



A SYSTEMATIC REVIEW ON MANAGEMENT OF HYPERTENSION THROUGH YOGA AND MEDITATION

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ABSTRACT

In this paper we explored a systematic review on management of hypertension through yoga and meditation. In this unit we said, yoga was linked to a small but substantial drop in blood pressure “(4mmHg, systolic BP (SBP) and diastolic BP (DBP)). Subgroup analyses revealed larger, more clinically significant blood pressure reductions for interventions incorporating three basic elements of yoga practice (postures, meditation, and breathing) (8mmHg, systolic; 6mmHg, diastolic) but not for more limited yoga interventions; yoga compared to no treatment (8mmHg, systolic; 6mmHg, diastolic) but not exercise. These decreases are clinically significant, indicating that yoga might be a useful tool for lowering blood pressure in persons with prehypertension or hypertension. Additional rigorous controlled trials are needed to further investigate the potential benefits of yoga for improving blood pressure in these populations and to determine optimal yoga program design and dosing because none of the included studies had methodologies with low risk of bias in primary domains. To avoid putting a changing internal training load on patients, exercise should be matched to their clinical and functional state. In hypertensive individuals, moderate-intensity aerobic, isometric, and dynamic resistance exercise training, alone or in combination, was equally efficient in decreasing blood pressure or hypertension.” There is a need to more research, prove, and prescribe the optimal and exact dose of various exercises that can be prescribed by physicians in support of pharmacological hypertension treatment, either in combination or alone in terms of volume and intensity, and to regulate blood pressure, it can also be adapted to the patient's functional and clinical condition.

KEYWORDS

Yoga, Management, Hypertension, Meditation

I. INTRODUCTION

Yoga is an example of an alternative healthcare exercise which has been demonstrated to assist with blood pressure or hypertension regulation [1–3]. Even though it is often explained as an ancient practice (originating between 5,000 and 8,000 years ago) [4–6] which includes poses, breathing exercises, meditation, and certain ethical concepts, there is no universally accepted definition of yoga [7, 8]. Various yoga practitioners keeps growing, with latest estimates predicting that around 15.8 million people (6.9% of the population) in the United States practice yoga [9]. Yoga is constantly being suggested as a method of improving quality of life and health by American health care professionals [9], which is particularly pertinent to the problem of blood pressure regulation. Blood pressure regulation is one of the best researched of the numerous advantages attributed to yoga practice [3]. Several studies [1, 3, 10–13] have been reported on the health and wellness benefits in regulating blood pressure as well as other cardiovascular risk indicators, the majority have noted that the quality of the research is typically poor.

CAM (Complementary and Alternative Medicine) is a kind of complementary and alternative medicine that encompasses mind-body treatments and has been shown to lower blood pressure. Yoga is a supplementary alternative medicinal therapy that includes yoga. Yoga was created around 5,000 years ago in Northern India by the Indus-Sarasvati culture [8]. Yoga is a mind-body exercise that may help you gain muscular strength and tone, lose weight, enhance your cardiac and vascular health, and deliver a number of mental and physical advantages. Yoga regulates the body's physiological system, lowering heart rate and increasing blood flow to the extremities. Yoga has health advantages that aren't harmed by medication interactions or negative effects. In order to evaluate if yoga or pharmacological therapies are more successful in treating and maintaining hypertension patients, research must be conducted on an individual patient basis. Furthermore, several studies have emphasized on blood pressure regulation explicitly, and meta-analyses are sparse. As a result, the degree with which yoga can reduce hypertension or blood pressure, and also the prospective moderating impacts of the kind of comparison group and intervention of yoga are not known. To bridge the gap, this study examines the impact of practicing yoga on diastolic as well as systolic blood pressure in adults having hypertension or prehypertension, and also how to control it.

II. RESEARCH METHOD

The analytical methods and inclusion criteria were established ahead of time, but not in publicly published literatures. Alt Health Watch, Academic Search Premier, Cochrane Library, Biosis/Biological Abstracts, Psyc ARTICLES, CINAHL Plus with Full Text, Natural Standard, Psyc INFO, Embase, Web of Science, and MEDLINE were used to conduct a systematic literature search. By examining review

bibliographies for further studies, all of the research presented in this study was discovered, along with few unsupervised yoga sessions with blood pressure tests was also seen. Yogi / yoga, pratyahara or dharana / dhyana / Samadhi / asana, yama / niyama, and also hypertensive or hypertension or blood pressure, DBP (diastolic BP), and SBP (systolic BP) were used as search phrases,

III. RESULTS AND DISCUSSION

A total of 850 publications were found for preliminary evaluation after a database search yielded 750 potentially suitable publications. Other sources led to the discovery of 16 more papers, resulting in a total NUMBER of journals for preliminary examination to 780. After reviewing the abstracts, 230 were ruled out as duplicates, and 554 were ruled out for failing to fulfill the criteria of inclusion. The entire assessment of text of the remaining 59 papers generated 16 researches that met our complete eligibility requirements. An additional 15 research [14–28] did not give the values of blood pressure or variation in information but met remaining necessities; the main researchers were approached for information. Despite the fact that only one researcher accepted to share information, this study [14] was used into the research, resulting in a total number of studies considered suitable to 17. Several studies looked at many comparison groups. These studies were deemed separate trials [29], and 22 trials were picked for study among the 17 investigations.

A total of 1013 recruited individuals were investigated across all included trials, with 473 (46.7%) allocated to the yoga group and 540 (53.3%) allocated to the control group. The overall number of individuals who completed the investigations was 943 (yoga = 427; controls = 516), with 9.7% and 4.4 percent dropout rates for both the comparison and yoga groups, respectively. Mostly in 14 studies, males composed around 38 percent of the participants that recorded gender (n = 14). Many studies published percentages without specifying whether gender referred to those who were enrolled or those who completed the research. The average sample size for this research (depending on the number of people who finished the research) was 55.4 (31.8), with a range of 20 to 120. 10 of the 22 studies (58.8%) adopted 3 features of yoga (poses, meditation, as well as breathing) without any other therapies, four (23.5%) included two or less components, and 3 (17.6%) incorporated other portions of yoga with several other therapies. Three types of comparison groups were found across the 22 trials: 13 (59%) received no therapy or standard care; 3 (13.6%) exercise; and 5 (22.7%) other therapies related to non-exercise and non-yoga. Possible adverse consequences were not identified in 12 (70.1%) of the studies, there were no possible complications in 4 (23.5%) of the studies, while 3 adverse reactions were observed in one study (5.8%) [30]. The average amount of time spent practicing yoga was 58.9 hours (56.1); in comparison to the average, 12 studies used fewer hours and 5 research would have more hours.

Categorization of the risk of bias at the particular research level:

There was no study that had a low chance of being biased because at least one significant area had an uncertain or high risk of bias.

Sequence Generation and Treatment Allocation: Since ten of the twenty investigations were nonrandomized and eight of the investigations lacked to reveal sequence generation or distribution, 17 of the twenty investigations exhibited a high or low selection bias risk.

Participants' blinding: all trials exhibited a significant risk of bias in terms of intervention blinding. Yoga was not deemed a key area for risk of bias because of the essential participatory character of the practice.

All studies would have an uncertain risk of bias for evaluation process, excluding 2 studies which reported blinding (minimal risk of bias) [30, 31].

Different groups had different levels of attrition bias. Attrition bias was found in 8 of the 17 investigations, with an ambiguous or high risk of occurrence since 3 of the studies [30-32] revealed a high percentage of dropouts and/or no intent-to-treat evaluation result (high risk of bias), and five research indicate dropout rates of more than 15%, so they were comparable among categories (unclear risk of bias). Trials that remain that is $n = 9$ had dropout rates of 15% or less in both the intervention and comparator groups or conducted an analysis with the purpose of treating it (low risk of bias).

Selective reporting: Because this study just examined with one end result (blood pressure), only studies with all these values specified in the document were considered.

Other biases: Research were only considered if such variables were given in the paper because this assessment just examined at one consequence (blood pressure) because baseline values changed considerably across groups [33] and another that was given an uncertain risk of bias because values were inconsistent across texts [34].

IV. Impact Of Yoga On Hypertension And Its Management

In both men and women, physical activity (PA) or Yoga is linked to a reduction in blood pressure (BP) and cardiovascular mortality. The objectives of this research were to see how effective yoga or PA was as a supplement to medications in the treatment and prevention of hypertension with pharmaceuticals. From 1994 to 2019, a review of studies on the impact of PA, exercise, or yoga on regulating blood pressure in hypertensive people was conducted [37]. Yoga was also linked to lower systolic (7.96mmHg) and diastolic (5.52mmHg) blood pressure when contrasted with no treatment, but it was not if contrasted to exercises or other forms of therapies. Exercise as well as various other physical treatments used in the reviewed studies are well known for lowering blood pressure around 3–9 mmHg if comparing without any therapy [35, 36]. Considering that those impacts are equal in size and it's not unexpected since we discovered no positive benefit of yoga over other active therapy when compared to all those stated with yoga.

Female and male adults having hypertension or prehypertension, both with and without cardiovascular disease, were always the research subjects in this study. As a result, the research findings will assist the vast majority of persons having hypertension. The majority of the research looked at mild yoga programs that may be easily adopted in this therapeutic setting. In, general quality of the papers this meta-analysis contained a limited number of studies. On one or more key domains, they all demonstrated a high or uncertain risk of bias. Inability to become a blind (or to acknowledge the blinding of) individuals was the most prevalent source of bias. On the other hand, active engagement in an instructor-led method is required for studies which require active participation cannot be blinded; hence this was not considered a major area of research quality. Only two of the 17 studies, however, blinding of outcome evaluators has been recorded, a practice that is perfectly viable for studies of active intervention. Furthermore, Attrition bias was present in 8 of the 17 trials, with an uncertain or high risk, while 15 had a high or unknown risk of selection bias.

Excluding studies that employed yogic therapies but did not designate them as such might have resulted in bias. Since there are no universally agreed-upon definitions of practicing yoga, so for analytical purposes,

studies like this one should define the criteria to explain yoga. We omitted studies of various treatments that, though not labelled as 'yoga' by the authors, may be construed as yogic practices. Studies of specific meditation methods, for example, that was widely regarded yogic practices but weren't labelled as such. Given the fact that meditation has also been demonstrated to help with blood pressure reduction. [37-40], the subgroup assessment of advantages having yoga programs conducted may have been biased by the absence of these evidence.

Hence, our results indicating that programs of yoga integrate three parts of yoga - poses, meditation, and control of breath has led to substantial blood pressure decreases whereas programs on yoga containing 2 or fewer parts of yoga should be read with care. Furthermore, although some of the studies included in this study were rather lengthy (189 hours) [41], the bulk of them were not.

Exercise promotes cardiorespiratory fitness and cardiometabolic health, both of which are crucial in lowering the cardiovascular disease risk [42]. Exercising has been demonstrated to benefit hypertension patients' health and lessen the negative consequences of cardiovascular disease [43]. Walking at a moderate speed improves blood pressure regulation in adults; hypertension patients must walk on a daily basis, since it is a simple kind of PA or yoga that may be accumulated [44].

Yoga fitness training of all kinds, along with a mix of resistance and endurance activities, as well as all antihypertensive drugs, were shown to be helpful in lowering baseline SBP. There have been no significant differences in the SBP reducing effects of angiotensin transforming enzyme inhibitors, angiotensin II receptor blockers, β -blockers, as well as diuretic medications in hypertensive groups when contrasted with the dynamic or endurance resistance exercise [45]. In order to promote individual and public well-being, physicians should stress preventive and lifestyle aspects of cardiovascular health. A dedicated strategy for recommending the amount of weekly moderate-intensity PA or yoga might assist regulates levels of blood pressure without the use of antihypertensive treatment. Aerobic and resistance workouts should be adjusted to the specific characteristics of the individuals involved.

After engaging in supervised resistance exercise, hypertension patients' SBP dropped significantly when it is contrasted with the control group [46]. Aerobic exercise is frequently recommended as the very first treatment for hypertension, based on reliable evidence that it decreases blood pressure by 5–7 mmHg in hypertensive adults [47]. Moderate-intensity resistance exercise is not contraindicated and might be used as part of a non-pharmacological interventional strategy to prevent and treat high blood pressure [48]. In adults, dynamic resistance training lowers resting DBP and SBP [49]. In adults, progressive resistance training is effective in lowering resting DBP and SBP [50].

Continual isometric handgrip training lowers blood pressure [51]. As the volume of PA or yoga increases, other benefits from hypertension prevention emerge; however, Pescatello et al., systematic review [52] provided strong and convincing evidence on the relevance of physical activity or yoga in controlling hypertension in persons with normal blood pressure as well as prehypertension, as well as its effectiveness in treating hypertension by lowering BP and lessening. Their results were dose–response, with no upper limit on the amount of PA or yoga that confers benefit. Moreover, aerobic as well as dynamic resistance exercise training were beneficial in decreasing blood pressure in those persons having normal blood pressure, hypertension, and prehypertension, either in combination or alone; however, training related to dynamic resistance exercise, aerobic exercise, combined resistance and aerobic, and isometric exercise all significantly reduced SBP, with combination resistance and aerobic and training providing no additional effect. Three months of involvement in a standard exercise-based lifestyle training program in older individuals led to SBP drops by 5 mmHg and DBP drops by 3 mmHg, and the same is expected in younger people [53]. The impact on SBP was only significant in hypertension people, not in pre-hypertensive participants, according to Reichert et al., [54]. Patients who had aquatic training had lower SBP than those in the control group, and this benefit was maintained as training progressed. However, aquatic training generated a drop in DBP following training in both prehypertensive and hypertension individuals; however, the drop in DBP in hypertension patients was considerably smaller than in pre-

hypertensive patients. According to Cao et al., [55], aerobic exercise had a major effect in lowering blood pressure, SBP, HR, and ambulatory SBP, suggesting that aerobic exercise training might be a useful technique for decreasing blood pressure in hypertensive individuals.

Meditation exercise substantially lowers SBP and DBP, according to Yang et al. [56]. Qigong, a Chinese exercise routine including synchronized body movement, breathing, and meditation, may be more successful in decreasing SBP and DBP in hypertension individuals. In addition to antihypertensive treatment, participation in Baduanjin exercise, a type of traditional Chinese Qigong exercise characterized by the alignment and a well-balanced combination of symmetrical bodily movement patterns, mind, postures, and breathing significantly reduced SBP, blood glucose, and total cholesterol levels as compared to treatment with only antihypertensive drugs. While comparing with the medication of antihypertensive, Qigong has been demonstrated to be a similarly effective therapy for hypertension [58]. In hypertensive individuals, a steady rise in PA or yoga level resulted in lower SBP and DBP (5–10 mmHg and 1–6 mmHg) [59].

After a stroke, individuals doing aerobics or yoga activities had significantly lower SBP than those in the control group. [60] In East Asians, collective fluctuations in blood pressure revealed considerable decreases in SBP: 4.7 mmHg and DBP: 3.2 mmHg [61]. HIIT (high intensity interval training) leads in a significant reduction in overnight DBP when contrasted to continuous moderate-intensity exercise. Further, HIIT results in a statistically significant higher reduction in daytime BP [62]. Kelley et al. [63] examined 47 clinical studies and discovered statistically significant decrease in both normotensive and hypertensive individuals' resting DBP and SBP. The differences between the two groups proved statically important, with hypertensives experiencing a drop of around 4% (systolic) and 5% (diastolic) and normotensives seeing a reduction of approximately 2% (systolic) and 1% (diastolic) [64]. The purpose of this study would be how effective yoga is as a supplement to pharmaceutical treatment and prevention as well as management of hypertension.

• *Implications for various practices*

The results of this systematic review support the yoga which can be used as a supplementary to other medications to help prevent and control hypertension. To begin, patients must be educated about hypertension. Second, emphasize the necessity of having your blood pressure checked. Finally, sticking to a healthy diet, medicine, and exercise routine. The 8th Joint National Committee (JNC-8) issued recommendations in 2014 for healthcare practitioners to follow in order to properly treat a patient's hypertension depending on their unique circumstances [65]. Patients with hypertension over the age of eighteen should start making lifestyle changes, according to these recommendations. Even when pharmacologic treatment fails to decrease blood pressure, lifestyle adjustments and adherence are emphasized throughout the algorithm. Patients with a history of hypertension or indicators of prehypertension should begin practicing yoga as soon as they are physically able, according to Family Nurse Practitioners (FNPs). This is a low-cost workout that can be done anywhere. There are a plethora of internet sites devoted to teaching yoga to people of all levels, from beginners to experts. Yoga practice is a good CAM to include into a patient's daily life as long as the patient can produce appropriate proof of its efficiency.

V. CONCLUSION

This review is look at the impact of yoga on blood pressure and how yoga and meditation may help manage it. The thorough review of the literature utilizing numerous databases and the appraisal of research by several authors based on a priori-defined standards. A prior selection of the analyses of acceptable subgroup, as well as the use of very well meta-analysis processes for all investigations, are the features of this study. Other possibly significant elements including yoga style, instructor capabilities or teaching techniques, practice setting, and participant characteristics for example yoga experience, physical fitness, blood pressure evaluation processes, or other issues related to methodologies in the present study is not assessed. Limitations on English-language articles, information sources, and research with complete blood pressure values are all examples of constraints. Yoga has been demonstrated to provide significant mental and physical advantages in the majority of studies. In over half of the research, participants' weight, waist circumference, and/or body mass indexes

were reduced as a consequence of yoga implementation. In addition, randomized controlled trials are necessary to investigate the yoga effects on those who have a family history of hypertension, prehypertension, or have been diagnosed with hypertension. Based on the research, it can be stated that yoga is an appropriate lifestyle adjustment that a Family Nurse Practitioner may offer to a patient to treat prehypertension or to supplement pharmaceutical treatment in essential hypertension management.

According to the studies included in this review, moderate-intensity isometric, training for adults in aerobic as well as dynamic resistance exercise, both SBP and DBP were believed to be highly helpful in lowering both the SBP and DBP in adults having normal blood pressure, hypertension, as well as prehypertension. However, in addition to pharmaceutical treatment, a well-planned, supervised, and individually customized fitness training program centered on the patient's functional capability and health state should be incorporated as an adjunct therapy for BP management in hypertensive patients.

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