

Impact Of Lifestyle Based Yogic Intervention On Blood Pressure And Anxiety Level In Hypertensive Patients At Yoga Clinic Of Himalayan Hospital: A Pilot Study

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Abstract

Background: Yoga offers a natural method for both exercising and relaxing the body. In today's context, hypertension can be effectively managed through lifestyle-oriented yoga practices.

Objective: To examine how lifestyle-based yoga practices influence blood pressure control and anxiety levels in individuals with hypertension.

Methods: Study Design: Descriptive.

Study Population: Participants with hypertension according to ACC/AHA criteria. The study was conducted at the Yoga Clinic of Himalayan Hospital, Dehradun. A total of 24 participants were enrolled after receiving expert counseling. Baseline parameters were assessed at the time of enrolment. Blood pressure and anxiety were measured using a sphygmomanometer and the Hamilton Anxiety Rating Scale, respectively. The yoga program designed for the participants included joint and gland practices, Nadishodhan pranayama, and 31-point systemic relaxation techniques from Himalayan tradition yoga, practiced daily for one hour (five days a week) over the course of one month.

Results: All key parameters of the participants were measured at the start of the study. A notable decrease in blood pressure and anxiety levels was observed in the group that practiced yoga as an intervention, compared to the baseline measurements.

Conclusion: These are preliminary findings, and a more extensive study with a larger participant group is planned for the future. The results indicate that yoga practices may serve as a beneficial complementary treatment for managing high blood pressure and anxiety in patients with hypertension.

Keywords: Hypertension, Anxiety, Yoga, Blood Pressure.

Introduction:

Hyper-tension is a prevalent condition globally, affecting approximately 25% of adults. It is recognized as a leading cause of death and the third most significant contributor to disability-adjusted life years worldwide.¹ Kearney et al. projected that by 2025, the number of adults with hypertension globally would rise to 1.56 billion.² Recognizing and analysing modifiable risk factors for hypertension is crucial for both public health and clinical practice. Hypertension arises from a range of factors,

including genetic, psychosocial, and environmental influences.²⁻⁴ Despite this, the physiological mechanisms are complex, and the relationship between psychosocial factors and hypertension remains not fully understood.⁵⁻⁷ Anxiety is a prevalent psychiatric condition among adults and poses a significant public health challenge in numerous countries,^{8,9} impacting the individual's health and overall quality of life.¹⁰ With both hypertension and anxiety presenting major public health issues, there has been increasing focus on understanding their relationship.

Several epidemiological studies have explored this relationship, often yielding mixed results. Some research indicates a link between anxiety and hypertension, suggesting that individuals with anxiety may have a higher risk of developing hypertension compared to those without anxiety.¹¹⁻¹⁴ Additionally, individuals with hypertension are at a greater risk of experiencing anxiety compared to those without hypertension.^{15,16} However, some researchers do not agree that anxiety symptoms contribute to the development of hypertension.^{17,18} Some research has even found that anxiety may be linked to lower blood pressure.^{19,20} As of now, no meta-analysis has been conducted to examine the relationship between anxiety and hypertension. Consequently, we reviewed existing data from both cross-sectional and longitudinal studies and performed meta-analyses to explore the correlation and long-term associations between anxiety and hypertension.

Lifestyle plays a crucial role in the development of hypertension. Factors such as insufficient physical activity, smoking, poor dietary habits, and weight gain can exacerbate anxiety and substantially elevate the risk of hypertension. Therefore, adopting lifestyle changes through practices like Ahaar Vihar Achar Vichar may assist in managing hypertension and mitigating these risks²¹. Focusing on lifestyle changes is crucial for managing hypertension. Research indicates that adjustments such as weight loss, following dietary guidelines, reducing salt intake, and increasing physical activity can effectively help control hypertension.²², managing stress, quitting smoking, and abstaining from alcohol²³. Additionally, lifestyle changes can play a crucial role in effective stress management²⁴. However, patients might lack sufficient knowledge about healthy lifestyle practices.

However, research on the impact of multi-component educational interventions in Iran is limited. This study was undertaken to address these gaps.

Objectives:

The study aimed

To evaluate the effect of Lifestyle based yogic practices on Blood Pressure control and Anxiety level in patients with Hypertension with their ongoing treatment

Methods:

The study population comprised individuals with hypertension according to ACC/AHA guidelines. The research was conducted at the Yoga Clinic of Himalayan Hospital in Dehradun. A total of 24 participants, aged 40 to 50 years, were enrolled following expert counselling. Inclusion criteria included hypertensive patients of either gender who experienced anxiety and were willing to participate. Patients with cognitive disorders and pregnant women were excluded from the study.

Intervention:

Lifestyle based yogic practices include AHAR, VIHAR, ACHAR and VICHAR components with some yogic practices for treatment of Hypertension and Anxiety in Hypertensive patients. This intervention include 45 minutes daily of combine yogic practices of Himalayan Tradition and 15

minutes of systemic relaxation (31 points) (Table 1) and 15 minutes of AVAV Counselling sessions. The intervention was provided by qualified yoga instructors and supervised through online video tutorials. Additionally, patients received an e-module (video) to facilitate self-learning and practice. A log book was used to track the daily practice times and durations, ensuring consistent participation from the entire study group. The study was conducted from October to December 2022.

Table 1. Yoga interventions details:

Therapies	Sessions	Duration
Joints and glands practices	1 session/day	30 min
Diaphragmatic breathing	2 session/day	10 min
Nadishodhan Pranayama	2 session/day	5 min
Systemic Relaxation (31 points)	2 session/Day	15 minutes
Counselling on Ahar Vihar Achar Vichar	1 session/day	15 minutes

Outcome Measurements:

Blood Pressure and Anxiety were assessed using the Sphegnomono meter and Hamilton anxiety rating scale.

The Hamilton Anxiety Rating Scale (HAM-A) is used to evaluate the severity of anxiety symptoms. It includes 14 items, each addressing a set of symptoms related to both psychic anxiety (such as mental agitation and psychological distress) and somatic anxiety (physical symptoms associated with anxiety). Each item is scored from 0 (absent) to 4 (severe), with total scores ranging from 0 to 56. Scores below 17 suggest mild anxiety, 18-24 indicate mild to moderate anxiety, and 25-30 reflect moderate to severe anxiety.

A sphygmomanometer is a common device used to measure blood pressure. It generally consists of an inflatable rubber cuff placed around the arm and connected to a graduated scale, which allows for the measurement of systolic and diastolic blood pressure by incrementally inflating and deflating the cuff.

Statistical analysis:

Baseline parameters for participants were assessed during the enrolment phase of the study.

Statistical analysis was conducted with IBM SPSS version 23 for Windows, and data were reported as means with standard deviations (SD). Data normality was assessed using the Kolmogorov-Smirnov test. Internal reliability of each scale was evaluated using Cronbach's alpha. Confirmatory factor analysis was employed to verify the factor structure of the scales utilized in the study.

A paired t-test was conducted to assess the statistical significance of the intervention, with significance defined as $P < 0.05$.

Results:

A total of 35 participants were initially recruited for the study. However, 11 participants were excluded: 8 withdrew unilaterally and 3 dropped out during the follow-up phase. As a result, the study was completed with 24 participants.

The results indicated in Table 2, there is statistically significant reduction in mean anxiety scores from baseline to after one month of practicing the yoga program ($P < 0.001$). A similar significant change was observed in blood pressure levels. The Least Significant Difference test showed that mean anxiety and blood pressure scores at the first and second post-tests were notably lower than their respective

pre-test values. Additionally, the scores at the first and second post-tests were significantly reduced compared to the pre-test values. Significant differences were also found between the two post-tests concerning the mean scores of anxieties and blood pressure ($P < 0.001$).

Table 2. Comparing Mean Scores of Anxieties and Blood Pressure Within the Group

Outcomes	Before	After 15 days	After One Month	P Value
Anxiety				
Group of Study	9.9 ± 1.8	7.6 ± 1.5	6.7 ± 1.6	0.001
Systolic Blood Pressure				
Group of Study	132.3 ± 6.6	130.2 ± 1.9	125.3 ± 6.1	<0.001
Diastolic Blood Pressure				
Group of Study	86.10 ± 5.2	83.2 ± 5.5	80.8 ± 3.5	<0.001

Discussion:

The current study indicates that lifestyle-based yoga interventions are effective in reducing anxiety and improving blood pressure. Similarly, a previous study demonstrated that multimedia nursing education for patients in the coronary care unit significantly impacted their levels of depression, anxiety, and stress.²⁵ In a similar vein, research demonstrated that training in positive thinking led to significant reductions in depression, anxiety, and stress among patients with coronary heart disease.²⁶

Additionally, Rezapour et al. (2016) found that implementing collaborative care was linked to reduced anxiety and stress in patients following coronary angioplasty.²⁷ These results may be attributed to the need for a longer follow-up period to fully assess the long-term impact of lifestyle-based yoga interventions on blood pressure levels.

The study results demonstrated a notable reduction in the average anxiety score between the initial and subsequent post-tests. These results are consistent with findings from previous research. For example, one study found that both face-to-face and written lifestyle education—covering topics such as smoking cessation, physical activity, treatment adherence, dietary changes, and management of blood pressure and stress—successfully lowered anxiety levels in cardiovascular patients, with effects observed up to four months after the intervention^{27,28}. Another study observed significant benefits from an eight-session educational program focused on mindfulness-based stress reduction, noting lasting effects on anxiety and stress that extended for three months following the intervention.²⁵

Lifestyle is influenced by thought patterns and constant environmental stressors, making yoga education essential for lifestyle modifications. To effectively alter health patterns, individuals need yoga education and lifestyle adjustments to identify and understand life-related issues impacting anxiety levels and blood pressure.

Additionally, our study focused on patients with hyper-tension and involved a face-to-face lifestyle-based yoga program supplemented by follow-up telephone contacts. In contrast, other studies addressed only specific aspects of lifestyle. A comprehensive lifestyle modification approach has a more substantial impact on patients' knowledge, attitudes, and practices concerning hyper-tension and anxiety²⁹. Furthermore, our study involved scenario presentations and group discussions, encouraging active participation from the subjects.

The discrepancies between the results of this study and previous studies might be attributed to the combined use of AVAV-based counseling, various yogic practices, and a comprehensive educational program that addresses all aspects of the participants' lifestyles, along with consistent follow-up.

One of the study's limitations was the brief follow-up period and the small sample size. To better understand the impact of lifestyle education and family support on blood pressure, stress, anxiety, and depression, future research should include longer follow-up periods and larger participant groups.

Conclusion:

Integrating lifestyle-based yoga interventions has shown to significantly alleviate anxiety and enhance blood pressure regulation in patients with hypertension. By incorporating these practices alongside traditional medical treatments, patients can experience improved mental and physical health outcomes. Yoga, with its combination of physical postures, breathing exercises, and meditation, addresses both the psychological and physiological aspects of hyper-tension. Regular practice not only aids in reducing stress and anxiety levels but also contributes to better cardiovascular health by lowering blood pressure. This dual approach is particularly beneficial for hypertensive patients who often suffer from anxiety, creating a cycle that exacerbates their condition. Incorporating yoga into conventional care routines can provide a holistic approach to managing hyper-tension. Patients benefit from the mental calmness and physical relaxation that yoga offers, leading to a more balanced and healthier lifestyle. This integrative method supports the notion that treating hyper-tension is not solely about medication but also about fostering overall well-being. Thus, lifestyle-based yoga interventions should be considered as a complementary strategy in the management of hypertension to enhance the efficacy of conventional treatments and promote greater mental and physical well-being for patients.

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