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Application of mindfulness-based interventions – MBCT and MBSR – in depression treatment and relapse prevention

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Abstract

Introduction: Depression stands as a primary contributor to disability, prompting extensive exploration of treatment and prevention strategies. Recognizing the limitations of conventional approaches, the significance of effective non-pharmacological therapies, like psychotherapy, in managing mental health disorders is increasingly acknowledged. There's a growing interest in mindfulness-based interventions such as Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR). These interventions, which prioritize present-moment awareness and acceptance, target depression's mechanisms, such as rumination, while cultivating coping strategies and resilience. Mindfulness, with its comprehensive approach and capacity for self-regulation, emerges as pivotal in addressing

psychiatric conditions. This paper aims to provide a comprehensive evaluation of MBCT and MBSR's effectiveness in treating depression and preventing relapses.

Description of the state of knowledge: MBCT and MBSR exhibit promising potential in effectively managing and preventing depression. Moreover, they alleviate anxiety, emotional exhaustion, stress and psychological distress, while fostering improved coping with rumination, memory disturbances and emotional regulation.

Summary: Research indicates that incorporating MBCT and MBSR could offer a hopeful avenue for managing and alleviating the symptoms of depression and mental disorders, by addressing underlying factors which play a pivotal role in their development. To corroborate these encouraging results, additional randomized, large-scale, placebo-controlled trials are essential.

Keywords: mindfulness; depression; Mindfulness-Based Cognitive Therapy; MBCT; Mindfulness-Based Stress Reduction; MBSR

Introduction

Depression is a serious and commonly occurring mental disorder.[1,2] People impacted by it lose interest in activities that previously brought them pleasure and often experience persistent feelings of hopelessness and sadness.[3,4] However, depression does not only affect the emotional sphere. Individuals affected by this condition may exhibit various somatic manifestations, such as digestive problems or even chronic pain.[5,6] They also experience sleep disturbances, shortness of breath, or dizziness.[7]

At present, depression stands as the primary global contributor to disability, frequently originating during the adolescent period.[8] While the essential criteria for diagnosing this condition remain consistent across various age groups, research by F. Rice et al. suggests that the symptom profile of depression varies between adolescents and adults grappling with severe depressive disorders. According to their findings, adults with major depressive disorder (MDD) tend to experience more difficulties with concentration, anhedonia, and loss of interests. Conversely, teenagers often manifest vegetative symptoms like insomnia, fluctuations in appetite and weight, or decreased energy levels at a higher frequency.[9] B. Nardi et al. also maintain the position that the clinical presentation of MDD varies depending on the patient's age and gender. According to the researchers, somatic complaints, especially fatigue and headaches, are common symptoms of MDD in adolescents. Furthermore, MDD in

individuals during adolescence is characterized by a high rate of suicide attempts.[10] Over the past 15 years in the United States, suicide rates have seen a rise across all age demographics, with the most notable increase occurring among females aged 10–14 (200%).[11] According to the 2017 report from the Centers for Disease Control and Prevention (CDC), in the USA population (both genders, all ages, all races), listing the top 10 leading causes of death, suicide ranks second among individuals aged 10-14, 15-24 and 25-34 years old.[12] J. L. Luby et al. suggest that in preschool-aged children, sensitive symptoms of depression include feelings of sadness and/or irritability. Additionally, anhedonia, characterized by a lack of enjoyment in activities and play, is considered a distinctive symptom. Preschoolers with depression also tend to engage in significantly more destructive and suicidal play themes compared to children with other psychiatric disorders or those without any disorders.[13]

In the treatment of adolescent depression, the therapeutic approach typically involves a combination of psychotropic medications and psychotherapy. Cognitive-behavioral therapy (CBT) is often recommended as the initial treatment option, alongside cognitive Post-Rationalist approaches (PR).[14] Treatment for major depressive disorder in adults typically involves a combination of psychotherapy and medication.[15] Selective serotonin reuptake inhibitors (SSRIs) and serotonin-norepinephrine reuptake inhibitors (SNRIs) are often considered first-line treatments in clinical practice. However, a significant proportion of MDD patients do not respond adequately to these conventional antidepressants. Hence, ongoing research is focused on identifying adjunctive treatments to enhance therapeutic outcomes. These efforts aim to address the limitations of current pharmacological interventions and provide more effective, non-pharmacological management strategies for MDD.[16,17]

The review methodology involved gathering information on Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR) from PubMed and Google Scholar, focusing specifically on their application within the context of depression treatment and preventing relapses. The keywords ‘mindfulness’, ‘depression’, ‘Mindfulness-Based Cognitive Therapy’, ‘MBCT’, ‘Mindfulness-Based Stress Reduction’ and ‘MBSR’ were used in the search. In selecting the bibliography, we were guided by originality, substantive value, ethical conduct of research involving human participants and relevance.

The utilization of Mindfulness-Based Cognitive Therapy (MBCT) in preventing depression relapses and in the process of its treatment

Mindfulness-Based Cognitive Therapy is a well-structured, evidence-based therapeutic regimen blending cognitive therapy components with mindfulness techniques. It emerged as a response to the imperative of preventing depression relapses. MBCT primarily aims to equip individuals with a history of depression with the ability to mindfully observe their thoughts, emotions and bodily sensations, while also fostering adaptive responses to them.[18] MBCT offers a holistic approach to treating depression, which encompasses both preventing relapses and reducing current depressive symptoms. MBCT operates on the principle that recurrent depression frequently entails automatic reactions to negative thoughts and emotions. By engaging in mindfulness techniques like meditation, body awareness exercises, and controlled breathing, participants acquire the ability to recognize these automatic responses and develop constructive ways of addressing them.[19] Throughout MBCT sessions, individuals are encouraged to explore their thoughts and emotions with an open and accepting mindset. By engaging in consistent mindfulness exercises, participants can start identifying recurring patterns in their thinking and behavior that may exacerbate depression and gradually learn to modify them.[20]

In a study by J. D. Teasdale et al., researchers investigated the effectiveness of Mindfulness-Based Cognitive Therapy as a group intervention aimed at training individuals who had recovered from recurrent depression to disengage from negative thinking patterns that could lead to relapse. The study involved 145 recovered recurrently depressed patients who were randomly assigned to either continue with their usual treatment or to receive MBCT in addition to their usual treatment. Over a 60-week period, the researchers assessed relapse or recurrence of major depression. Results showed that MBCT significantly reduced the risk of relapse or recurrence for patients who had experienced three or more previous episodes of depression, which constituted 77% of the sample. However, for patients with only two previous episodes, MBCT did not have a significant effect on relapse or recurrence.[21] Coelho HF and colleagues reached similar conclusions based on a systematic review of four studies comparing MBCT plus treatment as usual (TAU) to TAU alone. The researchers concluded that MBCT represents a beneficial adjunct to TAU for individuals who have experienced three or more depressive episodes.[22]

The study conducted by Shih VWY and others aimed to investigate the effectiveness and cognitive mechanisms of Mindfulness-Based Cognitive Therapy in older adults with active depressive symptoms. Fifty-seven older adults (mean age: 70 years) with normal cognitive function and mild to moderately severe depressive symptoms participated in the study. They were randomly assigned to either the MBCT group or an active control group for an 8-week intervention. The MBCT group attended eight 2-hour weekly sessions and a one-day retreat focusing on various mindfulness exercises, discussions, homework analysis and psychoeducation. The active control group engaged in one-hour physical exercise sessions and standard health education with group discussions on specific topics such as fall prevention or chronic pain. Participants were assessed before and after the intervention using four outcome measures: the Hamilton Depression Rating Scale (HAMD), the Autobiographical Memory Test (AMT), the Ruminative Response Scale (RRS) and the Mindful Attention Awareness Scale (MAAS).[23]

Overgeneral autobiographical memory (AM) is a dysfunctional phenomenon closely associated with the severity and duration of depression. It involves a reduced ability to recall specific life events, instead recalling general summaries or repeated events. Reduced AM may lead to problems with problem-solving and goal attainment, reinforcing negative emotions. In older adults, these difficulties may be more pronounced due to natural declines in cognitive control and changes in information processing and emotional coping strategies.[24,25]

Rumination is a thinking pattern commonly observed in individuals with, depression, characterized by a focus on oneself, mood and problems rather than seeking constructive solutions. Ruminative responses to stress can predict the onset, recurrence, duration and severity of depressive episodes. In older adults, a tendency to ruminate may lead to more frequent, severe and prolonged depressive episodes, increasing susceptibility to health and cognitive problems. Ruminative thoughts can often arise automatically in response to negative emotions, which makes them challenging to regulate or suppress.[26,27] Using resting-state fMRI and graph theory, Zhang R and colleagues examined neural networks associated with rumination in MDD. They found altered network integration and segregation, which correlated positively with depression severity as measured by the Hamilton Depression Rating Scale. Disrupted nodal centralities were observed in regions linked to emotional processing and attentional control. Results suggest rumination reflects both disease-specific pathology and functional depressive symptomatology with evolutionary implications.[28]

The results of the abovementioned study conducted by Shih VWY and colleagues showed a significant reduction in depressive symptoms in both the MBCT and active control groups. However, only the MBCT group demonstrated significant improvements in autobiographical memory specificity, rumination, and mindfulness. In conclusion, both MBCT and the active control program led to reductions in depressive symptoms in older adults, but only MBCT showed improvements in dysfunctional thinking patterns and memory disorders commonly found in this age group of depressed patients. These findings provide empirical support for the theoretical foundations of MBCT and suggest that older adults with more severe depression and cognitive impairments may benefit more from the specific therapeutic effects of MBCT.[23]

In a study led by van der Velden AM and colleagues, the effectiveness of Mindfulness-Based Cognitive Therapy in reducing rumination and depression was investigated. The researchers conducted a randomized controlled trial involving 80 participants with recurrent depression. They compared the effects of MBCT with treatment as usual (TAU). Participants underwent fMRI scans during different mental states, including rest, mindfulness practice, and rumination, before and after the intervention. MBCT sessions consisted of psychoeducation combined with mindfulness meditation techniques over an 8-week period. The intervention aimed to teach participants skills to prevent depressive relapse by enhancing attention regulation and present-moment awareness. Results revealed that MBCT led to decreased connectivity between the salience network (SN) and the lingual gyrus during rumination. This neural change was associated with improved attention regulation to body sensations. Importantly, these neural changes mediated the reduction in depressive symptoms observed post-intervention. The study suggests that MBCT may modulate neurocognitive functioning during depressive rumination, offering a potential avenue for alleviating symptoms of depression by enhancing interoceptive awareness and attentional control. These findings underscore the importance of mindfulness-based interventions in managing recurrent depression.[29]

Tseng HW and colleagues conducted their literature review by searching electronic databases including Airiti Library, PsycINFO, CINAHL, Cochrane Library, PubMed/MEDLINE, ProQuest, and the Index of the Taiwan Periodical Literature System, covering articles up to December 2021. They identified a total of 1327 publications in Chinese and English languages, and subsequently screened titles, abstracts, and full texts using a three-stage procedure. This rigorous process led to the inclusion of 13 randomized controlled trials

(RCTs) in their analysis. The positive aspects of utilizing MBCT in MDD were highlighted throughout the study. Firstly, MBCT was found to significantly improve depression and suicidal ideation among patients with MDD. The therapy sessions, lasting 1.5-2.5 hours and conducted five times per week over an 8-week period, contributed to these positive outcomes. Moreover, the quality assessment of the included studies using the Modified Jadad Scale indicated relatively high-quality evidence supporting the efficacy of MBCT. The study emphasized the importance of MBCT in not only treating acute symptoms of depression but also in reducing the recurrence of MDD over time, making it a valuable therapeutic approach. Additionally, MBCT was noted for its reliance on intensive mental training, which encompasses focused attention practices and encourages acceptance of all experiences, leading to increased openness and acceptance. This aspect distinguishes MBCT from other psychotherapies and underscores its potential effectiveness in managing depressive symptoms. Overall, the study provided robust evidence supporting the beneficial effects of MBCT in addressing depression and suicidal ideation among patients with MDD, offering promising prospects for its clinical application. Moreover Tseng HW and colleagues also highlighted the concept of rumination as a key factor in maintaining depression. Researchers emphasize that MBCT offers a constructive approach to addressing rumination, described as a repetitive, uncontrolled and negatively balanced cognitive process, by teaching individuals to cultivate mindfulness.Through mindfulness practices, individuals become more aware of their thoughts and feelings, learning to accept them as mental activities rather than judgmental statements. This non-judgmental stance fosters a healthier relationship between thoughts and emotions, enabling individuals to shift their focus from repetitive thinking to the present moment. By providing a broader perspective, mindfulness meditation helps detach affective processes from negative thinking patterns. The regular practice of MBCT thus facilitates a reduction in ruminative thinking, ultimately lowering the risk of depressive relapse. This illuminates the transformative potential of MBCT in breaking the cycle of depression by fostering greater awareness and acceptance of one's internal experiences.[30]

The study conducted by Cladder-Micus MB and colleagues examined the long-term outcomes of Mindfulness-Based Cognitive Therapy for chronically treatment-resistant depressed patients over a 6-month follow-up period. They investigated the effects of MBCT on depressive symptoms, remission rates, quality of life, rumination, mindfulness skills and self-compassion in 106 outpatient participants. Results showed that depressive symptoms, quality of life, rumination, mindfulness skills, and self-compassion improved during follow-

up, with remission rates increasing further. Higher baseline levels of rumination predicted lower depressive symptoms and quality of life at the 6-month follow-up. However, no other predictors such as duration of current depressive episode, level of treatment-resistance, childhood trauma, mindfulness skills, or self-compassion were found. While all participants received MBCT, future studies with control conditions are needed to validate the findings. Overall, the study suggests that MBCT provides lasting clinical benefits for chronically treatment-resistant depressed patients, with higher levels of rumination predicting greater improvement in depressive symptoms and quality of life.[31]

Segal ZV and colleagues conducted a study to evaluate the effectiveness of an online version of Mindful Mood Balance (MMB), a web-based application delivering Mindfulness-Based Cognitive Therapy, compared to usual depressive care alone, for adults with residual depressive symptoms. Participants were recruited from primary care and behavioral health clinics at Kaiser Permanente Colorado, Denver, and outcomes were assessed over a 15-month period. The intervention group received MMB plus usual depression care, including 8 online sessions over 3 months with minimal coaching support, while the control group received usual depression care only. Primary outcomes measured reduction in residual depressive symptom severity, rates of depressive relapse, and rates of remission, while secondary outcomes included depression-free days, anxiety symptoms, and functional status. Results showed that participants receiving MMB plus usual depression care experienced significantly greater reductions in residual depressive symptoms, higher rates of remission, and lower rates of depressive relapse compared to those receiving usual depression care alone. Additionally, the MMB plus usual depression care group showed improvements in anxiety symptoms and mental functioning compared to the control group. These findings suggest that MMB, as a web-based treatment, could offer a scalable approach for managing residual depressive symptoms.[32]

Studies have demonstrated that MBCT is a beneficial therapy for individuals with a background of recurrent depression, aiding in decreasing the likelihood of relapse and enhancing overall mental well-being. This program is frequently provided as an adjunctive treatment alongside pharmacological interventions or as a standalone therapy for those who favor a mindfulness-based approach.

Mindfulness-Based Stress Reduction (MBSR) and mental health

Mindfulness-Based Stress Reduction is a structured program developed by Jon Kabat-Zinn that aims to reduce stress and promote overall well-being through mindfulness practices.[33] It typically involves mindfulness meditation, body awareness exercises and gentle yoga.[34,35] MBSR teaches individuals to cultivate moment-to-moment awareness of their thoughts, emotions, and bodily sensations without judgment. By becoming more present and aware, participants can develop greater resilience to stressors and enhance their ability to cope with various challenges in life. MBSR has been widely studied and has shown effectiveness in management of chronic pain, reducing stress, anxiety, depression and improving overall quality of life.[36,37,38]

In a study conducted in 2017 by Yang J and colleagues, the effect of Mindfulness-Based Stress Reduction therapy on work stress and mental health of psychiatric nurses was investigated. A total of 100 psychiatric nurses from three hospitals in Hunan Province, China, were randomly divided into intervention and control groups. MBSR therapy was implemented as a psychological intervention for the intervention group, while the control group received no intervention. Before and after the intervention, both groups were assessed using various scales including the Symptom Checklist-90 (SCL-90), Self-Rating Depression Scale (SDS), Self-Rating Anxiety Scale (SAS), and Nursing Stress Scale. Results showed significant reductions in SCL-90, SDS, SAS, and Nursing Stress Scale scores in the intervention group post-intervention, indicating a decrease in work stress, anxiety, depression, and other negative emotions. No significant changes were observed in the control group. The study concludes that MBSR therapy can effectively improve the mental health of psychiatric nurses by reducing work stress and negative emotions.[39]

In an exploratory study conducted by Janssen M and coworkers, the effects of Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy on employees' mental health were investigated. A systematic review was performed in October 2015, searching PsycINFO, PubMed, and CINAHL for studies on MBSR and MBCT effects. Twenty-four articles were identified, describing 23 studies, with 22 focusing on MBSR and 1 on MBSR combined with MBCT aspects. Despite the absence of exclusive MBCT studies, the review identified reductions in levels of depression among employees who participated in MBSR interventions, alongside other positive outcomes such as decreased emotional exhaustion, stress, psychological distress, anxiety, and occupational stress with MBSR. Additionally, improvements were observed in mindfulness, personal accomplishment, self-compassion, sleep quality and relaxation. The review suggests that MBSR may contribute to enhancing

psychological functioning in employees across various occupational sectors, aligning with the World Health Organization's definition of mental health.[40]

In a study conducted by Song Y and Lindquist R, the effectiveness of Mindfulness-Based Stress Reduction on depression, anxiety, stress and mindfulness in Korean nursing students was investigated. Fifty nursing students from KN University College of Nursing in South Korea were randomly assigned to either the MBSR group or a waitlist control group. Data from 44 students were analyzed, with the MBSR group participating in mindfulness meditation sessions for 2 hours weekly over 8 weeks, while the control group received no intervention. Standardized self-administered questionnaires were used to assess depression, anxiety, stress and mindfulness at baseline and at 8 weeks. Results showed significant decreases in depression, anxiety and stress, as well as increased mindfulness in the MBSR group compared to the control group.[41]

The study conducted by Serpa JG, Taylor SL, and Tillisch K investigated the effectiveness of MBSR among 79 veterans at an urban Veterans Health Administration medical facility. The MBSR course comprised 9 weekly sessions led by a clinical psychologist trained in MBSR principles, with participants engaging in various mindfulness practices such as meditation, yoga and body scans. Pre- and post-MBSR questionnaires were administered to assess changes in pain, anxiety, depression, suicidal ideation and physical and mental health functioning. Results showed significant reductions in anxiety, depression and suicidal ideation following MBSR training, accompanied by improved mental health functioning. Mindfulness skills learned during the course were found to play a significant role in improving depression, anxiety and mental health scores. However, pain intensity and physical health functionality did not exhibit significant improvements. Despite these positive outcomes, limitations included the lack of a randomized control group and longitudinal follow-up assessments, which could provide further insights into the lasting effects of MBSR. Nonetheless, the findings suggest that MBSR may serve as a valuable adjunctive treatment for anxiety and depression among veterans, potentially reducing the need for antidepressants and improving overall patient health outcomes.[42]

Research confirms that Mindfulness-Based Stress Reduction can have a positive impact on mental health by reducing symptoms of depression, anxiety and stress, while enhancing mindfulness levels. The effectiveness of MBSR has been observed across various populations, including nursing students or veterans, suggesting its universal applicability. These findings

suggest that MBSR may be an effective intervention in the field of mental health, both in academic and clinical settings, highlighting its value as a tool for improving mental well-being.

Summary

The efficacy of Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR) as adjunctive treatments for depression remains confirmed by various research. With pharmacological interventions limited by side effects and maximal dosages, alternative approaches are sought for managing depression and other mental health disorders. MBCT demonstrates significant improvements in depression and suicidal ideation among patients with major depressive disorder, while effectively reducing rumination — a factor correlated with depressive relapse. Notably, MBCT fosters mindfulness, enabling individuals to accept and manage their thoughts and emotions, thereby enhancing resilience against depressive episodes. MBSR, on the other hand, aids in maintaining overall mental health and alleviating depression. Further research is warranted to assess the long-term effects of MBCT and MBSR on a larger scale, with randomized control groups, to better understand their clinical utility.

Author's contribution

Conceptualization, Julia Szymonik; methodology, Julia Szymonik and Sebastian Szopa; software, Sebastian Szopa; check, Julia Szymonik and Sebastian Szopa; formal analysis, Sebastian Szopa; investigation, Julia Szymonik; resources, Julia Szymonik; data curation, Julia Szymonik and Sebastian Szopa; writing - rough preparation, Julia Szymonik; writing - review and editing, Julia Szymonik and Sebastian Szopa; visualization, Julia Szymonik and Sebastian Szopa; supervision, Sebastian Szopa; project administration, Julia Szymonik; All authors have read and agreed with the published version of the manuscript.

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All authors declare that they have no conflicts of interest.

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