>17-28</sup>, standing out the conclusion that women who underwent this treatment are susceptible to somatic complications: heart, lung injury, complications in the shoulder and arm, secondary malignancies<sup>17</sup>, breast complications<sup>23</sup>, compromise of the sexuality<sup>19,20,25,26</sup>, and of other domains of HRQoL (pain<sup>18,26</sup>, anxiety, depression and sleeping disorder<sup>24,26</sup>, emotional and physical function<sup>24</sup>, fatigue<sup>21,23,26,28</sup>, and general and global

QoL<sup>27,28</sup>). In addition to attraction, femininity, and body image aspects<sup>22</sup>.

According to Oliveira et al.<sup>33</sup>, typically, heart injury described in the study<sup>17</sup> occurs in the long-term when it irradiates from the left breast and can affect the pericardium, myocardium, valves, conduction system and coronaries, affecting from 10 to 30% of the women<sup>31,34,35</sup>.

Chart 2. Synthesis of the data about objective, main results and conclusions of the articles analyzed, Alfenas, Brazil, 2019

Reference	Objective	Result	Conclusion
17	Review the contemporaneous knowledge about toxicity of radiotherapy	The radiotherapy treatment can be related to a series of somatic complications possibly affecting the QoL of the patient and the survival	Women submitted to radiotherapy for breast cancer must be followed up because the complications tend to appear after long periods
18	Evaluate the factors related to posttreatment chronic pain in breast cancer survivors	It was found that radiotherapy is significantly correlated with chronic pain $p=0.049$ ; OR: 2.60; CI 95% 1.07- 6.30)	The frequency of posttreatment chronic pain is considerably greater in patients receiving radiotherapy
19	Evaluate the aspects of the psychosocial QoL and body image in Turk patients with breast cancer: a comparison between the conservative treatment of the breast and mastectomy	41% of sexually active patients suffered deterioration of sexual functioning posttreatment	Psychosexual and body image problems are similar and occur in patients treated for breast cancer with mastectomy or conservative treatment
20	Evaluate prospectively the scale of the body image and the impact of cancer therapy of breast cancer in the sexuality of Moroccan women	100% of the individuals complain of deterioration of the symptomatology after the treatments and 3% of sexual disorders were detected post-radiotherapy	Breast cancer and its treatment can lead to significant difficulties of sexual functioning and sexual life
21	Evaluate the profile, criteria of evaluation and treatments for fatigue related to breast cancer and/or gynecologic in women submitted to radiotherapy	The level of posttreatment fatigue can be an important risk factor aggravated during radiotherapy and diminishing the QoL	Early detection of fatigue is relevant to propose correct treatments and achieve better clinical conditions, adherence, and continuity of the radiotherapy treatment
22	Investigate the perception of the body image, physical attractiveness, and femininity in a group of women with breast cancer	Radiotherapy treatment had significant effect in the attractiveness, femininity and body image as perceived by women survivors of breast cancer	The perceptions of the body image, attractiveness and femininity intensified the depression and diminished the QoL, especially during the first year of treatment
23	Evaluate the symptoms, functions, and pertinent attitudes during and after the adjuvant radiotherapy for breast cancer T1N0M0 and relate these classifications with the assessments of toxicity by the physicians	The physical, cognitive, social function, role play, global health and QoL were stable or deteriorated slightly during the treatment. The most evident symptoms were fatigue and problems of the breast	Most of the HRQoL worsened only slightly during radiotherapy and improved the basal levels in some months
24	Investigate the QoL and factors related in Iranian women with breast cancer	Radiotherapy had negative effect in the QoL with alterations in the domains: insomnia, fatigue, physical and emotional function	Breast cancer can affect the QoL of women. This calls for more attention to find effective forms of promoting and improving the QoL of these patients
25	Investigate the result of sexual health self-reported by women with breast cancer in the routine of posttreatment in comparison with women without former or current breast	Breast cancer and its treatments associated are frequently related with several physical and emotional changes that can cause harmful effects in the sexual health	The results demonstrate that the problems of sexual health persist in the survival of breast cancer and are significantly different than of the general population

to be continued

Chart 2. continuation

Reference	Objective	Result	Conclusion
26	Evaluate the QoL of breast cancer survivors in the critical initial phase until 3 years after the conclusion of adjuvant radiotherapy	There was change in the scale EORTC QLQ-BR23 in symptoms of pain, discomfort, anxiety, and depression; in the scale of functioning, sexuality was the most deteriorated	The categories of pain/discomfort and symptoms of pain in the arm, breast and body image improved, while anxiety, depression, and future perspective, it didn't
27	Summarize the evidence of QoL during and after adjuvant therapy in older patients with cancer	For older patients with breast cancer, there was no negative and significant change of global QoL. No prolonged adverse effect was noticed after the conclusion of the adjuvant treatment	QoL during and after adjuvant chemotherapy and/or radiotherapy is maintained or improved in most of the older patients with solid tumors
28	Measure the QoL of Egyptian women with breast cancer and compare the scores of HRQoL in groups of patients who receive different lines of treatment	Several domains of QoL of the Egyptian women with breast cancer are diminished and the group of patients in radiotherapy shows lower scores of the subdomains of the functional scale EORTC QLQ-C30	The findings of the study show that other factors as chronic diseases associated, and advanced stages of cancer can interfere in the QoL
29	Investigate the influence of the therapeutic touch in the HRQoL in women receiving radiotherapy for breast cancer	Individuals receiving the therapeutic touch during radiotherapy treatment had better HRQoL	Therapeutic touch improve the vitality, pain, and physical function among HRQoL items
30	Explore the effect of therapeutic massage in women with breast cancer during the treatment with radiotherapy and chemotherapy	The participants experienced a reduction of various harmed domains of the QoL after 3 weeks of therapeutic massage	Therapeutic massage was beneficial in improving the effects of the treatment, reducing the side effects of chemotherapy and radiotherapy, and improving the QoL
31	Analyze the influence of music therapy in reducing cancer-related fatigue in women with breast cancer or gynecologic during radiotherapy treatment	The women reported that music therapy made difference in their lives; they had a positive perception in the improvement of fatigue and reduction of stress	Music therapy was effective to reduce fatigue, depressive symptoms, and improvement of QoL
32	Investigate the impact of exercise self-reported over the levels of fatigue and anxiety pre (T0), middle (T1) and post (T2) radiotherapy in patients in initial stage of breast cancer	The patients in initial stage of breast cancer showed signs of fatigue and anxiety while those submitted to therapy of radiation, regardless of self-reported exercise measured with a questionnaire of physical activity	The exercise can reduce the anxiety during the treatment of radiation for patients in initial stage of breast cancer

**Captions:** QoL = Quality of live; HRQoL = Health related quality of life; EORTC QLQ = European Organization for Research and Treatment of Cancer Quality of Life Questionnaire; OR = Odds ratio; CI = Confidence interval.

Lung complications can occur early, among them, pneumonitis from four to 12 weeks after the beginning of the treatment whose main symptoms are: dry cough, dyspnea, low fever and late as fibrosis which onset from six to 24 months<sup>17</sup>.

The same study<sup>17</sup> concluded that the complications of shoulder and arm as symptoms of lymphedema, brachial plexopathy and impaired movement of the shoulder are the more problematic potentially affecting up to 90% of the women.

These women can also present secondary malignancies as contralateral breast cancer and skin, endometrium, colorectal and pancreas tumors. Ovary, lung, renal, uterine cancers, sarcoma, and melanoma are more frequent. The less frequent are rib fracture, chronic pain, axillary venous thrombosis, and bone necrosis<sup>17</sup>.

One integrative review corroborated the results of this category showing that women in radiotherapy treatment can have complications as restriction of the movements, upper brachial plexopathy, heart lesions and additionally,

cutaneous fibrosis, endometrial thickening, weight gain, bone calcium reduction and pain<sup>33</sup>.

The studies<sup>19,20,26</sup> revealed changes in sexuality, especially deterioration of the sexual activity. The reduction of the libido responds for this alteration, followed by loss of interest for the spouse, sexual unsatisfaction, reduction of sexual pleasure, dyspareunia, vaginal dryness, and difficulty to reach orgasm<sup>22</sup>, all of them potentially appearing soon after the radiotherapy treatment. Additionally, one of the articles analyzed<sup>26</sup> emphasizes that, further to radiotherapy, changes in sexuality can also be related with cultural issues because in some cultures it is considered a taboo.

Similarly, an Iranian study concluded that women who received adjuvant treatments simultaneously, radiotherapy and hormone therapy had higher percentage of sexual dysfunction in comparison with women receiving another adjuvant therapies<sup>36</sup>. Sebold et al.<sup>37</sup> reinforced that the decline of treatment related sexual activity can be associated with fatigue caused by radiotherapy and other specific physical symptoms.

In contrast, the same study did not find correlations between the radiotherapy treatment and reduction of the sexual activity. The study of Verenhitch et al.<sup>38</sup> which evaluated the sexuality of women with cancer and the interfering factors, concurring with this finding, showed that sexual dysfunction did not hold causal relation with radiotherapy.

It is widely known that women's sexuality can be quite complex after breast cancer with very problematic sexual changes. The impact of these changes have the potential of lasting for several years after the end of the treatment and can be associated with adverse physical and emotional events<sup>39</sup>.

Therefore, the effects of breast cancer over women's sexuality should not be evaluated alone, it is paramount to identify the association with the physical and psychosocial effects, which often are caused by the treatment and the pathological process and impact the HRQoL<sup>38,40</sup>.

For the other domains of HRQoL, the pain pointed out in the studies<sup>18,26</sup>, according to the literature, is the result of the association of radiotherapy with surgery potentially causing fibrosis in the scar. For that reason, radiotherapy treatment can be quoted as a predisposing factor for pain, associated with radiodermatitis too, occurring after the exposure to ionizing radiation, one of the most compromising factors of HRQoL<sup>9</sup>.

Anxiety, depression, and sleep disorder are symptoms related to radiotherapy treatment as the study<sup>26</sup> concluded. Anxiety is the uncertainty associated with the disease and treatment, further to being a complex and frequent symptom<sup>41</sup>. It can be associated with the activation of

pro-inflammatory cytokines, secondary to the destruction of tissues<sup>42</sup>. Sleep disorders are influenced by pain and depression<sup>43</sup>.

Similarly revealed in the studies<sup>23,26,28</sup>, fatigue is one of the most common and anguishing symptoms experienced by patients with cancer, compromising the QoL<sup>44</sup>. It is a tough manageable symptom because its physiopathological process is not fully known. Several factors are related to fatigue, there are indications that radiotherapy generates tumor hypermetabolism and its by-products together with high energetic expenditure cause this symptom<sup>9,45</sup>.

The alterations in the domains performance and role, self-care<sup>28</sup> and physical function<sup>24,28</sup> reflect the several symptoms already mentioned, experienced by the female during the treatment, since they are debilitating of the physical and emotional status and directly impacting the HRQoL.

The study<sup>27</sup> did not show correlation between radiotherapy treatment and overall QoL, nevertheless, another study by Nicolussi and Sawada<sup>46</sup> concluded that the patients who received radiotherapy had worse scores of the domains of overall and global QoL. This data corroborated the study<sup>28</sup> that showed that global and overall QoL of the patients who were in radiotherapy treatment had more changes.

A research<sup>22</sup> demonstrated that the perception of women survivors of breast cancer, radiotherapy treatment had no significant effect in attractiveness, femininity, and body image. However, in a systematic review of the literature of Rezaei et al.<sup>47</sup> about the factors that influence the body image of women with breast cancer, it has been shown that the residual effects of radiotherapy as change of the skin color in the local irradiated, chronic pain and lymphedema are factors significantly affecting the women's perception of their body image.

The findings of the current category show the importance of a holistic evaluation of the patient since the diagnosis, during the treatment and along its life, as the studies concluded that some effects tend to disappear after long periods of latency possibly causing progressive injuries. Measure the HRQoL allows to evaluate the impact of the treatment in the perception of the individual over its life and to what extent the changes resulting from the disease can interfere in their domains<sup>46</sup>.

## CATEGORY 2. INTEGRATIVE AND COMPLEMENTARY THERAPIES

This category included three studies<sup>29-31</sup> (19%) from the articles analyzed which addressed integrative and complementary therapies as music therapy, therapeutic massage, and Reiki to improve the symptoms caused by radiotherapy treatment.

In the last decades, complementary and alternative medicine is being utilized as support to the treatment of neoplasms, most of all to ameliorate the symptoms including strategies of care and therapeutic resources that play an important role in the global health<sup>48</sup>.

Regarding music therapy, the study<sup>31</sup> concluded that it is an effective strategy to reduce fatigue after 30 to 40 minutes sessions with classical, romantic, and baroque music selected by the investigator twice a week prior to the radiotherapy applications. A study developed in Taiwan with music was also effective for pain and fatigue after 5 30-minutes sessions, five times a week with Taiwan typical classical, religious and ballroom music<sup>49</sup>.

The study<sup>30</sup> showed that therapeutic massage (Swedish massage with soft and rhythmic touches and evolving to stronger touches) applied once a week for three consecutive weeks reduced the side effects and improvement of perception of HRQoL. 30-minutes therapeutic massage applied for five consecutive weeks, three times a week in a randomized sample improved the symptoms of anxiety, mood disorders, including anger, positive affection, reduction of physical symptoms as pain and fatigue<sup>50</sup>.

The therapeutic touch (Reiki), which allegedly improved the HRQoL (domains vitality, pain, and physical function) when applied in women with breast cancer in radiotherapy treatment was developed in three stages, the first after one third of the treatment was completed, four sessions in mid-treatment and the last session after the end of the treatment with approximately 30-minutes each session<sup>29</sup>.

The literature review by Tabatabaee et al.<sup>51</sup> showed that 20-40 minutes each session of therapeutic touch is beneficial to improve the mood, well-being, reduction of the pain, nausea and vomit, relaxation, spiritual elevation, improvement of sleep and increase of the functional capacity. However, in a cohort study developed by Younus et al.<sup>52</sup>, the therapeutic touch applied for five consecutive weeks after the sessions of radiotherapy three times a week during 15 to 20 minutes failed to show improvement of the aspects of the HRQoL (fatigue and mood).

The integrative therapies are low-cost, non-invasive procedures with minimum side effects and can be applied by a skilled professional within a humanized and integral treatment of the patient with cancer.

### CATEGORY 3. PHYSICAL ACTIVITY

It was included in this category, a study (6%) which associates the practice of physical activity with the reduction of the symptoms of anxiety and fatigue resulting from the treatment, its results concluded that physical activity shows improvement only in the symptoms of

anxiety, being utilized the International Physical Activity Questionnaire, where physical activity was connected to the daily life, work, recreational activities or regular exercises in the last seven days. Patients who exerted activities demanding more physical effort provoking hyperventilation were considered active<sup>32</sup>.

There is evidence that physical activity increases the perception of energy, reducing the feeling of fatigue, being considered an adjuvant therapeutic modality for coping and rehabilitation<sup>53,54</sup>. It was effective in the domains of anxiety and fatigue of women with breast cancer who were in radiotherapy treatment and most satisfactory in reducing the levels of anxiety<sup>55</sup>. None of these studies addressed the practice of physical activity similarly to the study included in this category.

Physical activity is not associated only with sports but to the regular practice of daily physical activities which can be a strong support to reduce the levels of anxiety during the adjuvant treatment being one alternative for the patients submitted to this type of therapy.

The low level of weak evidence in 11 studies possibly resulting in results biases is the limitation of the study. New studies are suggested with better level of evidence and strict design to attest the efficacy of the interventions and dissemination of practices interfering in the HRQoL of oncologic patients to ensure the migration of the knowledge and excellence of the practice to this population.

## CONCLUSION

The current review included articles from all the continents, showing comprehensiveness and relevance of studies on QoL of women in radiotherapy treatment. The studies reviewed addressed the side effects of the treatment and showed evidences of effective integrative and complementary practices to minimize them and improve the HRQoL. It is anticipated that the summary of the reviews offer contents to improve the professionals' clinical practice while caring for women with breast cancer in radiotherapy treatment with positive impact on their HRQoL.

## CONTRIBUTIONS

All the authors contributed substantially for the study conception and design, data collection, analysis and/or interpretation, wording, and approval of the final version to be published.

## DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.



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