THEORETICAL FOUNDATIONS OF MINDFULNESS-BASED INTERVENTIONS FOR INDIVIDUALS WITH POST-TRAUMATIC STRESS DISORDER

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Abstract: *Posttraumatic stress disorder (PTSD) is a psychological disorder that can persist over time and significantly impair individual and social functioning and quality of life. Although trauma-focused therapies remain central to PTSD treatment, mindfulness-based interventions (MBIs) have increasingly attracted attention as a potential complementary approach. This article aims to systematize the theoretical foundations, mechanisms of action, and evidence regarding the effectiveness of mindfulness-based interventions for PTSD. A literature review and analysis were conducted using sources from PubMed, PsycINFO, ScienceDirect, and Google Scholar, with a focus on empirical studies, randomized controlled trials, systematic reviews, and meta-analyses. The findings indicate that mindfulness may support attentional and emotional regulation, reduce automatic reactions, and enhance acceptance of trauma-related experiences. Existing evidence, particularly regarding Mindfulness-Based Stress Reduction (MBSR), suggests positive effects in reducing PTSD symptoms; however, the quality and consistency of the evidence remain limited. Therefore, mindfulness should be considered a complementary approach rather than a replacement for trauma-focused psychological therapies. Future research should further clarify the mechanisms underlying its effects and evaluate its long-term effectiveness.*

Keywords: *Posttraumatic stress disorder; PTSD; mindfulness; mindfulness-based interventions; MBSR.*

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I. INTRODUCTION

Posttraumatic Stress Disorder (PTSD) is a psychological disorder that may develop after an individual experiences or witnesses a traumatic event. It is characterized by symptoms such as re-experiencing, avoidance, negative alterations in cognition and emotions, and heightened arousal. PTSD can persist over time and significantly impair individual and social functioning and quality of life (American Psychiatric Association, 2022; World Health Organization [WHO], 2024). Although trauma-focused psychological therapies have demonstrated effectiveness, some individuals with PTSD do not respond adequately or have difficulty maintaining treatment, highlighting the need for complementary intervention approaches.

In recent years, mindfulness-based interventions (MBIs) have received increasing attention as an approach for supporting individuals with PTSD. Mindfulness emphasizes the ability to attend to present-moment experiences with an attitude of non-judgment and acceptance (Kabat-Zinn, 2003). Several studies have indicated that Mindfulness-Based Stress Reduction (MBSR) and other mindfulness-based programs may reduce PTSD symptoms (Polusny et al., 2015; Liu et al., 2022; Molteni et al., 2024). However, the current evidence remains inconsistent with regard to intervention programs, sample characteristics, and methodological quality.

Accordingly, this article aims to systematize the theoretical foundations, mechanisms of action, and evidence regarding the effectiveness of mindfulness-based interventions for PTSD, while also discussing considerations for their application in psychological practice.

II. RESEARCH METHOD

This study employed a literature review and analysis approach to systematize the theoretical foundations and empirical evidence concerning mindfulness-based interventions for post-traumatic stress disorder (PTSD). Relevant literature was searched across major international scientific databases, including PubMed, PsycINFO, ScienceDirect, and Google Scholar, using combinations of the following keywords: post-traumatic stress disorder, PTSD, mindfulness, mindfulness-based intervention, mindfulness-based stress reduction, trauma, and trauma-related disorders.

The inclusion criteria focused on scientific publications directly addressing: (1) the concept, characteristics, and mechanisms of PTSD; (2) the concept and theoretical foundations of mindfulness; (3) models and programs of mindfulness-based interventions; and (4) the efficacy, mechanisms of action, and conditions for applying mindfulness-based interventions to PTSD. Priority was given to empirical studies, randomized controlled trials, systematic reviews, meta-analyses, and clinical practice guidelines published in reputable peer-reviewed scientific journals. Bibliographic information and Digital Object Identifiers (DOIs) were verified to minimize the inclusion of unidentified or unverifiable sources.

Data from the selected literature were analyzed, compared, and synthesized thematically. On this basis, the study systematized key arguments concerning the theoretical foundations of mindfulness-based interventions for PTSD, including their conceptual basis; intervention components and formats; psychological mechanisms that may account for the effects of mindfulness; empirical evidence of intervention efficacy; and limitations and considerations in psychological practice. The synthesis aimed to identify similarities, differences, and gaps in the existing literature, thereby establishing a scientific basis for further research and the application of mindfulness-based interventions for individuals with PTSD.

III. RESEARCH CONTENT

3.1. Key Related Concepts

3.1.1. Post-Traumatic Stress Disorder

Post-traumatic stress disorder (PTSD) is a trauma- and stressor-related disorder that may develop after an individual experiences or witnesses a traumatic event. The disorder is characterized by persistent symptoms involving the re-experiencing of the traumatic event, avoidance of trauma-related stimuli, negative alterations in cognition and mood, and alterations in arousal and reactivity. These symptoms can cause significant impairment in an individual's social, occupational, and other important areas of functioning (American Psychiatric Association, 2022).

From a psychological perspective, PTSD is not solely associated with memories of the traumatic event but also with how individuals perceive, interpret, and respond to internal experiences and environmental stimuli. Trauma-related memories, emotions, bodily sensations, or situations that serve as reminders of the trauma may trigger stress responses, while avoidance tendencies may maintain difficulties in psychological adaptation. Therefore, PTSD interventions should not only aim to reduce symptoms but also support individuals in developing more adaptive ways of relating to trauma-related thoughts, emotions, and bodily sensations.

Currently, trauma-focused psychological therapies remain central to the treatment of PTSD. However, adjunctive approaches have also been investigated to expand intervention options for individuals who do not fully respond to, are not suitable for, or do not choose existing therapies. Within this context, mindfulness-based interventions have emerged as an increasingly studied and promising approach.

3.1.2. Mindfulness

Mindfulness is commonly described as the capacity to maintain attention on present-moment experiences with an attitude of openness, non-judgment, and acceptance. Kabat-Zinn (2003) conceptualized mindfulness as the process of intentionally attending to present-moment experience, through which individuals become more aware of what is occurring rather than responding automatically. In contemporary psychology, mindfulness is not regarded solely as a meditation technique but also as a set of capacities involving attentional regulation, awareness of internal experiences, and changes in how individuals respond to those experiences. This distinction is important when examining mindfulness-based interventions, as different programs may employ different practices and underlying mechanisms. On this basis, mindfulness-based interventions encompass a range of structured programs. Among these, Mindfulness-Based Stress Reduction (MBSR) is one of the most extensively studied programs. MBSR typically incorporates practices involving attention to the breath, body scanning, mindfulness meditation, mindful movement, and the cultivation of mindfulness in everyday life (Kabat-Zinn, 2003).

3.2. Theoretical Basis for the Application of Mindfulness in PTSD Intervention

3.2.1. PTSD and Dysregulation of Attention, Emotion, and Cognition

An important characteristic of PTSD is heightened sensitivity to threat- and trauma-related stimuli. Memories, thoughts, emotions, or bodily sensations associated with the traumatic event may capture attention and trigger stress responses. At the same time, avoidance of trauma-related internal and external experiences may become a common coping strategy. From this perspective, mindfulness may provide an alternative approach: rather than automatically avoiding or becoming overwhelmed by an experience, individuals learn to recognize what is occurring and observe it with a non-judgmental attitude. The shift from automatic reactivity to intentional awareness represents an important theoretical basis for understanding the potential role of mindfulness in PTSD.

3.2.2. Psychological Mechanisms of Mindfulness

The potential mechanisms of mindfulness can be broadly conceptualized into four domains:

First, enhanced attentional regulation. Mindfulness practice requires individuals to sustain attention on a particular object, recognize when their attention has wandered, and gently redirect it back to the intended focus. This process may strengthen the ability to monitor and regulate the allocation of attention toward distressing experiences.

Second, enhanced emotional awareness and regulation. Mindfulness encourages individuals to recognize emotions without immediately attempting to eliminate them or reacting to them. This may reduce automatic reactivity to distressing emotions and facilitate more adaptive emotion regulation.

Third, reduced cognitive fusion with thoughts and internal experiences. Rather than treating thoughts as facts that require action, individuals may learn to observe thoughts as psychological events that arise and change over time. This mechanism may be particularly relevant to negative thoughts and trauma-related interpretations.

Fourth, increased acceptance of experiences. Mindfulness encourages individuals to remain in contact with present-moment experiences without judgment. In the context of PTSD, this capacity may reduce reliance on avoidance of internal experiences and thereby support adaptation to distressing emotions and memories.

3.2.3. Mindfulness-Based Interventions for PTSD

3.2.3.1. Forms of Intervention

Mindfulness-based interventions do not constitute a single intervention program but encompass a range of approaches. Mindfulness-Based Stress Reduction (MBSR) is one of the most extensively studied programs within this group. Other approaches include Mindfulness-Based Cognitive Therapy (MBCT), trauma-adapted mindfulness programs, and interventions that integrate mindfulness with other therapeutic components. It is important not to equate MBIs with MBSR. MBSR is a specific intervention program, whereas MBI is a broader term encompassing multiple programs and forms of mindfulness practice. This distinction is important when synthesizing evidence because effects observed for MBSR cannot necessarily be generalized to all mindfulness-based programs.

3.2.3.2. Core Content and Components

MBSR programs are typically delivered over approximately eight weeks and combine guided practice sessions with individual practice. Core components generally include body scanning, breath-focused attention, mindfulness meditation, mindful movement, and the integration of mindfulness into everyday activities.

For individuals with PTSD, mindfulness practices should be adapted to trauma-related characteristics and individual needs. Practices that focus on bodily sensations or internal experiences may increase awareness of distressing sensations in some individuals. Therefore, the selection of practices, pace of progression, and level of therapist guidance should be carefully considered rather than applying a standardized mindfulness program without modification.

3.2.3.3. Evidence of Efficacy

Current empirical evidence suggests that mindfulness-based interventions have the potential to reduce PTSD symptoms, although the strength and consistency of the evidence vary across studies. A randomized clinical trial by Polusny et al. (2015) involving military veterans with PTSD found that MBSR was associated with greater reductions in PTSD symptoms compared with a present-centered group therapy condition. This study represents an important source of empirical evidence supporting the use of MBSR among individuals with PTSD. Subsequent evidence syntheses have also reported generally positive findings. Liu et al. (2022), in a meta-analysis of randomized controlled trials examining MBSR for PTSD, reported beneficial effects of the intervention in reducing PTSD symptoms. Molteni et al. (2024) likewise found positive effects of mindfulness-based interventions on trauma-related symptoms while also examining the potential role of interoceptive processes. Notably, a comprehensive review by Jovanovic and Garfin (2024) synthesized 69 systematic reviews, including 27 meta-analyses and 83 primary studies. The reanalysis indicated a moderate effect of mindfulness-based interventions on reducing PTSD symptoms (SMD = 0.41). However, the methodological quality of the included reviews was heterogeneous, with most being rated as having limited methodological rigor.

Accordingly, the most appropriate conclusion at present is not that "mindfulness has been demonstrated to be an effective treatment for PTSD," but rather that "mindfulness-based interventions, particularly MBSR, show promise for reducing PTSD symptoms, and the supporting evidence base continues to develop".

3.2.3.4. The Role of Mindfulness in the PTSD Intervention System

It is important to emphasize that mindfulness should not currently be regarded as a substitute for trauma-focused psychological therapies. The 2023 VA/DoD Clinical Practice Guideline provides a weak recommendation in favor of MBSR for the treatment of PTSD, whereas the evidence for MBCT and many other forms of mindfulness practice remains insufficient to support either a recommendation for or against their use. This suggests that mindfulness may be considered an adjunctive intervention or an appropriate option for certain individuals, particularly when individual preferences, accessibility, and personal characteristics are taken into account.

IV. DISCUSSION

The synthesis of theoretical perspectives and empirical evidence indicates that mindfulness offers a noteworthy approach to PTSD by changing how individuals relate to their thoughts, emotions, and bodily sensations. Rather than directly eliminating distressing experiences, mindfulness aims to cultivate greater awareness and acceptance of present-moment experiences. This mechanism may be particularly relevant to PTSD, in which avoidance and automatic reactivity to trauma-related stimuli play important roles.

However, the current evidence should be interpreted with caution. Jovanovic and Garfin (2024) found that although the pooled effect of MBIs on PTSD symptoms was moderate, the methodological quality of many systematic reviews remained limited. Similarly, the review by Molteni et al. (2024) reported positive findings, but the number of eligible studies was relatively small, and differences across intervention programs require further clarification.

An important gap in the field concerns the identification of mechanisms of action. Current studies suggest potential roles for emotion regulation, attentional processes, acceptance, and awareness of bodily sensations. However, the causal relationships between these changes and reductions in PTSD symptoms have not yet been fully established. Investigating mediating mechanisms may help shift the focus of research from the question "Does mindfulness work?" toward more specific questions: "Through which mechanisms does mindfulness affect PTSD, for whom, and under what conditions?".

V. CONCLUSION

Mindfulness-based intervention represents an approach with a growing theoretical foundation and empirical evidence for supporting individuals with PTSD. Mindfulness may contribute to greater awareness of present-moment experiences, improved attentional and emotional regulation, reduced automatic reactivity, and increased acceptance of distressing experiences. Recent empirical studies and evidence syntheses suggest that MBSR and other mindfulness-based interventions have the potential to reduce PTSD symptoms, although the quality and consistency of the evidence remain subject to limitations.

Therefore, mindfulness should be considered a promising intervention approach that may complement evidence-based PTSD treatment, rather than a replacement for trauma-focused therapies. Future research should focus on the standardization of intervention protocols, identification of mechanisms of action, characteristics of individuals who are most likely to benefit, and evaluation of the long-term maintenance of treatment effects.

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