



Mindfulness

Research Synopsis

Publications Spanning 2020 - 2024



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Mindfulness Literature Synopsis

Summary of Key Findings

Mindfulness has captivated the interest of Western researchers for well over three decades. While a standardized definition of mindfulness remains somewhat elusive, it is commonly understood as a three-pronged practice: cultivating awareness of the physical body, accepting thoughts and feelings without judgment, and learning to remain present in the current moment. Upon reviewing over 150 systematic reviews, it appears as though the applications of mindfulness-based interventions (MBIs) are endless. From treating anxiety and depression to coping with infertility to managing chronic pain, mindfulness is promoted as a promising alternative to conventional Western practices in the wellness space.

In recent years, populations of interest have evolved from individuals with general anxiety and depression to more specific applications such as anxiety related to infertility, chronic illness, and palliative care. While outcomes in this area remain conflicted, branching into more specific populations has allowed researchers to determine that Mindfulness-Based Stress Reduction (MBSR) may improve anxiety symptoms, while Mindfulness-Based Cognitive Therapy (MBCT) may be better suited to preventing the recurrence of depression. Alternatively, studies focused on medical students, healthcare workers, and family caregivers have reinforced the efficacy of MBIs in reducing workplace stress, improving cognitive focus, and enhancing overall well-being in high-stress occupations. Most notably, research in these populations has indicated that MBIs are not effective in treating burnout, underscoring that burnout is a systemic issue rather than an individual problem. Additionally, there has been increased interest in mindfulness interventions for children and their families. This represents a significant advancement in mindfulness research, as it measures the impact of MBIs on complex relationships. While this area is relatively new and focuses mainly on children with ADHD, researchers have observed promising trends. Young children show the best behavioural outcomes with movement-based MBIs, while older children benefit more from reflection-based practices. Interestingly, children with ADHD have the best outcomes when their parents participate in MBIs, regardless of whether they participate themselves, emphasizing the significant role of parental influence.

While we have seen MBIs infiltrate schools, healthcare settings, and broader communities, one of the most intriguing spaces recently claimed by the mindfulness research sphere is the digital one. Interest in the online delivery of MBIs began in 2018, but with the onset of the COVID-19 pandemic, between 2022 and 2024, we have seen an explosion of online and app-based mindfulness adaptations. This foray into the

digital space has been complicated but has provided researchers with a cost-effective avenue to access rural communities, diversify their demographics, and scale their projects. Digital MBIs have also allowed researchers to explore how intuitive app building and the integration of AI algorithms may allow programming to be tailored for specific populations with limited time, specific needs, and unique challenges that make accessing traditional face-to-face MBIs difficult. For example, many digital mindfulness programs incorporate interactive features such as guided meditations, real-time feedback, and community support, enhancing user engagement and effectiveness. Recent research has demonstrated that digital MBIs are likely as effective as in-person interventions in reducing stress, anxiety, and depression, which may improve at-home practice, a consistent confounding variable reported in existing literature. Finally, digital interventions offer the unique option of incorporating data collection into the digital platforms themselves, allowing reliable and consistent tracking of duration, frequency, and feedback directly through the platform as it is used.

While the expansion of mindfulness research into various populations and platforms has provided valuable insights, the overarching field of mindfulness appears to suffer from an ironic lack of focus. This ongoing challenge has perpetuated several gaps in knowledge. For example, decades of researchers have called for standardized research protocols, follow-up evaluations, and more inclusive studies. Yet even in 2024, researchers are still pointing out inconsistent terms, methodologies, and measures, short intervention periods, and a lack of long-term follow-up studies. While these systemic issues limit our ability to perform robust meta-analyses, it is important to acknowledge that in order to test the effectiveness of mindfulness as a viable intervention for specific populations, researchers are forced to strip down something rich and incorporeal into something rigid and systematic in order to attempt western-style evaluation. Unlike pharmaceutical trials or structured behavioural interventions, mindfulness is a way of living in the world, which may be internalized quite differently from person to person. This variability in participants' mindfulness experience may help explain both why mindfulness appears to be life-changing for some and not others, as well as why researchers continue to find conflicting results about the overall effectiveness of mindfulness in various populations. Additionally, unlike areas of psychology where there is substantial financial support for large-scale studies and replication efforts, mindfulness research often struggles to secure the same level of financial investment, further complicating the effort to build a consistent and reliable evidence base.

To address these challenges and support advancements in the field, future research should prioritize several key areas. First, it is critical that the research community collaborate to standardize research protocols to ensure consistency and comparability across new research contributions. This includes clear operational definitions of

mindfulness and adjacent practices, methodologies, and measures that can be uniformly applied. Second, longer intervention periods and follow-up evaluations should become the expectation, not the exception, as they will provide much-needed insight into the long-term effects of MBIs on different populations of interest. Third, care should be taken to include more diverse and inclusive populations, which will enhance the external validity of findings and ensure that interventions are effective across different demographic groups. Finally, digital platforms should be leveraged to explore new opportunities for large-scale projects and real-time data collection, improving the financial feasibility, accuracy, and relevance of future research outcomes. By addressing these areas, researchers can build a more robust and reliable base of knowledge, providing a much richer understanding of how, when, and why MBIs may be appropriate for certain populations. This will allow the mindfulness research community to use our cumulative skills, ideas, and expertise to propel this field into the future.

Knowledge Synthesis

1. Kraines, M. A., Peterson, S. K., Tremont, G. N., Beard, C., Brewer, J. A., & Uebelacker, L. A. (2022). Mindfulness-based stress reduction and mindfulness-based cognitive therapy for depression: A systematic review of cognitive outcomes. *Mindfulness*, 13(5), 1126-1135. <https://doi.org/10.1007/s12671-022-01841-7>

Kraines et al. examine the cognitive effects of Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) in people with depression. The authors review 10 studies including both single-arm trials and randomized controlled trials (RCTs), and conclude that MBSR and MBCT have inconsistent effects on cognitive outcomes which they attribute to varied definitions and terminology, divergent samples, and inconsistent methodologies across studies. While the reviewed studies claim MBSR and MBCT are designed to target cognitive processes associated with depression, the authors found the evidence on their efficacy in improving cognitive functions remains mixed (some finding change and some finding none). The review underscores the need for more standardized approaches to studying cognitive outcomes in depressed individuals, including the use of consistent measures and terminology. Overall, while the findings are promising, they also highlight the need for rigorous and consistent research to better understand the cognitive impacts of MBSR and MBCT.

2. Kundarti, F. I., Titisari, I., Rahayu, D. E., Kiswati, & Jamhariyah. (2023). Mindfulness improves the mental health of infertile women: A systematic review. *Journal of Public Health Research*, 12(3), 22799036231196693. <https://doi.org/10.1177/2279903623119669>

Kundarti et al. examine the effects of mindfulness on the mental health of infertile women. The authors reviewed 9 articles and found that Mindfulness-Based Interventions (MBIs), including Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), significantly reduce mental health disorders such as stress, anxiety, and depression in infertile women. The authors noted multiple types of MBIs appear to be effective in targeting specific mental health issues, indicating their versatility and effectiveness.

Interestingly, the authors claim that MBIs can reduce anxiety levels in infertile women by up to 76%, with MBSR recommended specifically for stress and anxiety, and MBCT recommended for reducing depression. This is the first study identified in this review that separates MBSR and MBCT interventions for addressing specific aspects of complex mental health issues within the same population. The authors also noted that infertile women are more susceptible to stress, anxiety, and depression due to the length of fertility treatments, which may provide an interesting perspective for addressing prolonged climate grief and eco-anxiety. However, while the authors appear confident in their findings, the lack of long-term follow-up in the studies reviewed limits our understanding of the long-term benefits of either MBSR and MBCT in this population.

3. Lee, Y. C., Chen, C. R., & Lin, K. C. (2022). Effects of mindfulness-based interventions in children and adolescents with ADHD: A systematic review and meta-analysis of randomized controlled trials. *International Journal of Environmental Research and Public Health*, 19(22), 15198. <https://doi.org/10.3390/ijerph192215198>

Lee et al. examine the effects of Mindfulness-Based Interventions (MBIs) on children and adolescents with ADHD. The authors review 12 studies and conclude that MBIs may improve behavioural problems and mindfulness in children and stress in parents. The authors focused on studies employing three types of MBIs: yoga, mindfulness-based psychological interventions, and meditation training. Their meta-analysis showed moderate-to-large improvements in ADHD symptoms, particularly in older children, while positive effects in mindfulness were small to moderate. The authors join a line of other systematic reviews shining a light on the need for higher-quality controlled studies to produce meaningful meta-analysis studies for this population.

The authors' finding that older children show more significant improvements than their younger counterparts aligns with existing research on the path of developmental changes in children with ADHD. The authors' observation that different mindfulness techniques may be more or less effective for different populations is also noteworthy and could be an interesting avenue for future research on broader populations. This is the second review to include parental stress as an outcome which continues to highlight the complexity of ADHD and the broader impact of neurodivergence on family dynamics.

4. Opie, J. E., Vuong, A., Welsh, E. T., Gray, R., Pearce, N., Marchionda, S., ... & Khalil, H. (2024). Outcomes of Best-Practice Guided Digital Mental Health Interventions for Youth and Young adults with emerging symptoms: part I. A systematic review of Socioemotional outcomes and recommendations. *Clinical child and family psychology review*, 1-52. <https://doi.org/10.1007/s10567-024-00469-4>

Opie et al. investigate the effectiveness of digital mental health interventions (DMHIs) on socioemotional outcomes in youth (ages 12-25). The authors reviewed 32 studies exploring depression, anxiety, stress, and quality of life in this population and determined that DMHIs show strong evidence for improving socioemotional outcomes, but these effects are relatively short-lived. However, they do note that the most effective interventions often included refresher/follow-up content, goal setting, and relapse prevention, while limited effects were associated with homework completion, self-monitoring, and keeping a diary.

This article emphasizes the potential influence of personalized content as a vehicle for long-lasting impact on socio-emotional outcomes. The authors' conclusion that content personalization and self-reflective activities are crucial for preserving the effects of DMHIs is particularly significant and signals an important shift from a 'one-size-fits-all' approach to more individualized mental health care. The study also identifies a critical gap in research regarding the efficacy of different types of guided DMHIs across diverse demographics and cultural contexts, indicating this is a vital area for future investigation.

5. Yeun, Y. R., & Kim, S. D. (2022). Psychological effects of online-based mindfulness programs during the COVID-19 pandemic: A systematic review of randomized controlled trials. *International journal of environmental research and public health*, 19(3), 1624. <https://pubmed.ncbi.nlm.nih.gov/35162646/>

Yeun and Kim investigate the psychological impact of online-based mindfulness programs during the COVID-19 pandemic. The authors reviewed six randomized controlled trials (RCTs) and found that online-based mindfulness interventions may have

a positive effect on reducing anxiety, depression, and stress in both clinical and general populations during the quarantine period. However, despite these positive findings, the authors reiterate the need for standardized online protocols and the use of more rigorous research methodologies to provide consistent and reliable results in this area.

Interestingly, this is one of the first studies reviewed to recommend mindfulness-based interventions (MBIs) as a complementary or supplemental intervention to traditional Western treatments for stress, anxiety, and depression. Echoing other recent studies, the authors emphasize the importance of utilizing available technology to create personalized care for groups with diverse needs. They also stress the need for continued research across different populations and cultural contexts to fully understand the efficacy and applicability of these interventions.

Sample Research Studies

Study Title, Authors, & Country	Population	Sample Size	Intervention Type	Duration	Study Design	Key Findings	Conclusions	Limitations
Kraines et al. (2022), USA	People with Depression	10 Studies	MBSR, MBCT	Varies	Systematic Review	Inconsistent cognitive outcomes	Mixed evidence on cognitive impacts	Need for standardized measures and terminology
Kundarti et al. (2023), Indonesia	Infertile Women	9 Studies	MBSR, MBCT	Varies	Systematic Review	MBIs reduce stress, anxiety, depression	MBSR for stress and anxiety, MBCT for depression	Lack of long-term follow-up
Lee et al. (2022), Taiwan	Children with ADHD	12 Studies	Yoga, Mindfulness-based psychological interventions, Meditation training	Varies	Systematic Review, Meta-Analysis	Moderate-to-large improvements in ADHD symptoms	MBIs improve behaviour in children, reduce parental stress	Need for higher-quality controlled studies
Opie et al. (2024), Australia	Youth and Young Adults	32 Studies	Digital MBIs	Varies	Systematic Review	Positive socio-emotional outcomes	Digital MBIs effective during COVID-19	Need for more interactive features
Yeun & Kim (2022), South Korea	General Population during COVID-19	6 RCTs	Online-based mindfulness programs	Varies	Systematic Review	Positive effect on reducing anxiety, depression, and stress	Online MBIs effective during COVID-19	Need for standardized online protocols