The impact of mindfulness on mental health in cancer patients: an integrative review

O impacto da atenção plena na saúde mental de pacientes com câncer: uma revisão integrativa

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**ABSTRACT**
This article explores the effectiveness of Mindfulness-Based Interventions (MBIs) in psycho-oncology, specifically targeting the reduction of depressive and anxious symptoms in cancer patients. It investigates short-term efficacy for anxiety and the uncertainty of long-term...
depression treatment. The study also examines the feasibility of internet-based MBIs for patients with limited in-person access, emphasizing the importance of a strong therapeutic alliance. Moreover, it underscores understanding therapeutic factors and personalized approaches for various patient groups. Using PubMed, articles with keywords "Mindfulness," "AND," and "Cancer" were searched, including those published between 2018 and 2023 in Portuguese and English. Exclusions comprised reviews, books, or irrelevant documents. From 105 samples, 32 were carefully selected, resulting in 20 articles. Analyzing 20 articles on MBIs in oncological patients' mental health revealed relative improvements in depression, anxiety, and sleep quality. Short-term stress resolution was noted, but long-term efficacy was diminished. Gender-wise, women exhibited greater mindfulness adherence and efficacy. Mindfulness interventions offer short-term relief for anxiety and depression, with less robust long-term effectiveness. Adherence, acceptability, and engagement play pivotal roles. Mindfulness proves cost-effective, accessible, and applicable across care stages. Further long-term studies are needed to assess its cost-effectiveness in cancer patient healthcare, regardless of gender.

**Keywords:** psycho-oncology, anxiety, depression, mindfulness.

### 1 INTRODUCTION

Mindfulness-Based Interventions (MBIs) have shown to be evidence-based group psychological treatments in the field of oncology, resulting in the reduction of depressive and anxious symptoms. Although they have proven more effective in short-term acute symptoms in...
anxiety patients, the long-term effectiveness of these interventions in treating depressive patients is still questioned.1

An effective alternative for cancer survivors with limited access to in-person psychological treatment is Internet-based MBI, which can alleviate stress and provide a more accessible intervention. However, concerns arise about the possibility of developing a strong therapeutic alliance in the practice of online MBIs.1, 2

Furthermore, gaining knowledge about therapeutic factors associated with treatment outcomes is necessary to improve MBIs. Such practices have been increasingly integrated into cancer treatment to alleviate psychological distress and promote emotional and physical well-being of patients.3

A challenge faced is the resistance of some male patients to mindfulness-based interventions, while female breast cancer survivors have shown more openness to treatment. This underscores the importance of approaches that cater to the specific needs of different patient groups.4

Since the publication of the most recent comprehensive meta-analysis on MBIs in cancer in 2012, the number of published studies has more than doubled, highlighting the growing use of these interventions in psycho-oncology. To assess the effectiveness of these interventions, a systematic review and meta-analysis of randomized clinical trials (RCTs) were conducted, testing their efficacy in measures of psychological distress (primary outcome) and other health outcomes in cancer patients and survivors.5

Results indicated that approximately one in three cancer patients experiences high psychological distress. Thus, mindfulness-based interventions have proven effective in reducing this distress, especially in this patient group. However, availability and flexibility of these interventions remain challenges, potentially impacting participation of patients with late-stage symptoms such as fatigue or pain.6

A strategy to address this challenge is offering mindfulness-based interventions online, providing greater accessibility and reach to patients. However, evaluating the cost-effectiveness of this approach and considering how it can be implemented in public health to ensure easy patient access is necessary.6

In the specific case of breast cancer, which is the most common cancer among women, diagnosis and treatment can significantly affect quality of life, leading to symptoms such as sleep disturbances, depression, and anxiety. In this context, the mindfulness-based stress reduction program shows promise, aiming to develop nonjudgmental awareness and acceptance of each moment, which can benefit patients with mood disorders and chronic pain.4
Studies have demonstrated that mindfulness treatment is as effective as conventional treatment in improving physical function in early-stage breast cancer patients receiving adjuvant chemotherapy. Additionally, practices like mindfulness have shown promising results in reducing anxiety and depression, improving overall physical and mental health and quality of life in these patients.\(^7,8\)

Mindfulness-based interventions have shown to be particularly effective for cancer patients, contributing to improved concentration and attention. Self-help interventions have been an accessible alternative for patients who resist in-person therapy.\(^8\)

Considering that cancer can cause unwanted side effects, affecting perceived stress and patients’ mindfulness, integrating nonpharmacological complementary approaches, such as mindful breathing, can be useful in reducing stress and promoting well-being during treatment.\(^9\)

Furthermore, with the development of positive psychology, research on post-traumatic growth in cancer patients has gained increasing attention. Effectively increasing levels of post-traumatic growth and improving quality of life for these patients is an important goal to achieve.\(^10\)

Future studies should explore the long-term association between mindfulness, anxiety, and depression in adult cancer patients, as well as its effectiveness in different cancer patient populations, using active controls for comparison. Continuous research in this field is essential to enhance mindfulness-based interventions and provide better outcomes for cancer patients.\(^11\)

2 RESULTS

Regarding oncology patient symptoms, depression, anxiety, and cancer-related fatigue are the most commonly reported symptoms during the course of this disease. Therefore, the use of Mindfulness-Based Interventions (MBIs) has become a possibility among cancer patients, especially women with breast cancer. Thus, based on analyses of articles from the PubMed platform, the samples varied due to different stages, types, and cancer treatments. Other variables considered included the history of mental pathology, prior knowledge of MBIs, and use of antidepressant or anxiolytic medications.\(^12\)

Typically, breast cancer patients respond effectively to treatment when alternative methods are utilized. MBIs are likely to reduce breast cancer symptoms compared to other treatments (control, usual care, nutritional intervention, metacognitive), improving depression scores, fatigue, and cognitive aspects. These findings demonstrate the need for greater availability of alternative treatments for breast cancer symptoms, which could reduce intervention costs and also complement usual treatment.\(^7\)
Moreover, a hurdle for the performance of this therapy is the time required for a considerable improvement in the patient's clinical condition. Thus, an intervention was carried out through a mindfulness-based cancer recovery program, which showed immediate clinical improvement that was maintained throughout the entire month.\textsuperscript{11}

As previously addressed, cancer patients experience intense psychological distress due to fear of poor prognosis. Thus, anxiety and depression symptoms are present daily, and in seeking to improve their quality of life, patients may opt for MBIs. Therefore, even with the often-existing difficulty of travel in the patient's routine, they can engage in therapy, which offers remote treatment options with better cost-effectiveness.\textsuperscript{13}

Thus, relevant aspects regarding the use of this intervention modality are acceptance (starting the intervention) and adherence (receiving an intended dose of the intervention), which are tracked with data from therapy websites. The most reported registration measures related to better treatment outcomes are usage frequency (e.g., number of logins), duration of usage (such as the duration of each login), and activity (i.e., the number of completed exercises). While different usage patterns can be beneficial for clinical treatment, high activity levels are beneficial.\textsuperscript{13}

Furthermore, regardless of the neoplastic nature, patient and family suffering, especially spouses, is inevitable, especially regarding incurable neoplasms like metastatic non-small cell lung cancer. The burden of diagnosis leads to psychological and spiritual suffering, predicting worse patient survival. Thus, MBIs were an alternative with low to moderate effects on spiritual well-being of lung cancer patients and their spouses, possibly being on par with 8-week interventions conducted by psychiatrists and psychologists, as proposed by Milbury.\textsuperscript{10}

Meta-analyses have shown the benefits that mindfulness-based interventions (MBIs) have on oncology patients and survivors with anxiety and depression.\textsuperscript{12} Similarly, in a study conducted by Liu W. et al\textsuperscript{7} (2022) on early-stage breast cancer patients, increased effectiveness of mindfulness-based interventions compared to other conventional treatments was demonstrated.

Additionally, no divergence in the effectiveness of different types of MBIs on cancer patients was identified.\textsuperscript{5} Thus, when considering mindfulness-based interventions, it can be added that breast cancer patients who participated in this study showed significant improvement in anxiety and depression over the course of a year, along with elevated levels of post-traumatic growth.\textsuperscript{10} As observed in the meta-analysis by Zhang Z. et al\textsuperscript{13} (2022), which demonstrated that 3,476 cancer survivors, in addition to elevated levels of post-traumatic growth and positive mental states, also experienced relief from depression, anxiety, stress, and fatigue.
Furthermore, it is evident that mindfulness-based interventions promote improvements in the health of oncology patients, both for breast cancer\textsuperscript{7,10,12} and head and neck cancer,\textsuperscript{13} as these are cancers primarily affecting the female population. It was observed that men are more resistant to the mental illnesses resulting from cancer treatment, and thus tend to be less receptive to mindfulness-based interventions, yielding fewer positive results in this population.\textsuperscript{11} The improvements observed, particularly in women, encompass psychosomatic symptoms such as anxiety and depression primarily, but also influence physical function, self-reported fear of cancer recurrence, fatigue, and sleep disturbances.\textsuperscript{5,7}

Regarding patients’ quality of life, there was divergence among the analyzed studies, as Cillessen L. et al\textsuperscript{5} (2019) stated that no effects were found for measures of quality of life or symptoms of post-traumatic stress disorder. While other authors report that their research found mindfulness-based interventions to succeed in improving the quality of life of the patients analyzed.\textsuperscript{7,13}

Furthermore, it is important to mention that in some studies, mindfulness-based interventions have shown greater efficacy in anxiety symptoms than in depression.\textsuperscript{5,11,12} Thus, the analysis conducted by Oberoi S. et al\textsuperscript{11} (2020) demonstrated that tangible reductions only occurred in short- and medium-term anxiety symptoms. This study also reported that the severity of long-term anxiety and depressive symptoms did not effectively decrease in the MBI treatment of cancer patients who participated in the research.\textsuperscript{11}

Additionally, Cillessen L. et al\textsuperscript{5} (2019) also highlighted that MBI establishes greater significance in the treatment of anxiety and depression in cancer patients when initiated at the onset of symptoms, contrary to the National Comprehensive Cancer Network guidelines, which recommend treatment only when distressing symptoms are already exacerbated.\textsuperscript{5}

Based on the evaluated articles, the consequences of mindfulness on short-term anxiety did not differ due to the patient’s characteristics, intervention, or study analyzed. Therefore, the short-term benefits of mindfulness on anxiety did not depend on cancer type or treatment stage. These results suggest that the examined mindfulness-based interventions may result in the reduction of short-term anxiety in adults, regardless of cancer type or treatment stage.\textsuperscript{14} Moreover, the association of mindfulness with reductions in short-term anxiety was not limited to group sessions; instead, anxiety reduction was marginally greater when mindfulness was delivered in an individual setting.\textsuperscript{10,11} Longer group sessions can be challenging for patients with cancer-related complications or undergoing active treatment.\textsuperscript{7,14}

On the other hand, although MBI provides modest effects on cancer patients with anxiety, depression, and quality of life in the long term,\textsuperscript{5,7,11} it is notable that these data can be
reversed with reinforcement or follow-up sessions after the intervention, thereby increasing the durability of MBI effects.\textsuperscript{11} As mindfulness is a successive skill improvement technique, reinforcement sessions can offer patients the opportunity to master challenging skills and enhance mindfulness for effective utilization of benefits seen from mindfulness-based interventions.\textsuperscript{10,11,14} This technique allows for efficacy in the newly diagnosed and benefits in aspects such as personal growth and changes in healthy lifestyle,\textsuperscript{5} functioning as an adjunct for the well-being of these patients.\textsuperscript{7}

Furthermore, mindfulness-based interventions have also significantly improved symptoms such as fatigue, distress, and pain in oncology patients. Thus, it is reasonable for mindfulness-based interventions to be considered an effective treatment option to reduce short- and medium-term anxiety among adult cancer patients.\textsuperscript{5,7,11} Additionally, they are considered cost-effective, widely accessible, and without harm,\textsuperscript{5} and can even be used in specific situations of cancer treatment, such as reluctance to use medication.\textsuperscript{7}

Given the benefits presented by mindfulness-based interventions, they have also been explored by cancer patients diagnosed with depressive and anxiety disorders through the internet, using guided self-help interventions that include audio and text with educational information and exercises.\textsuperscript{12,14} This addresses the need observed by Oberoi S. et al\textsuperscript{11} (2020) for individual sessions tailored to the specificities of each cancer patient, with the option of shortening session times, varying availability of time slots, and reducing barriers for the debilitated. Cancer patients who are technologically savvy and have internet access may prefer telehealth-based mindfulness approaches, as individualized mobile app video-based appointments can be beneficial.\textsuperscript{5,11} Unfortunately, this benefits only those with internet access, excluding the more underserved and needy populations, posing a downside of the online MBI approach.\textsuperscript{12,14}

Thus, the 6-month treatment with online mindfulness-based interventions evaluated by Nissen E.R. et al (2019) demonstrated effectiveness in anxiety symptoms and well-being among cancer patients. Additionally, the results presented align with what was previously cited in this article, as there was not robust improvement in depressive symptoms presented by patients who participated in this experiment.\textsuperscript{12}

3 CONCLUSION

Mindfulness-based interventions have shown positive results in the treatment of short-term anxiety and depression, especially effective for long-term anxiety and well-being.\textsuperscript{12} Some robust studies confirm the reduction of long-term anxiety, attributing this effect to better stress...
tolerance. However, long-term effectiveness in treating depression has been less consistent. There are studies that contradict the idea of mindfulness benefits in the long term, spanning anxiety, depression, and quality of life.

Patient adherence and acceptability to mindfulness-based interventions have been a challenge, especially in cancer patients, where a significant portion do not engage in treatment. The therapeutic alliance can help patient engagement, contributing to treatment continuity. However, the therapeutic alliance alone has shown therapeutic effects in reducing stress and promoting well-being.

An individual mindfulness approach has been observed to be beneficial, with advantages in cost reduction and greater patient access to interventions, including online guidance. This practice enables the integration of mindfulness into health systems with a good cost-effectiveness ratio, increasing patient engagement.

Mindfulness offers a non-pharmacological, non-invasive, and complication-free alternative for emotional disorders, being relevant for cancer patients due to the side effects of many drugs. Additionally, mindfulness has proven to be a valid therapeutic intervention in palliative care.

Gender appears to influence individuals' response to mindfulness, with men showing less receptivity and responsiveness to interventions compared to women. In the short and medium term, mindfulness-based interventions have shown positive results in reducing anxiety and depression and improving quality of life in women.

For a more comprehensive understanding, more studies evaluating the long-term effects of mindfulness on cancer patients are needed, including cost-effectiveness analysis of this intervention for healthcare systems and services.
REFERENCES


