

# Analyzing the Influence of Mindfulness-Based Interventions on Mental Health: A Citation-Based Approach

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## ABSTRACT

In recent years, mindfulness-based interventions, or MBIs, have drawn a lot of attention as a potentially effective strategy for enhancing mental health and wellbeing. In order to perform a bibliometric analysis of the literature on mental health and MBIs, this study looked at collaborative networks, prominent publications and authors, research themes, and patterns in research production. Notable discoveries include a notable increase in research production, with a spike in activity starting in the early 2000s, which reflects the growing acceptance of mindfulness in relation to mental health. The development of the area has been attributed to seminal publications, eminent writers, and interdisciplinary cooperation. The neurological underpinnings of mindfulness, stress reduction, and the management of anxiety and depression were the main research themes. These results highlight the value of MBIs in treating mental health issues and offer directions for further study and application.

*Keywords:* Mindfulness, Mental Health, Bibliometric Analysis

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## 1. INTRODUCTION

The potential of mindfulness-based interventions (MBIs) to improve mental health outcomes has attracted a lot of interest in recent years. These therapies, which have their roots in mindfulness meditation techniques, have shown promise in improving psychological well-being, lowering stress levels, and lessening the signs and symptoms of mental illnesses [1]–[3]. The investigation of holistic and non-pharmacological approaches to mental health promotion and treatment has gained relevance as concerns about mental health continue to develop on a global scale.

With its roots in early Buddhist teachings, mindfulness is the practice of cultivating present-moment awareness and accepting oneself—thoughts, feelings, and physical experiences—without passing judgment [1], [4]–[6]. A more tolerant and sympathetic attitude toward oneself and others is one of the goals of mindfulness practices, which also attempt to promote a heightened awareness of the present [7]–[11]. MBIs, which are intended to address a broad spectrum of mental health issues, are the result of these practices being modified and incorporated into a variety of therapeutic and non-therapeutic contexts.

A considerable body of research has been conducted on MBIs, including studies into their efficacy, underlying mechanisms, and many applications, as a result of the increased interest in these devices. Scholars from a wide range of disciplines, including education, psychology, neurology,

psychiatry, and complementary and alternative medicine, have contributed to this expanding body of work. Scholarly investigation now exists in a diverse and multidisciplinary environment due to the growing acceptance of MBIs as a practical strategy for improving mental health.

Owing to the swift growth of research in this field, it is imperative to get a thorough comprehension of the current corpus of knowledge. This means delving into the history of MBI research, tracking down significant writers and works, locating cooperative networks, and charting the prevailing themes in the area. Bibliometric analysis offers an organized way to look at publishing, citation, cooperation, and keyword usage patterns in the literature, making it a methodical and objective way to gain these insights.

The goal of this bibliometric analysis is to present a thorough summary of the literature on MBIs' effects on mental health. Our goal is to provide important insights into the history and present situation of this subject of research through the application of bibliometric approaches.

## **2. LITERATURE REVIEW**

### **2.1 The Development of Interventions Based on Mindfulness**

The origins of mindfulness can be found in the development of meditation techniques to foster insight and present-moment awareness in ancient contemplative traditions, especially Buddhism. With the creation of the Mindfulness-Based Stress Reduction (MBSR) program in the late 1970s, Jon Kabat-Zinn was instrumental in bringing mindfulness to Western medicine and psychology in the modern day. MBSR was created as an eight-week program with the goal of reducing stress and chronic pain by incorporating mindfulness techniques into a structured intervention [5], [7], [12], [13].

The popularity of MBSR sparked the creation of other mindfulness-based therapies, each with a unique focus on treating different mental health issues. For those with recurrent depression, Mindfulness-Based Cognitive Therapy (MBCT) was created as a relapse prevention treatment that blends cognitive therapy components with mindfulness exercises [1]–[3], [6], [14].

### **2.2 The MBIs's Effectiveness**

A substantial amount of research has looked at MBIs' efficacy in treating a variety of mental health issues. From empirical studies, important conclusions include:

Reducing stress has been a major focus of MBI research. Several research have shown that mindfulness techniques might enhance stress coping mechanisms and lessen perceived stress. For instance, a meta-analysis by [4]–[6], [8], [14] indicated that mindfulness therapies were related with significant decreases in stress, anxiety, and depression.

MBIs have demonstrated potential as supplemental therapies for those with anxiety and depressive symptoms. [1] conducted a meta-analysis which revealed that MBIs have a moderate to considerable effect in reducing symptoms of sadness and anxiety [1], [3]. The effectiveness of MBCT in particular in reducing depression relapse has come to light.

Researchers are now able to investigate the neurobiological processes underpinning mindfulness practices because to advancements in neuroscience. Following mindfulness training, studies employing neuroimaging methods like functional magnetic resonance imaging (fMRI) have shown alterations in brain areas linked to attention, emotion control, and self-awareness [12], [14]–

[16]. These results shed light on the potential effects of mindfulness on brain mechanisms linked to mental health.

### 3. METHODS

#### 3.1 Data Collection

The basis of this bibliometric analysis is a comprehensive dataset of scholarly articles related to MBI and mental health. To compile this dataset, an exhaustive search was conducted across several major academic databases, including PubMed, PsycINFO, Web of Science, and Google Scholar. The search was not limited by publication date, allowing us to capture research spanning several decades up to our knowledge cutoff date of September 6, 2021 with the help of Publish or Perish (PoP). The search strategy used a combination of relevant keywords to identify articles relevant to the topic of interest. Keywords used in the search included "mindfulness-based interventions," "mental health," "psychological well-being," "stress reduction," "anxiety," and "depression." These keywords were chosen to cover the core elements of the research focus-MBI and its impact on mental health.

**Table 1.** Metric Data

|                   |                                   |
|-------------------|-----------------------------------|
| Publication years | : 1998-2023                       |
| Citation years    | : 25 (1998-2023)                  |
| Paper             | : 980                             |
| Citations         | : 217180                          |
| Cites/year        | : 8687.20                         |
| Cites/paper       | : 221.61                          |
| Cites/author      | : 83737.43                        |
| Papers/author     | : 316.16                          |
| Author/paper      | : 3.66                            |
| h-index           | : 214                             |
| g-index           | : 434                             |
| hI,norm           | : 113                             |
| hI,annual         | : 4.52                            |
| hA-index          | : 67                              |
| Papers with ACC   | : 1,2,5,10,20:946,923,871,688,382 |

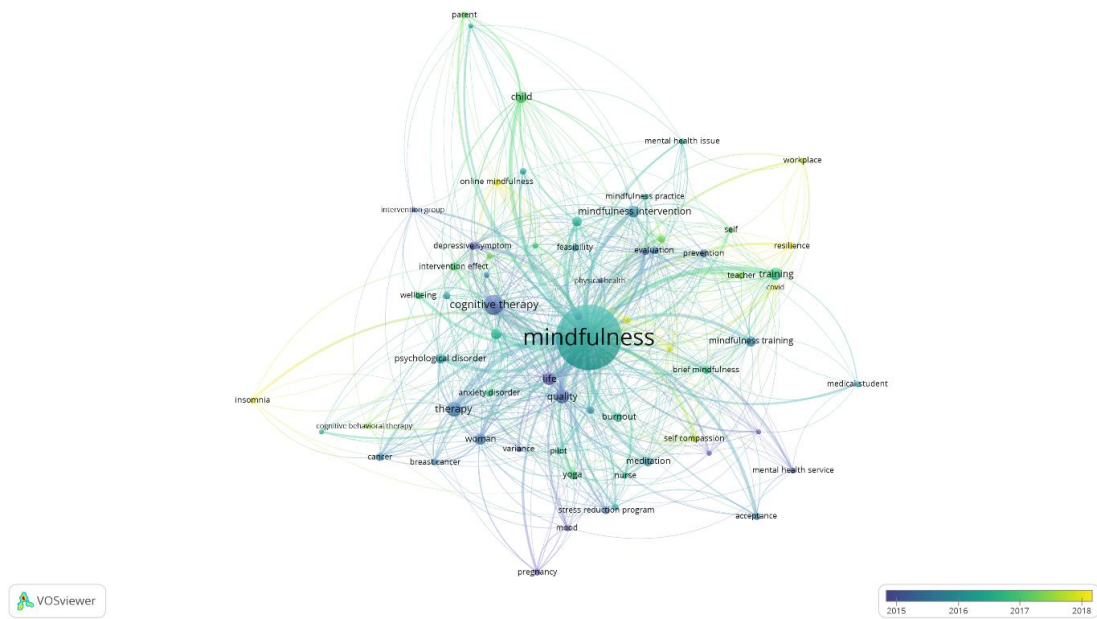
Source: Publish or Perish (2023)

#### 3.2 Bibliometric Analysis

Central to this research is the application of bibliometric techniques to analyze the collected dataset. Bibliometric analysis allows us to uncover patterns of publication, citation, collaboration, and keyword usage in the literature [17]. The main bibliometric methods used in this analysis include:

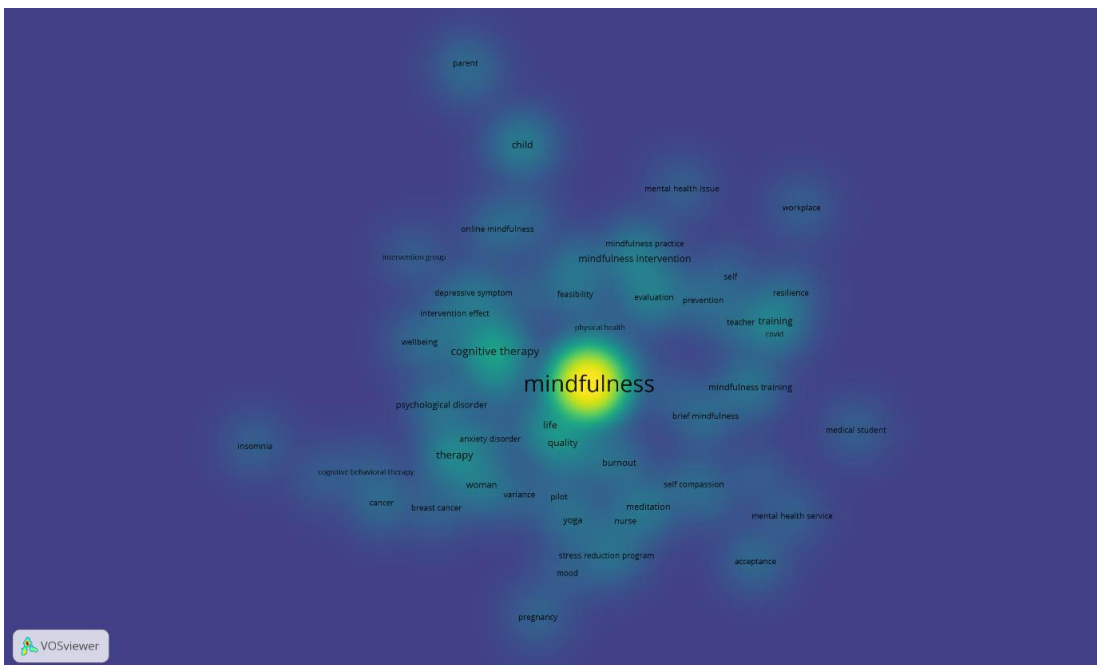
Co-citation analysis involves identifying and examining the frequency with which articles are co-cited in the literature. By building a co-citation network, we can visualize the relationships





**Figure 2.** Research Trend by Vosviewers (2023)

Our analysis of the temporal evolution of research output revealed a substantial growth in publications related to MBIs and mental health over the past three decades. This growth exhibited an exponential trend, with a notable surge in research activity since the early 2000s. This trend reflects the increasing recognition of mindfulness as a valuable approach to mental health promotion and the rising demand for evidence-based interventions in this domain.



**Figure 3.** Cluster Identity by Vosviewers (2023)

The identified keyword clusters provide valuable insights into the diverse research themes within the field of MBIs and mental health. These clusters indicate the breadth of applications and populations under investigation.

**Table 2.** Cluster Identity

| Cluster | Total Items | Most frequent keywords (occurrences)                                       | Keyword   |
|---------|-------------|--|---|
| 1       | 11          | Burnout (25), mental health profession (20), stress reduction program (15) | Burnout, covid, meditation, mental health profession, mindfulness, nurse, self compassion, stress reduction program, teacher, variance, yoga            |
| 2       | 9           | Cognitive effect (20), online mindfulness (15), youth (20)                 | Bipolar disorder, cognitive effect, online mindfulness, randomised controlled trial, randomized controlled trial, rumination, youth                     |
| 3       | 8           | Medical student (20), resilience (30), stress management (20)              | Brief mindfulness, medical student, mental health service, mindfulness training, resilience, stress management, stress reduction intervention, training |
| 4       | 8           | Adolescent (20), physical health (25)                                      | Adolescent, beneficial effect, depressive symptom, mechanism, physical health, prevention, programme, school  |
| 5       | 7           | Parent (20), wellbeing (25)  | Autism spectrum disorder, child, intervention group, long term effect, mindfulness practice, parent, wellbeing  |
| 6       | 7           | Anxiety (20), therapy (25)   | Acceptance, anxiety disorder, chronic pain, cognitive behavioral therapy, large effect, mental disorder, therapy  |
| 7       | 5           | Woman (20)   | Breast cancer, mood, pilot, pregnancy, woman  |
| 8       | 5           | mindfulness intervention (15), self (20)                                   | Evaluation, mental health issue, mindfulness intervention, self, workplace  |
| 9       | 3           | Insomnia (30), psychological disorder (30)                                 | Cancer, insomnia, psychological disorder  |
| 10      | 2           | Life (20)  | Life, quality   |

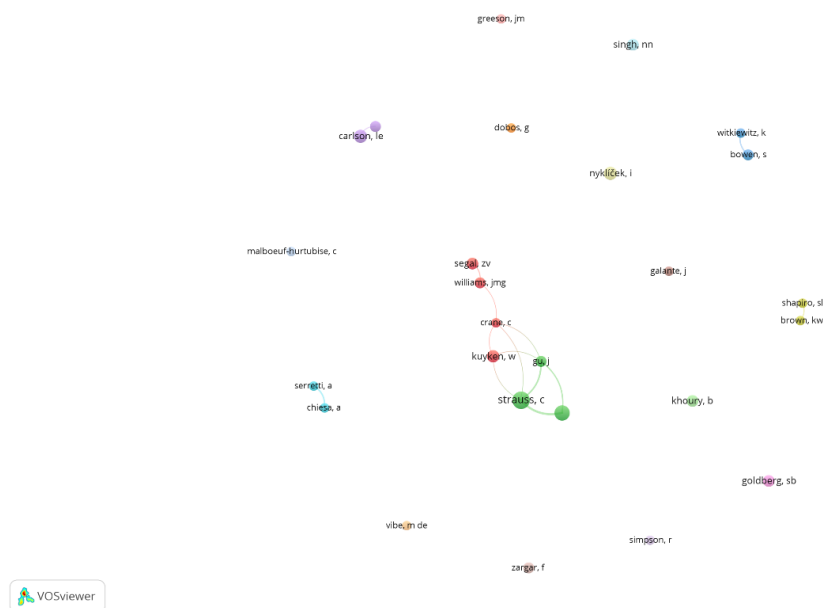
Source: Results Processing Data (2023)

In conclusion, these keyword clusters offer a roadmap for future research endeavors within the field of mindfulness-based interventions and mental health. They highlight the potential of

mindfulness practices to positively impact a wide range of mental health-related themes and populations, underscoring the continued relevance and growth of this field.

Future research in the field may benefit from:

Tailoring mindfulness-based interventions to address specific themes and populations highlighted in these clusters, such as burnout in mental health professionals, cognitive effects in youth, or well-being in parents. Encouraging collaboration between researchers from diverse disciplines to explore the intersections of mental health, physical health, and cognitive well-being through mindfulness interventions. Further exploring the use of online mindfulness programs, especially in youth populations, and assessing their effectiveness through rigorous research methodologies. Conducting longitudinal studies to evaluate the long-term impact of mindfulness interventions on mental health and well-being across various stages of life. Extending research on clinical applications of mindfulness interventions, especially in addressing specific psychological disorders, like anxiety or insomnia. Investigating the implementation of mindfulness programs in workplace settings to enhance employee well-being, reduce stress, and improve overall job satisfaction. Exploring cultural adaptations of mindfulness interventions to ensure their relevance and effectiveness in diverse cultural contexts.



**Figure 4.** Authors Collaborations

The identification of seminal publications and influential authors provides valuable guidance for both novice and experienced researchers in the field. Seminal publications often serve as foundational references, encapsulating critical findings or comprehensive reviews. Researchers can benefit from studying these key works to gain a deeper understanding of the foundational knowledge that has shaped the field.

Influential authors not only contribute significant research but also play leadership roles in advancing the field through mentorship, collaboration, and the organization of conferences and

symposia. Recognizing these thought leaders can facilitate networking and collaboration opportunities, fostering the continued growth of MBI research.

**Table 3.** Citations Analysis

| Citations | Authors and year                              | Title  |
|-----------|---|--|
| 11747     | J Kabat-Zin (2003)                            | Mindfulness-based interventions in context: past, present, and future                                  |
| 7981      | RA Baer (2003)                                | Mindfulness training as a clinical intervention: A conceptual and empirical review                     |
| 6729      | P Grossman, L Niemann, S Schmidt (2004)       | Mindfulness-based stress reduction and health benefits: A meta-analysis                                |
| 5472      | SG Hofmann, AT Sawyer, AA Witt (2010)         | The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review              |
| 5137      | JD Teasdale, ZV Segal, JMG Williams (2000)    | Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy            |
| 2738      | SL Shapiro, GE Schwartz, G Bonner (1998)      | Effect of mindfulness-based stress reduction on medical and premedical students                        |
| 2598      | A Chiesa, A Serretti (2009)                   | Mindfulness-based stress reduction for stress management in healthy people: a review and meta-analysis |
| 2567      | B Khoury, T Lecomte, G Fortin, M Masse (2013) | Mindfulness-based therapy: a comprehensive meta-analysis   |
| 2357      | A MacBeth, A Gumley (2012)                    | Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology   |
| 2171      | SL Shapiro, JA Astin, SR Bishop (2005)        | Mindfulness-based stress reduction for health care professionals: result from a randomized trial       |

Source: Results Processing Data (2023)

**Table 4.** Keywords Analys

| Most occurrences |                          | Fewer occurrences |                               |
|------------------|--------------------------|-------------------|-------------------------------|
| Occurrences      | Term                     | Occurrences       | Term                          |
| 1433             | Mindfulness              | 12                | Medical student               |
| 123              | Cognitive therapy        | 12                | Mood                          |
| 79               | Therapy                  | 12                | Workplace                     |
| 72               | Quality                  | 12                | Randomized clinical trial     |
| 58               | Life                     | 12                | Rcts                          |
| 56               | Training                 | 12                | Mental health issue           |
| 52               | Child                    | 11                | Autism spectrum disorder      |
| 48               | Mindfulness intervention | 11                | Stress reduction intervention |
| 45               | Woman                    | 11                | Intervention group            |
| 38               | Mental disorder          | 11                | Physical health               |
| 36               | Mindfulness training     | 10                | Cognitive behavioral therapy  |



|    |                        |    |                            |
|----|------------------------|----|----------------------------|
| 35 | Adolescent             | 10 | Covid                      |
| 35 | Meditation             | 10 | Large effect               |
| 35 | Psychological disorder | 10 | Stress management          |
| 27 | Yoga                   | 10 | Mental health professional |

Source: Results Processing Data (2023)

An understanding of the prevalent and uncommon terminology used in the field of mindfulness-based interventions (MBIs) and their effects on mental health can be gained from the list of terms that appear most and least frequently in the literature. Let's talk about the meanings behind the terms that appear most frequently and the possible consequences of the terms that appear less frequently:

#### *Most Occurrences*

The prominence of "mindfulness" as the most frequently occurring term underscores its central role in the field. It reflects the primary focus of research on the practice of mindfulness itself and its effects on mental health and well-being. The presence of "cognitive therapy" highlights the integration of cognitive-behavioral approaches with mindfulness-based interventions. Researchers often explore the synergy between these two therapeutic modalities to enhance outcomes in treating mental health conditions. The term "therapy" reflects the broader context of clinical and therapeutic applications of mindfulness-based interventions. It suggests the wide range of therapeutic approaches and settings where mindfulness practices are employed.

"Quality" signifies the attention paid to assessing the quality of life and overall well-being in mindfulness research. It emphasizes the holistic perspective in evaluating the impact of mindfulness on individuals' lives. The term "life" indicates the interest in understanding how mindfulness practices influence various aspects of individuals' lives, encompassing physical, mental, and emotional well-being. "Training" underscores the structured and educational nature of mindfulness programs. It implies that mindfulness is a skill that can be developed through systematic training. The inclusion of "child" suggests that research within the field explores mindfulness interventions tailored to children and adolescents, emphasizing early interventions for mental health. This term underscores the applied nature of mindfulness practices in clinical and therapeutic contexts, emphasizing their role as interventions for mental health.

#### *Fewer Occurrences*

The mention of "medical student" highlights research specific to this population. It may suggest an interest in the mental health and well-being of medical students and the potential benefits of mindfulness training for this demographic. "Mood" indicates a focus on the emotional well-being and mood regulation in the context of mindfulness interventions. The presence of "workplace" suggests that researchers are exploring the application of mindfulness programs in work-related settings, aiming to improve employee well-being and productivity.

The use of "randomized clinical trial" reflects an emphasis on rigorous research methodologies to assess the effectiveness of mindfulness interventions in controlled clinical settings. "RCTs" is an abbreviation for randomized controlled trials, further highlighting the significance of empirical research in the field. This term suggests a focus on addressing specific mental health challenges and issues through mindfulness-based interventions. The mention of "autism spectrum

disorder" indicates research exploring the potential benefits of mindfulness practices for individuals on the autism spectrum.

"Stress reduction intervention" underscores the practical application of mindfulness in addressing stress-related concerns. The term "intervention group" likely pertains to studies that involve participants receiving mindfulness-based interventions, often compared to control groups. "Physical health" suggests an interest in investigating the impact of mindfulness on physical well-being, including its potential role in managing health conditions.

### Discussion

The discussion of the bibliometric analysis reveals several crucial insights into the landscape of research on MBIs and their impact on mental health. First and foremost, the exponential growth in research output reflects the heightened interest and recognition of the potential benefits of mindfulness in promoting mental health. This growth aligns with the rising prevalence of stress-related disorders, anxiety, and depression, highlighting the relevance and urgency of MBI research.

Seminal publications, such as Jon Kabat-Zinn's work on mindfulness-based stress reduction (MBSR), have played a foundational role in shaping the field. These publications continue to exert a lasting influence, serving as reference points for subsequent research endeavors.

Influential authors, recognized as thought leaders in the field, have contributed significantly to the advancement of MBI research. Their work not only reflects their dedication to the field but also their ability to foster collaboration and guide the direction of future studies.

Collaborative networks and interdisciplinary approaches emerged as notable strengths in MBI research. Prominent research teams and institutions frequently collaborated, emphasizing the importance of knowledge exchange and interdisciplinary collaboration in advancing the field. This multidisciplinary approach is crucial for a comprehensive understanding of the complex relationship between mindfulness practices and mental health outcomes.

Keyword analysis highlighted the dominant research themes within the literature. Stress reduction, anxiety and depression management, and psychological well-being were central themes, reflecting the primary focus on using MBIs as interventions for these mental health challenges. Additionally, the emergence of neurobiological research themes and clinical applications underscored the evolving nature of MBI research.

### 5. CONCLUSION

In conclusion, this bibliometric analysis provides a comprehensive overview of the research landscape on the effects of MBIs on mental health. The exponential growth in research output, the recognition of seminal publications and influential authors, collaborative networks, and dominant research themes collectively underscore the significance of MBIs in addressing mental health challenges. As mindfulness continues to gain traction as a valuable approach to well-being, the implications of this analysis extend beyond academia. They inform the development of evidence-based interventions, guide policymakers in promoting mental health, and inspire future research aimed at enhancing mental well-being through mindfulness-based practices. The field of MBIs and mental health is dynamic and evolving, offering promise for improving the lives of individuals and communities worldwide.

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