Effect Of Mindfulness Based Cognitive Therapy (MBCT) on Anxiety and Blood Pressure for Hypertension: A scoping review

Ady Irawan. AM[1*], Anjani Janmabhumi[2], Ziara Arum Wulandari[3], Anggie Pradana Putri[4], Aris Prio Agus Santoso[5]

[1,2,3]Program Studi S1 Keperawatan, Fakultas Ilmu Kesehatan, Universitas Duta Bangsa, Surakarta, Indonesia
[4]School of Nursing, National Taipei University of Nursing and Health Sciences, Taipei, Taiwan; Program Studi D3 Keperawatan, Stikes Mamba'ul 'Ulum Surakarta, Indonesia
[5]Program Studi S1 Hukum, Fakultas Hukum dan Bisnis, Universitas Duta Bangsa, Surakarta, Indonesia
*Correspondence email: ady_irawan@udb.ac.id

Abstract

Hypertension, a prevalent and chronic medical condition, is often associated with elevated anxiety levels, contributing to its progression and complications. Mindfulness-Based Cognitive Therapy (MBCT) has emerged as a potential intervention to address both anxiety and hypertension. Objective: this scoping review aims to explore the existing literature on the effect of MBCT on anxiety and blood pressure in individuals with hypertension. Methods: A comprehensive search was conducted across electronic database, including Garuda, PubMed, Web of Science (WOS), and Science, for relevant articles published between 2013 to 2023. The searching process utilized PCC approach (Population: adult with hypertension; concept (C): mindfulness based cognitive therapy (MBCT), anxiety, high blood pressure, hypertension, cardiovascular disease context (C): clinical and community settings). Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was employed as guideline to the screening process of articles in this study. Result and discussion: A total of eight articles were evaluated their quality using The Joanna Briggs Institute Checklist. Some characteristics of mindfulness were identified: MBCT general, MBCT for perinatal depression (MBCT-PD), MBCT for anxiety (MBCT-A), and telephone delivered MBCT (MBCT-T). In general terms, the timeframe for conducting MBCT is eight weeks, with each session lasting 2 to 2.5 hours. **Conclusion:** MBCT demonstrates promise as an adjunctive intervention for managing anxiety and blood pressure in individuals with hypertension. Recommendations: While preliminary evidence suggests MBCT's potential benefits, further research is needed to establish its efficacy and refine its application in clinical practice. Integrating MBCT into comprehensive hypertension management strategies may offer a multifaceted approach to improving the well-being of individuals with hypertension.

INTRODUCTION

Hypertension, a common and chronic medical condition, represents a significant challenge in global public health. Often referred to as the "silent killer," hypertension is characterized by persistently high blood pressure levels, increasing the risk of cardiovascular diseases, stroke, and other related complications (Benenson et al., 2021). In addition to its physiological manifestations, hypertension is closely associated with psychological factors, particularly anxiety (Johnson, 2019). The coexistence of hypertension and anxiety represents a complex relationship, with each exacerbating the other (Lim et al., 2021).

Anxiety is a prevalent mental health issue involving various emotional states. Anxiety is marked by excessive worry, fear, and heightened discomfort (Setyananda et al., 2021). In the context of hypertension, anxiety plays a critical role. High levels of anxiety not only contribute to the development and progression of hypertension but also complicate its management (Guarner-Lans et al., 2020). The interplay between these two conditions presents a unique challenge in healthcare, necessitating a comprehensive and holistic approach to treatment.

Mindfulness-Based Cognitive Therapy (MBCT) has emerged as a promising intervention for addressing the intersection of anxiety and hypertension (Cladder-Micus et al., 2018). With its core components of mindfulness meditation and cognitive-behavioral principles, MBCT combines self-awareness techniques with cognitive restructuring strategies to enhance emotional regulation and promote overall well-being (Ghahari et al., 2020). This approach has the potential to target not only the psychological distress associated with anxiety but also the physiological factors contributing to elevated blood pressure.

Despite gaining significant attention and acceptance in the field of mental health, its application in hypertension management still requires more comprehensive development (Conversano et al., 2021). Understanding the potential impact of MBCT on reducing anxiety and regulating blood pressure in individuals with hypertension is crucial. A systematic and focused review of MBCT's efficacy is needed to fill the knowledge gap regarding the effects of MBCT on the adult population with hypertension. Findings from this review have the potential to provide guidance in clinical practice and guide further research efforts in the pursuit of an integrated and holistic approach to hypertension management.

OBJECTIVE

This scoping review aims to systematically explore and synthesize existing scientific literature regarding the effects of MBCT on the reduction of anxiety and blood pressure among hypertensive patients. By synthesizing and mapping the available evidence, this scoping review seeks to provide a comprehensive overview of the current state of knowledge regarding MBCT as a non-pharmacological approach to managing anxiety and blood pressure in individuals with hypertension.

METHOD

The research method follows the scoping review strategy outlined by Arksey and O'Malley. There are five steps in this research: 1) identifying research questions, 2) identifying literature sources related to the topic, 3) the process of selecting the obtained literature sources, 4) creating data tabulation, and 5) organizing, summarizing, and reporting the results.

Identifying research questions

The research question was whether there is existing literature on the effectiveness of MBCT in reducing anxiety and blood pressure among hypertensive patients.

Identifying literature sources related to the topic

The researcher conducted a literature search through electronic databases, including Garuda, PubMed, Web of Science (WOS), and Science. Specific clinical questions formulated for searching scientific articles included population (P): adults with hypertension, hypertensive patients, adults with hypertension; concept (C): mindfulness-based cognitive therapy (MBCT), anxiety, high blood pressure, hypertension, cardiovascular disease, anxiety, high blood pressure, cardiovascular disease; context (C): clinical and community settings. The researcher also used Boolean search operators in some keywords, such as "mindfulness-based cognitive therapy (MBCT) OR mindfulness intervention AND anxiety OR generalized anxiety disorder OR stress OR depression AND hypertension OR hypertensive OR cardiovascular disease," "MBCT AND hypertension," "mindfulness-based cognitive therapy (MBCT) AND anxiety OR stress OR general stress symptoms OR depression AND hypertension OR hypertensive OR cardiovascular."
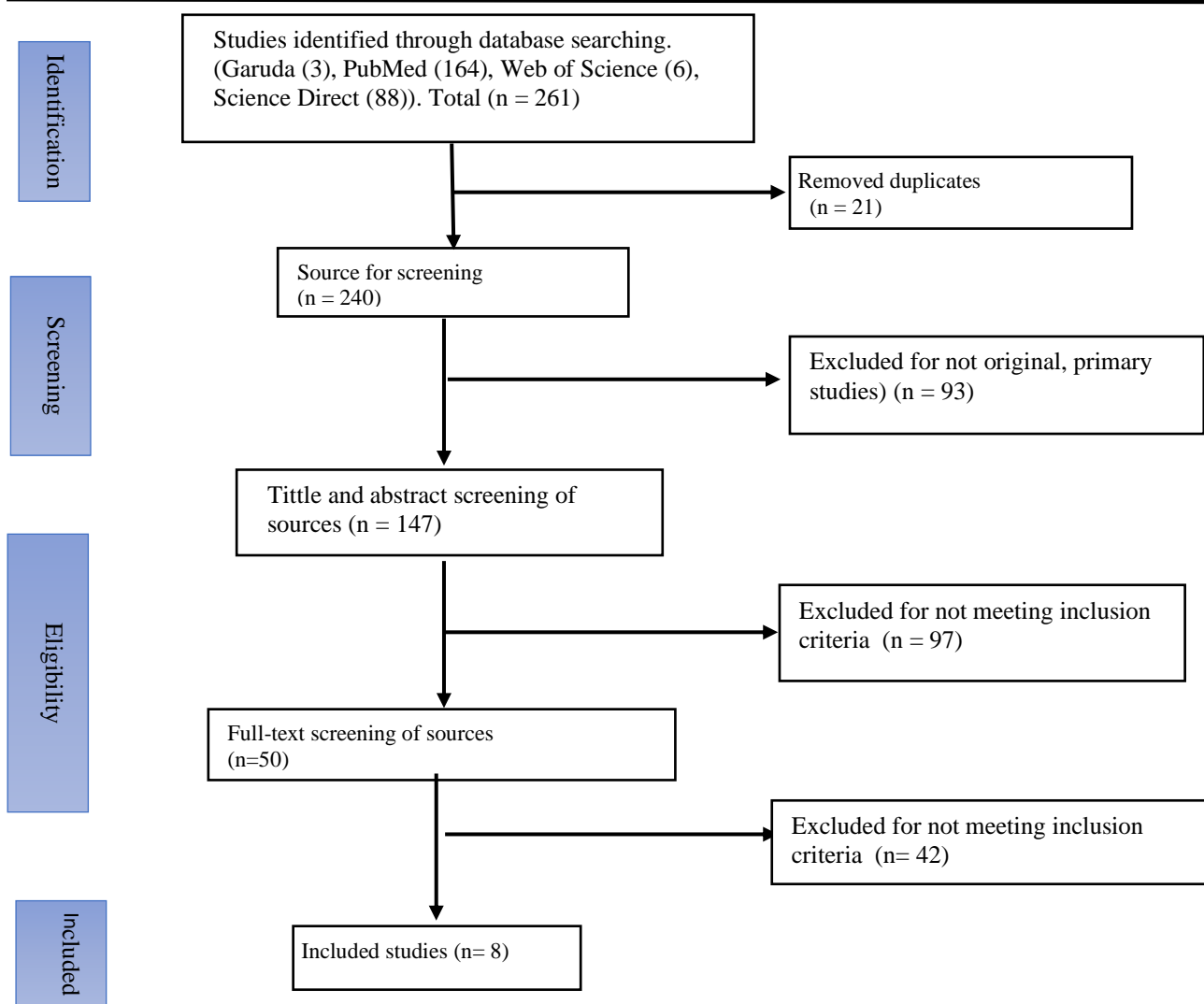
Figure 1. Library source selection process in this research

disease." The literature search was conducted in July and August 2023.

Process of selecting the obtained literature sources

Several inclusion criteria were applied in this research, including 1) original research, not studies using secondary data, published between 2013 and 2023, 2) articles with full text, not just abstracts, 3) articles published in Indonesian and English, 4) the study population consisting of adults with hypertension, 5) articles representing the effectiveness of MBCT for anxiety and hypertension management, and 6) research conducted in the community. Two reviewers in this study applied these criteria in the process of selecting literature sources. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) were used as a guideline for selecting the obtained articles. All researchers played a role in the initial selection process and content analysis.

Creating data tabulation

Creating a list of tables is a technique that facilitates the synthesis of research topics and questions. All the articles analyzed in this study received positive evaluations. In the synthesis process, eight articles were extracted and analyzed, recording the following data: 1) author and year of publication, 2) objectives, 3) research methods, 4) participants and their numbers, 5) location or setting, and 6) research findings. Detailed research data tables are presented by the researcher in the results section.

RESULTS AND DISCUSSION

Results

The process of selecting literature sources

The researcher obtained 261 articles from various online sources, including Garuda (3), PubMed (164), Web of Science (6), and Science Direct (88). Some of the articles found were duplicates in other databases, resulting in 240

articles selected for the next stage. This study applied specific inclusion and exclusion criteria for the articles to be analyzed. From the 240 articles selected after removing duplicates, 50 full-text articles were left for inclusion and exclusion criteria analysis. At the end of the screening process, the researcher included eight articles for analysis. Figure 1 represents the flowchart of the literature source selection process used in this study.

Characteristics of the articles analyzed in this study

The selected articles were published between 2018 and 2022. The efficacy testing of MBCT was mostly conducted outside of Indonesia, including China, the Netherlands, the United States, Spain, and Canada (Cladder-Micus et al., 2018; Jiang et al., 2022; Ponte Márquez et al., 2019; Shallcross et al., 2022; Spinhoven et al., 2022; Tomfohr-Madsen et al., 2016; Zhang et al., 2019). The characteristics of the selected articles for analysis in this study are presented in Table 1.

The research methods in these articles were primarily randomized controlled trials, which are research methods with high validity (Cladder-Micus et al., 2018; Jiang et al., 2022; Ponte Márquez et al., 2019; Spinhoven et al., 2022; Tomfohr-Madsen et al., 2016; Zhang et al., 2019). In the remaining cases, the research method used was an experiment without a control group (Rizal, 2019; Shallcross et al., 2022).

The participants in the analyzed studies had a history of anxiety. This included pregnant women, patients with hypertension, and patients with cardiovascular disorders. Articles that applied MBCT to pregnant women were considered for analysis because the inclusion criteria for those studies involved a history of anxiety and elevated blood pressure as an outcome of MBCT intervention.

Components of MBCT

MBCT is a therapy that combines cognitive, psychoadaptive, and mindfulness abilities (Spinhoven et al., 2022). Several types of mindfulness were extracted in this research, including general MBCT, MBCT during pregnancy, MBCT for anxiety (MBCT-A), and telephone-delivered MBCT (MBCT-T) {Citation}. All of these MBCT variants share the same characteristics as the classic MBCT developed by Teasdale et al. (2003). Some of these components include body MBCT is a therapy that combines cognitive, psychoadaptive, and mindfulness abilities (Spinhoven et al., 2022). Several types of mindfulness were extracted in this research, including general MBCT, MBCT during pregnancy, MBCT for anxiety (MBCT-A), and telephone-delivered MBCT (MBCT-T) (Jiang et al., 2022; Ponte Márquez et al., 2019; Spinhoven et al., 2022; Tomfohr-Madsen et al., 2016; Zhang et al., 2019). All of these MBCT variants share the same characteristics as the classic MBCT developed by Teasdale et al. (2003) written in Ghahari et al. (2020). Some of these components include body scanning, breath awareness exercises, yoga or mindfulness meditation, mindful eating, walking, and loving-kindness practices. For detailed information on the topics and components of MBCT, please refer to Table 2.

In broad terms, the timeframe for conducting MBCT is eight weeks, with each session lasting from 2 to 2.5 hours. One development of MBCT includes the addition of a pre-course session lasting four hours, as well as one day dedicated to contemplation (day of silence). MBCT-T has also emerged as an alternative for delivering therapy online.

Discussion

The present scoping review aimed to explore and synthesize the existing literature on the effects of Mindfulness-Based Cognitive Therapy (MBCT) on anxiety and blood pressure in individuals with hypertension. The findings of this review shed light on the potential therapeutic benefits of MBCT in managing these important health outcomes.

The Effectiveness of MBCT in Reducing Anxiety

This study provides compelling evidence that MBCT holds significant potential for reducing anxiety levels in individuals with hypertension. Our analysis results indicate that the majority of the studies we reviewed show a statistically significant decrease in anxiety levels after participants undergo the MBCT program. These findings align with prior research, supporting the efficacy of MBCT in alleviating anxiety across various populations, including individuals grappling with chronic health issues such as hypertension (Ponte Márquez et al., 2019; Spinhoven et al., 2022; Tomfohr-Madsen et al., 2016; Zhang et al., 2019). These outcomes lend credence to the idea that MBCT can be effectively employed as a therapeutic approach for managing anxiety symptoms in individuals with hypertension (Conversano et al., 2021).

This scoping review underscores that MBCT can make a positive contribution to reducing anxiety levels as a primary outcome. Nevertheless, it is important to note that the majority of previous research was conducted on the general population or individuals with common anxiety issues, without specifically targeting those with hypertension. Therefore, our findings further support the evidence that MBCT can also be beneficial, especially in reducing anxiety among individuals suffering from hypertension.

Table 1. Characteristics of the articles included in this study

No	Author(s), year	Objective(s)	Methods	Population	Sample size	Setting
1	(Jiang et al., 2022)	Exploring the effects of MBCT-A in reducing anxiety among patients experiencing anxiety, decreasing disease severity, and improving quality of life.	Randomized, controlled, noninferiority trial	Adult patients experiencing anxiety.	138	Outpatients in Sixth Hospital Universitas Peking, China
2	(Spinhoven et al., 2022)	Evaluating the effectiveness of MBCT for patients experiencing anxiety and analyzing emerging mediation variables.	Pragmatic randomized controlled trial	Adults experiencing anxiety who have undergone at least one therapy session.	128	PsyQ (Parnassia Bavo group), Hague, Netherlands
3	(Shallcross et al., 2022)	Evaluating the suitability, acceptance, and safety of MBCT-T in patients with symptoms of depression and hypertension.	Experiment-open trial	Patients who have symptoms of depression and hypertension.	14	Educational clinic center in the northern part of the United States.
4	(Ponte Márquez et al., 2019)	Evaluating the effectiveness of mindfulness in reducing blood pressure and stress in patients with hypertension.	Randomized controlled trial (PROBE:)	Grade 1 hypertensive patients aged 18 to 60 years	42	Hospital Santa Creu I Sant Pau, Barcelona, Spain
5	(Tomfohr-Madsen et al., 2016)	Analyzing the effectiveness of MBCT for managing anxiety and blood pressure in pregnant women.	Randomized controlled trial	Pregnant women who are experience anxiety during her pregnancy	60	Healthy HEARTS Laboratory, Universitas Calgary, Alberta, Canada.
6	(Zhang et al., 2019)	Analyzing the effectiveness of mindfulness for emotion regulation.	Randomized controlled trial	Adults patients with anxiety	36	Community setting in Beijing area
7	(Rizal, 2019)	Investigating the effectiveness of mindfulness-based psychotherapy programs in reducing anxiety in patients with heart disease.	One group pre-test post-test design	Patients with cardiovascular and having moderate to high levels of anxiety	3	Community setting in Indonesia
8	(Cladder-Micus et al., 2018)	Evaluating MBCT for chronic illness accompanied by depression.	A pragmatic randomized controlled trial	Patients who have experienced depression and anxiety in the past 12 months.	106	Radbound University Medical Center, Centre of Mindfulness

Table 2. Characteristics of the Mindfulness Based Cognitive Therapy (MBCT) included in this study

No	MBCT type(s)	MBCT components	Duration or sessions	Evaluation and instruments
1	Mindfulness based cognitive therapy (MBCT) -general	1. Body scanning/ routine activities. 2. Body scanning/ routine activities/ breathing exercise 3. Mindful yoga/ breathing exercise, breathing exercise+body scanning 4. Mindful yoga/ breathing exercise, breathing exercise+body scanning 5. Breathing exercise, breathing exercise +body scanning 6. Breathing exercise, telling and expressing though 7. Choose and combine between: body scanning/ mindful yoga/ breathing exercise 8. Instructions for practicing mindfulness in the next session.	8 weeks, 2 – 2.5 hours each session	W0 (pre intervention), W4 (mid-point), W8 (post-intervention), W20 (follow up post-intevention) Anxiety: Depression, Anxiety, and Stress Scales (DASS-21); Profile of Mood States (POMS), Perceived Stress Scale (PSS-10). Blood pressure (BP): digital sphygmomanometer
2	MBCT in pregnancy with improving anxiety and blood pressure as outcomes	The protocol is adapted from MBCT for perinatal depression (MBCT-PD). Mindful movement provided directly by the therapist and recorded in the form of CD and DVD.	8 weeks, 2 hours each session	W2 (pre intervention), W9 (post-intervention), W12 (follow up post-intervention) Anxiety: the Pregnancy-Related Anxiety (PRA), the Edinburg Depression Scale (EDS), the Generalized Anxiety Disorder Scale (GAD-7), and the Perceived Stress Scale (PSS-10). Blood pressure (BP): digital sphygmomanometer
3	MBCT-A (MBCT-anxiety)	This MBCT protocol follows the classic MBCT by Segal, Williams, and Teasdale: 1. Mindful eating 2. Body scan 3. Sitting meditation 4. Loving kindness 5. 3-min breathing space exercise 6. Mindful yoga 7. Mindful walking	• 4 hours precourse orientation • 8 weeks for the main class • 1 day of silence	W1 (baseline), W8 (post intervention), W20 (follow up after intervention) Anxiety Hamilton Anxiety Rating Scale (HAMA)
4	Telephone-Delivered MBCT (MBCT-T)	Adapted from the mindfulness protocol for individual therapy by Segal et al., 2001, into a telephone-based intervention. Participants are provided with a workbook containing interventions for each session, a journal or logbook, and audio recordings to guide independent mindfulness practice. Self-practice is scheduled daily for 15-20 minutes.	8 weeks, with each telephone intervention session lasting one hour.	W0 (pre intervention), W4 (mid-point), W8 (post-intervention), Anxiety: HADS (Hospital Anxiety and Depression Scale)

The Effectiveness of MBCT in Lowering Blood Pressure

In addition to reducing anxiety levels, our findings also indicate that MBCT can have a positive impact on blood pressure in individuals with hypertension. This research shows that several studies have found a significant decrease in blood pressure after participants completed the MBCT program (Rizal, 2019; Shallcross et al., 2022). However, the effects of MBCT on blood pressure may vary depending on individual characteristics and the duration of the intervention.

Although the conclusions of this scoping review provide positive evidence regarding the effectiveness of MBCT in reducing anxiety and blood pressure in individuals with hypertension, this research also has limitations. Firstly, the authors set limit criteria on language of the articles and published years included in this study. Secondly, heterogeneity in study designs, sample populations, and measurement methods can influence our research findings. Furthermore, the findings ware restricted to the term set within this study. Therefore, further research with larger samples and more rigorous research methods is needed to validate our findings.

Understanding the mechanisms through which MBCT exerts its effects on anxiety and blood pressure is an essential avenue for future research. Potential mechanisms may include improved stress management, reduced sympathetic nervous system activity, and enhanced relaxation response (Lim et al., 2021). Further studies should investigate these mechanisms to better elucidate how MBCT influences these health outcomes.

Moreover, future research should address several limitations observed in the studies included in this review. These limitations include small sample sizes, variations in MBCT protocols, and the absence of long-term follow-up assessments. Larger, well-designed randomized controlled trials with long-term follow-up are needed to provide more conclusive evidence regarding the efficacy of MBCT in the management of anxiety and blood pressure in individuals with hypertension.

The findings of this scoping review have important clinical implications. Healthcare providers should consider incorporating MBCT into their hypertension management programs, particularly for individuals experiencing comorbid anxiety symptoms. MBCT can be a valuable adjunctive intervention alongside pharmacological treatments, lifestyle modifications, and other stress-reduction strategies.

CONCLUSION

The results of this research have important implications for hypertension management. MBCT can be considered as a potentially beneficial adjunct therapy in addressing the often-accompanying anxiety issues in hypertension, while also contributing to blood pressure management. Therefore, MBCT programs can be considered as a relevant therapeutic option for individuals with hypertension.

In order to address the challenges faced by individuals with hypertension, this research provides evidence that MBCT is a potential approach to reducing anxiety and contributing to blood pressure management. While further research is still needed to validate our findings, the results of this study can provide valuable guidance to healthcare practitioners in designing effective interventions for populations with hypertension and anxiety issues.

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