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MINDFULNESS APPLICATION FOR MANAGEMENT SYMPTOMS OF HYPERTENSION: LITERATURE REVIEW

[1]Winda Rofiyati, [2]Tengku Isni Yuli Lestari Putri, [3]Ratna Wirawati Rosyida

[1]Department Medical Surgical Nursing, Faculty of Health Science, Universitas Alma Ata, Yogyakarta, Indonesia
[2]Department of Nursing, STIKes Al Insyirah Pekanbaru, Pekanbaru, Indonesia
[3]The School of Nursing of the Health Polytechnic of Surakarta, Surakarta, Central Java, Indonesia
Email: windarofiyati15@almaata.ac.id

ABSTRACT

Hypertension is cardiovascular disease that increasing, many symptom that caused oh hypertension such as insomnia, headache, high blood pressure, anxiety and many more that caused quality of life decrease. The application of mindfulness therapy to be expected provide benefit in symptom management of hypertension.The purpose of this article was to explore the evidence about the application of mindfulness therapy for symptoms management in hypertension. We conducted a literature review in several database such as PubMed, Science Direct in July 2022. We use the search terms "mindfulness" OR "behavioral therapy" AND "hypertension" OR "high blood pressure". Only RCT and clinical trial included that discuss about intervention to maintain symptoms hypertension patient. There are 11 articles that included that discuss about the mindfulness application to maintain symptoms of hypertension. There are 11 articles that summarize and all articles with RCT and Clinical trial using mindfulness intervention such as Mind-Body Practice Relaxation Response(MB-RR), Mind-Body Stress Reduction, Mindfulness based Blood Pressure Reduction (MB-BP), Chi-Running, Purse-lip breathing, MBSR-ELDERSHINE, Yoga Mindfulness in Motion (MM),Mindfulness based cognitive Therapy (MBCT) and Mindfulness Meditation . There are intervention that use into management symptoms of hypertension. This literature review conclude that mindfulness have the beneficial effect on management symptoms of hypertension. Mindfulness provide the psychological approach to maintain the physiological response that could lower the blood pressure of hypertensive participants but also target mechanism must be more exploration.

Keywords: Mindfulness, Hypertension, Symptom Management

INTRODUCTION

Hypertension is condition when the average of 2 measurement of systolic was ≥140 mm Hg and diastolic was≥90 mm Hg (1). This condition cloud increase the risk of many cardiovascular disease such as stroke, myocardial inf ark, heart failure and others. Hypertension has many clinical manifestation that needs to manage to be decrease the risk of many CVD and complication. One of the implementation of technique that have benefit effect to maintain the symptom of hypertension is mind-fullness therapy.

Mindfulness is defined as a combination of acceptance, diffusion, at present moment and transcendent sense of self is a powerful ally in producing therapeutic change (2). Other definition explore that mindfulness is about awareness as a using one's attention to monitor one's moment to moment experience through an open lens of equanimity and acceptance (3). The mindfulness intervention supporting bio behavioral and neuroimaging studies provide plausible mechanistic pathway linking mindfulness interventions with positive physical health

outcomes. That would possible to apply in managing the symptoms of some chronic condition such as hypertension. We conducted a literature review to explore the evidence that mind full application would add benefit impact to managing symptoms of hypertension patient and could increase the health condition trough the psychological process.

METHOD

a. Identification and selection

This review focuses on the mindfulness application and intervention on hypertension condition. We conducted a systematic searches on science direct and Medline in July 2022. We identified the titles, abstract, and full text were screened for the eligibility by 2 reviewer separated. This inclusion criteria was the RCT and clinical trial article and available in full text, article using English language. We use the specific keyword the conducted systematic research using mesh term and combination keyword of hypertension AND mindfulness, only RCT AND clinical trial were included.

Exclusion Criteria:

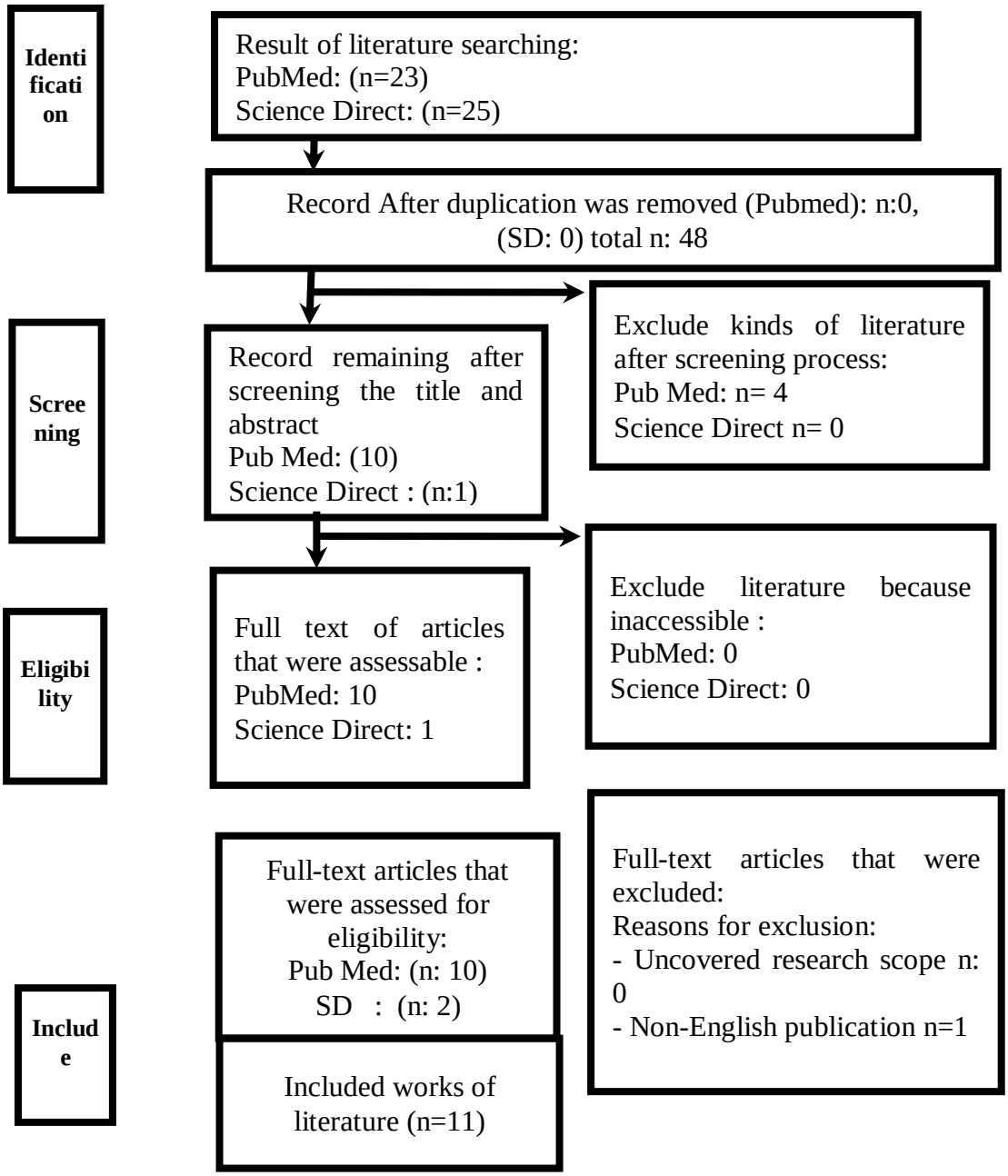
We Exclude articles other than English and experiments using animals.

Data Extraction:

Data were extracted from eligible article on study population, study design, intervention, measurement and outcomes.

Summarizing The Findings

All articles with inclusion criteria then summarized by taking into findings the mindfulness to maintain of symptoms of hypertension. The methodological characteristics of articles also evaluated using excel worksheet. Each article will be assessed about the study design inclusion criteria, data retrieval and outcome.



No	First Author	Publication year	Country	Journal	AIM	Inclusion (IC) and Exclusion Criteria	Study Design	Intervention	Main Findings
1.	Bhasin. M.K(4)	2017	Israel	J Altern Complemet Med	To determine the biological pathways and mechanisms of MInd-Body Practices Relaxatio	The inclusion criteria in this study were patients with stage 1 hypertension with blood pressure between 140-159 mmHg and diastolic pressure between 90-104mmHg at an average of 3 weeks of visits, and previously the	Clinical Trial	The enrolled patients received training to receive the Relaxtion Response , which included eight weekly personal	This study suggest that theRR reduces BP, at least partially, by change expression of genes in a select set of biological pathways, most

					n response that lowers blood pressure	patient had not taken antihypertensive drugs and had experience with Mind-Body Practice RR (relaxation response)		training sessions from an experienced RR trainer.	prominently involving NFkB as a key regulatory molecule.
2.	Kimberly Blom(5)	2014	Canada	Am J Hypertension	The aim of this study was to determine whether an8-week MBSR therapy program could lower ambulatory BP among untreated participants with stage 1hypertension	Inclusion criteria: were aged 20 to 75 years with mean awake ambulatory systolic or diastolic BP ≥ 135/85mm Hg or mean 24-hour ambulatory BP ≥ 130/80mm Hg.	RCT	8-week MBSR programth at was completed during the initial 12-week period (mindfulness bassed stress reduction)	MBSR did not lower ambulatory BP by a statistically or clinically significant amount in untreated, stage 1 hypertensive patients when compared with a wait-list control group.
3.	Joel W. Hughes(6)	2013	Canada	psychosomatic Medicine	This study examined the effects of MBSR on high BP using a small-scale randomized controlled design	Healthy individuals aged 30–60 years with unmedicated BP in the prehypertensive range (SBP 120–139 mm Hg or DBP 80–89 mm Hg) were sought for this trial. Participants could not be taking antihypertensive medication, could not be experienced with meditation practices, could not be current smokers, and could not report any disease (e.g., myocardial infarction, heart failure, chronic kidney disease, diabetes) that would mandate treatment with drugs that could substantially	RCT	Intervention of MBSR (minfulness based stress reduction) comparing with control group with Progressive muscle relaxation (PMR)	MBSR resulted in a reduction in clinic SBP and DBP compared to PMR.

						affect BP			
4.	Loucks(7)	2019	California, USA	PLoS ONE	The primary objective of this Stage 1 clinical trial was to create an adapated MindfulnessBased Blood Pressure Reduction (MB-BP) program, and evaluate acceptability, feasibility, and effects on hypothesized primary proximal self-regulation mechanisms.	Inclusion criteria were:(1)Hypertension/prehypertension (SBP≥120 mmHg systolic or DBP≥ 80 mmHg or prescribed antihypertensive medication for treatment of hypertension); (2) Able to speak, read, and write in English; (3) All adults (≥18 years of age), genders and racial/ethnic groups were eligible to be included. Exclusion Criteria were: (1) Current regular meditation practice (>once/week); (2) Serious medical illness precluding regular class attendance; (3) Current substance abuse suicidal ideation or eating disorder; and (4) History of bipolar or psychotic disorders or self-injurious behaviors	Clinical Trial	MBSR for participant with prehypertension/hypertension (MB-MB-BP and MBSR contain similar instruction and practices in mindfulness meditation, and conversations about stress and copingBP).	Mindfulness-based program is aceptable and faasibel for participant with elevated blood pressure.
5.	Kelly McDermott(8)	2015	California	BMC Complementary and Alternative Medicine	The objective of this studi is to examine the feasibility and acceptability and gather the preeliminary outcome data of ChiRunning for participant with elevated blood	Inclussion :1)The upper limit of SBP was increased to 150 mmHg and the upper limit of DBP to 100 mmHg, 2) BMI was increased to ≤35 kg/m2 , and 3) participants currently taking blood pressure medication were permitted with permission of their physician. Exclusion criteria included: inability to provide informed consent; any history of serious joint or lower limb injury precluding running	RCT-pilot study	Participants were randomized 2:1:1 to 8 weeks of: 1) intervention—a trainer-led ChiRunning group (n = 10); 2) active control—a trainer-led running group (n = 6); or 3) educational control—a self-directed	ChiRunning is feasible and acceptable exercise for people with elevated bloodpressure. It did not find that ChiRunning had a significant impact on blood pressure or self reported injury, butdid see a positive change in BMI over

					pressure.	as a reasonable exercise program; self-reported inability to run continuously for 5 min (required for the gait analysis reported separately); substance or alcohol abuse, mental health, or a medical condition that, in the opinion of investigators, would make it difficult to participate in the group training sessions;		running group (n = 6) and followed for 4 more weeks. The active control and educationa l control groups were combined for analysis.	time.
6.	Thapana wong Mitsungn ern MD(9)	2020	Thail and	J Clin Hype rtens	The study aimed to examine the effect of a pursed-lip breathing technique combine d with number counting versus con ventional care on BP and heart rate (HR) in HT urgency patients in ER.	1) ACS, 2. acute HF, 3) acute stroke, 4) intracerebral hemorrhage (ICH), 5) hypertensive encephalopathy, 6) acute aortic dissection, or 7) acute kidney injury (AKI)	RCT	Using a pictorial card set, an emergency nurse trained each pa tient to do pursed-lip breathing with number counting until the patient was able to do it correctly.	A pursed-lip breathing exercise combined with number counting was effective for lowering BP and HR. It is an easy and harmless complement ary treatment for patients who exhibit HT urgency in the ER.

7.	Palta(10)	2012	New York	Journal of Urban Health	The aim of this pilot study was to test the feasibility of a mindfulness based intervention, based on the principles and practices of the MBSR program, to develop mindfulness and social and emotional skills, and to lower blood pressurein a sample of low-income, urban African-American older adults	Inclusion into the study was restricted to African-Americans aged 62 years or older who were living in the building at the time of the baseline interview and had no plans to move.	RCT	This pilot study was a prospective randomized controlled trial of an adaptation of amindfulness-based intervention, called ELDERSHINE Participants who met these inclusion/exclusion criteria and who completed theconsent form and baseline questionnaires were randomized to either the 8-week ELDERSHINE intervention or a social support control group.	8 weeks ofthe mindfulness-based ELDERSHINE program improves blood pressure outcomesin low-income, urban African-American older adults. Compared to individuals inthe social support group, those who participated in the intervention program had alower mean systolic and diastolic blood pressure post 8-week intervention.
8.	LauraTolbaños Roche(11)	2017	SPAIN	Complementary Therapies in Clinical Practice	Tto analyse the effect of yoga in physiological, emotional and cognitive self-regulation and in perception of happiness and satisfaction with	100 participants, men and women, between 40 and 70 years old. The participants were diagnosed and treated essential arterial hypertension patients of San José Health Centre in Las Palmas de Gran Canaria.	RCT	Himalayan Tradition (HT) Meditation group: 12, Pranayama group: 19, Yoga Practice group: 14	The results of this study show that yoga practice has a significant and beneficial effect on physiological, emotional and cognitive self-regulation, as well as on perception of happiness and

					one's life of the participants, and to study the effect of this self-regulation on physiological parameters related to hypertension and on associated emotional symptomatology, i.e., anxiety, distress, perceived stress and depression.				satisfaction with one's life enhancement.
9	Kathy D. Wright(12)	2021	Ohio United states	J Am Geriatr Soc	to examine the feasibility and acceptability to deliver a novel Mindfulness in Motion plus DASH (MIM DASH) intervention to improve diet, mindfulness, and reduce stress and systolic blood pressure	(1) diagnosis of hypertension and (2) MCI indicated by a score of 10–17 on the Self-Administered Gerocognitive Examination (SAGE),12 specifically designed to screen for MCI and early dementia.	RCT	The MIM DASH intervention was delivered by the investigators (KDW, MK, IA) in a group format of 8-weekly sessions lasting 2 hours each. Weekly group sessions included a didactic presentation on stress, mindfulness, and the somatic mind/body connection	There were no changes in diet, mindfulness, or stress. There was a clinically significant reduction in systolic BP in the MIM DASH group (−7.2mm Hg) relative to the attention only group (−.7), and no change between the MIM DASH and true control groups.

					in African American older adults with mild cognitive impairment (MCI) and hypertension.			.	
10	Mercedeh Masoumi Alamout(13)	2020	Iran	International Journal of Nursing Sciences	to evaluate the effect of mindfulness-based cognitive therapy (MBCT) on weight loss, hypertension, and attentional bias towards food cues in a group of women affected with this condition.	The, body massindex (BMI) of 25.0e29.9 kg/m2; absence of menopause, lactation, and pregnancy, no cancer, hepatic, renal, thyroid, gastrointestinal, and specific psychiatric disorders, no weight-loss surgery, nonattendance in cognitive therapy sessions, age range of 30e50 years, female gender, no weight loss over the past 6 months, non use of herbs and medications to suppress appetite and to lose weight, and no consumption of vitamin-mineral supplements.	quasi-experimental research with a control group accomplished by pretest/poste	The first experimental group was subjected to a diet therapy together with MBCT, the second experimental group took the weight-loss diet therapy alone, while the third group received no intervention as the control group.	In general, it seemed that a combination of cognitive interventions with hypocaloric diets was more effective than any of these interventions alone. Therefore, obese individuals can improve their mental health and strengthen their self-management once they receive nutritional and dietary recommendations and psychological support
11.	Jeani Park et al	2014	Virginia	*Am J Physiol Regul Integr Comp Physiol*	to determine the effects of MM on BP and SNS activity acutely in hypertensive AA males with	This study consisted of 15 participants aged 51-66 years, with a medical diagnosis of stage III CKD. All participants had kidney function not more than 5% with hypertension controlled by treatment. The sample of this	RCT	Intervention of mindfulness meditation	The major new findings of this study are the following: 1.) a single session of guided MM lowers BP and HR acutely in hypertensive patients with CKD Stage III; 2) CKD

	CKD.	study was male African-American veterans who were treated at the Atlanta Veternas Affairs Medical Center. All participants do not do meditation and exercise regularly. Exclusion: Use of “Illicit drug within 12 months and have major comorbidities such as diabetes mellitus, neuropathy, vascular disease, uncontrolled anemia, or heart failure and heart disease as described by ECG disturbances .		patients had a significantly greater reduction in MSNA acutely during MM, suggesting that MM may modulate central sympathetic output, resulting in lower BP; 3) reductions in BP and MSNA, but not HR, were maintained during the immediate recovery period following MM; 4) participants had a lower RR during MM compared with the control intervention; and 5) during CB, in which RR was lowered without concomitant meditation, BP and MSNA were not lower compared with the control intervention, suggesting that CB alone is not suffificient to acutely modulate central SNS output.

RESULTS AND DISCUSSION

The literature selection after using search term and Boolean resulted in 48 articles. These article screened by duplication, reading the abstract, full text assessed there 11 articles included in this review. We included 11 articles based on the inclusion criteria from: *J Altern Complemet Med, Am J Hypertension, psychosomatic Medicine, PLoS ONE, BMC Complementary and Alternative Medicine, J Clin Hypertens, Journal of Urban Health, Complementary Therapies in Clinical Practice, J Am Geriatr Soc, International Journal of Nursing Sciences, Am J Physiol Regul Integr Comp Physiol.*

There are 11 articles that summarize and all articles with RCT and Clinical trial using mindfulness intervention such as Mind-Body Practice Relaxation Response (MB-RR) (4), Mind-Body Stress Reduction (5, 6), Mindfulness based Blood Pressure Reduction (MB-BP) (7), Chi-Running((8), Purse-lip breathing (9), MBSR-ELDERSHINE (10), Yoga (11), Mindfulness in Motion (MM) (12), Mindfulness based cognitive Therapy (MBCT) (13), Mindfulness Meditation (14). Thera are intervention that use into management symptoms of hypertension. The article data information is detailed in table.1 all article discuss about the application of mindfulness intervention for symptoms management of hypertension. Hypertension is a cardiovascular disease whose prevalence is increasing and causes mortality worldwide (15). Hypertension has several kinds of symptoms that can reduce the quality of life of sufferers such as headaches, increased blood pressure, insomnia etc (16). Several complementary methods and alternative therapies are available for the management of cardiovascular disease, one of which is the Mind-Body Approach (17). Mindfulness has a positive impact on hypertension especially in reducing blood pressure and reducing stress level (18). Mindfulness is kind of several procedures, including acceptance, cognitive diffusion, and exposure (2). Mindfulness has developed many interventions based on Mind-Body Relaxation (19). One of them is about MBSR which has the effect of lowering diastolic and systolic blood pressure in hypertensive patients and reducing stress compared to progressive muscle relaxation (6). MBSR provide an alternative intervention for physicians and patients that may help patient's acceptance with their diseases effectively (20). Mindfulness also develop in many program to increase the efficacy of the intervention, some of them is too maintain the resentence and to develop the behavior of participant cope with the hypertension. Mindfulness make the approach with health education make participant with hypertension manage their disease better (21).

CONCLUSION

This literature review conclude that mindfulness have the beneficial effect on management symptoms of hypertension. Mindfulness provide the psychological approach to maintain the physiological response that could lower the blood pressure of hypertensive participants but also target mechanism must be more exploration.

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