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## **The Effects of Mindfulness-Based Interventions on Mental Health, Quality of Life, and Physical Activity in Cancer Patients: A Literature Review**

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## **ABSTRACT**

**Introduction.** Cancer is a major burden in both the somatic and psychological dimensions. Oncology patients often experience high levels of stress, anxiety, depression, and reduced quality of life resulting from both the diagnosis itself and the course of treatment. In recent years, growing attention has been paid to psychosocial interventions that help patients cope with these difficulties. One such approach is mindfulness-based interventions (MBIs), including programs such as Mindfulness-Based Stress Reduction (MBSR). The aim of this paper was to review the literature on the impact of mindfulness-based interventions on mental health, quality of life, and physical activity among cancer patients.

**Materials and methods.** The literature review was conducted using scientific publications available in PubMed, ScienceDirect, and Wiley Online Library. A total of 23 publications concerning the use of mindfulness-based interventions in cancer patients were included in the analysis. These publications comprised clinical studies, randomized controlled trials, observational studies, and systematic reviews. The inclusion criteria covered studies on mindfulness interventions in oncology populations and the assessment of their effects on mental health, quality of life, or physical functioning.

**Literature review.** The analysis of available studies suggests that mindfulness interventions may offer significant benefits for the mental health of cancer patients. Many studies have reported reductions in symptoms of depression, anxiety, and psychological distress among

patients participating in mindfulness programs. Moreover, these interventions may contribute to improved quality of life by enhancing patients’ ability to cope with illness and by supporting emotional functioning. Some studies also reported a reduction in somatic symptoms such as fatigue and sleep disturbances. Available evidence further suggests a possible link between improved psychological well-being and greater motivation to engage in physical activity, although the number of studies directly investigating this aspect in oncology populations remains limited.

**Summary and Conclusions.** The findings of the reviewed studies indicate that mindfulness-based interventions may represent a valuable addition to comprehensive cancer care. These interventions may contribute to improved mental health, quality of life, and overall well-being in oncology patients. At the same time, the literature highlights the need for further high-quality research to better determine the long-term effects of mindfulness-based interventions, particularly with regard to physical activity.

**Keywords:** mindfulness, mindfulness-based interventions, cancer, quality of life, mental health, physical activity, oncology patients

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## **1. Introduction**

Cancer is one of the most complex medical and psychosocial challenges in modern healthcare, involving not only a physical burden but also serious psychological difficulties. Numerous epidemiological studies show that a cancer diagnosis and the course of treatment often lead to increased stress, anxiety, low mood, and feelings of loneliness in patients. [1]

Mindfulness-based interventions (MBIs) have developed into one of the key methods of supporting oncology patients in coping with these difficulties. Programs such as Mindfulness-Based Stress Reduction (MBSR), as well as other adaptations based on mindfulness and present-moment awareness, focus on developing the ability to observe one's thoughts, emotions, and bodily sensations without judgment. This, in turn, helps increase awareness of personal experience and improves the ability to regulate stress reactions. [10]

Systematic reviews and meta-analyses indicate that mindfulness interventions may have a meaningful impact on the psychological functioning of patients with cancer. In an analysis including several randomized clinical trials, MBSR was shown to significantly reduce symptoms of anxiety, depression, and loneliness in people living with cancer when compared with standard care. [1,5]

In addition, systematic data suggest that mindfulness-based programs may improve quality of life in oncology patients by regulating negative emotions and strengthening the ability to cope with the psychological consequences of illness. The literature also provides early evidence that these interventions may be associated with positive effects on emotional well-being, reduction of psychological distress, and better adaptation to the treatment process. [2,12]

The growing body of research on MBIs in oncology suggests that mindfulness may serve as a therapeutic strategy not only for improving mental health, but also more broadly for enhancing patient well-being by supporting their ability to cope with the challenges associated with cancer and its treatment. [10,12]

## **2. Materials and Methods**

This literature review was based on scientific publications available in PubMed, ScienceDirect, and Wiley Online Library. Articles concerning mindfulness-based interventions in oncology patients were included and assessed in the context of mental health, quality of life, and physical functioning.

The study material consisted of publications including clinical trials, randomized controlled trials, observational studies, and systematic reviews analyzing the use of mindfulness-based

interventions in patients with cancer. Many of the analyzed studies used programs such as Mindfulness-Based Stress Reduction (MBSR) or other mindfulness-based approaches aimed at reducing psychological distress and improving patients' psychological functioning.

In total, 23 scientific publications available in the above-mentioned databases were analyzed.

The inclusion criteria were as follows:

1. studies concerning mindfulness interventions or mindfulness-based programs,
2. participation of patients with cancer or cancer survivors after treatment,
3. assessment of the effects of these interventions on mental health, quality of life, psychological symptoms, or physical functioning.

The analyzed studies used a variety of research designs, including randomized controlled trials comparing mindfulness interventions with standard care or other forms of psychosocial support.

Some studies also assessed both short-term and long-term effects of the interventions.

Standardized psychometric tools were used to evaluate outcomes such as anxiety, depression, psychological distress, and quality of life in cancer patients. Many studies also examined changes in psychological well-being, fatigue, and overall patient functioning during or after mindfulness programs.

The literature analysis was based on a qualitative synthesis of the findings presented in individual publications. The main conclusions regarding the effects of mindfulness-based interventions on mental health, quality of life, and physical functioning in oncology patients were taken into account. Special attention was given to randomized trials and meta-analyses, which provide the most reliable evidence on the effectiveness of these interventions in cancer populations.

### **3. Literature Review**

#### **3.1. The role of mindfulness interventions in cancer care**

In recent years, increasing attention has been paid to the role of psychosocial interventions in comprehensive cancer care. Cancer and its treatment are often associated with long-term psychological distress, worsening emotional functioning, and reduced quality of life. In response to these problems, various forms of psychological support have been developed, among which mindfulness-based interventions occupy a particularly important place.[10,12]

Mindfulness is defined as consciously directing attention to present-moment experiences—both psychological and physical—in a non-judgmental and accepting way. In clinical practice,

mindfulness is most often delivered through structured therapeutic programs such as Mindfulness-Based Stress Reduction (MBSR), which include mindfulness meditation training, breathing exercises, and elements of mindful movement. [10,15]

The analyzed publications indicate that mindfulness interventions are increasingly used in oncology care as a component of psychological support. These programs may be delivered in group settings, individually, or online, which increases their accessibility for patients during treatment and after its completion.[6,13,20]

### **3.2. The impact of mindfulness on mental health in cancer patients**

One of the most frequently studied areas in mindfulness research is its effect on the mental health of oncology patients. Numerous clinical studies have shown that mindfulness-based interventions may help reduce psychological symptoms accompanying cancer. [4,18]

Cancer patients often experience elevated levels of anxiety and depression, which may result both from the diagnosis itself and from the course of treatment. The analyzed studies showed that participation in mindfulness programs may significantly reduce the severity of depressive and anxiety symptoms. [4,9,17]

Meta-analyses of randomized clinical trials indicate that mindfulness interventions conducted over several weeks may substantially reduce psychological distress and improve overall psychological well-being in cancer patients. In these studies, participants in mindfulness programs achieved significantly better scores on anxiety and depression scales compared with individuals receiving standard care. [4,13,14]

Some studies also demonstrated a reduction in feelings of loneliness among patients participating in mindfulness interventions. Loneliness is an important issue in cancer populations, since the disease often leads to reduced social contact and a sense of isolation. [1]

### **3.3. Reduction of psychological distress**

An important aspect of the impact of mindfulness on cancer patients' functioning is the reduction of psychological distress. A cancer diagnosis and the treatment process can be major sources of stress, affecting both mental and physical health. [10,12]

Programs such as MBSR were specifically designed to reduce stress by developing the capacity to consciously observe one's emotional and physical experiences. In the analyzed studies, participants in these programs often reported reduced emotional tension and an improved ability to cope with difficult feelings related to illness. [7,15,17]

Practicing mindfulness may also increase acceptance of illness-related experiences and reduce the tendency toward rumination, that is, the repetitive dwelling on negative thoughts and emotions. [7,12]

### **3.4. Mindfulness and quality of life in cancer patients**

Improving quality of life is one of the key aims of psychosocial interventions used in patients with cancer. The analyzed publications repeatedly emphasize that mindfulness programs may lead to meaningful improvements in quality of life in this population. [2,5]

Randomized clinical trials indicate that patients participating in mindfulness programs achieve higher scores on quality-of-life scales compared with those receiving standard care. This improvement mainly concerns emotional functioning and the ability to cope with illness-related difficulties. [2,5]

Some studies have also shown that mindfulness interventions may improve social functioning, increase life satisfaction, and enhance overall well-being. [12]

### **3.5. The effect of mindfulness on somatic symptoms**

Some of the analyzed studies also addressed the possible effect of mindfulness on physical symptoms associated with cancer and its treatment. In particular, symptoms such as fatigue, sleep disturbances, and chronic pain were investigated. [3,11,16]

Study findings suggest that participation in mindfulness programs may contribute to a reduction in cancer-related fatigue and fatigue associated with anticancer treatment. In addition, some studies reported improved sleep quality in patients taking part in mindfulness programs. [11,16,23]

The reduction of somatic symptoms may partly be related to improved emotional regulation and decreased psychological distress. [4,12,23]

### **3.6. Mindfulness and physical activity**

The analyzed publications also touch on the potential impact of mindfulness on health-promoting behaviors, including physical activity. Although the number of studies directly examining the effect of mindfulness on physical activity in oncology patients is limited, some research suggests a possible relationship between these phenomena. [19,21,22]

Improved mental health, reduced depressive symptoms, and lower stress levels may support greater motivation to engage in physical activity. The literature also suggests that mindfulness

may increase body awareness and improve emotional experiences related to physical effort. [19,21,22]

For this reason, many authors propose that mindfulness interventions may indirectly support physical activity by improving patients' psychological well-being. [21,22]

### **3.7. Limitations of the studies and directions for further research**

The analyzed publications also point to several limitations in the research on mindfulness interventions in cancer patients. The most commonly mentioned limitations include methodological differences between studies, variation in intervention protocols, and relatively small sample sizes in some clinical trials. [4,10,12]

Many authors also emphasize the need for further high-quality randomized clinical trials that would allow for a more precise assessment of the effectiveness of mindfulness interventions and their long-term impact on mental health and quality of life in oncology patients. [12,14,20]

## **4. Summary**

The findings of the reviewed publications indicate that mindfulness-based interventions constitute an important form of psychosocial support for patients with cancer. Evidence from clinical studies, randomized controlled trials, and systematic reviews suggests that participation in mindfulness-based programs, such as Mindfulness-Based Stress Reduction (MBSR), may lead to improvements in mental health outcomes, including reductions in anxiety, depression, psychological distress, and loneliness. These interventions have also been associated with improvements in quality of life, emotional functioning, and patients' ability to cope with the psychological burden of cancer and its treatment.

Some studies further suggest that mindfulness interventions may reduce physical symptoms related to cancer and its treatment, such as fatigue and sleep disturbances, which may contribute to better overall well-being. In addition, improved psychological well-being may indirectly support engagement in health-promoting behaviors, including physical activity, although direct evidence in oncology populations remains limited.

At the same time, the available literature presents several limitations, including methodological heterogeneity across studies, differences in intervention protocols, and variation in sample sizes. Therefore, further high-quality randomized controlled trials are needed to better determine the long-term effectiveness of mindfulness-based interventions and their potential role in supporting both psychological and physical outcomes in cancer patients.

## **Disclosure**

### **Author's contribution**

Conceptualization: [KP], [MP]

Methodology: [DS], [EC], [JB]

Check: [EC], [JBa], [MC],

Investigation: [MP], [KK], [JBa]

Data curation: [AC], [EC], [MC], [KP]

Writing - rough preparation: [AB], [DS], [MP]

Writing - review and editing: [JB], [AC]

Visualization: [DS], [MC], [AB]

Project administration: [KP], [KK], [JBa]

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### **Conflict Of Interest**

The authors declare no conflict of interest.

**All authors have read and agreed with the published version of the manuscript.**

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