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The Effect of Selected Yogic Intervention on different parameters in Obese Individuals

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Abstract:

Introduction

Obesity is a significant public health concern globally and is closely associated with elevated blood pressure, increasing the risk of cardiovascular diseases. Conventional management often relies on pharmacological interventions, which may have limited long-term efficacy and potential side effects. The present study explores the effect of selected yogic interventions on body weight, BMI and blood pressure reduction among obese individuals. A non-pharmacological, integrative approach was employed, utilizing a structured yoga module that included specific asanas (postures), pranayama (breath regulation), and guided relaxation techniques. A randomized controlled trial was conducted involving 100 obese participants aged 20–40 years, divided into a yoga group and a control group. Over a 12-week period, the yoga group practiced the intervention five days per week under supervision. Pre- and post-intervention measurements of body weight, BMI, systolic and diastolic blood pressure were recorded and statistically analysed. Results indicated a significant reduction in body weight, BMI, systolic and diastolic blood pressure in the yoga group compared to the control group ($p < 0.05$).

Objective:

To evaluate the effects of selected yogic interventions on body weight, body mass index (BMI), and blood pressure on obesed individuals.

Material and methods:

Two hundred cases of obsessed, aged 20 to 40, from the Raipur city participated in a preliminary controlled trial investigation. They were divided in to into two groups such as control and experimental. The experimental group practiced selected yoga for 3 months but the control group did not practice any yoga but led as usual life.

Results:

Results showed significant improvements in the yoga group, with reductions in all measured variables ($p < 0.05$).

Conclusion:

Effect of selected yogic interventions has got the positive result to reduce the body weight, body mass index (BMI) and blood pressure in observed individuals.

Key words: obesity, yoga, BMI, blood pressure

Introduction:

Obesity has emerged as a major public health concern worldwide, characterized by excessive accumulation of body fat that adversely affects health. It is closely associated with a range of comorbidities, including hypertension, type 2 diabetes, cardiovascular diseases, and metabolic syndrome[1]. Among these, elevated blood pressure is a common and significant complication, often leading to serious cardiovascular outcomes[2]. According to the World Health Organization (WHO), the global prevalence of obesity has nearly tripled since 1975, with a concurrent rise in hypertension cases, particularly in urban populations [3].Obesity contributes to elevated blood pressure through multiple mechanisms, including increased sympathetic nervous system activity, insulin resistance, renin-angiotensin system dysregulation [4], endothelial dysfunction, and chronic low-grade inflammation. Conventional pharmacological treatments for hypertension often provide symptom relief but may be accompanied by adverse effects[5]. This has led to a growing interest in complementary and alternative approaches, particularly mind-body practices such as Yoga, which integrate physical postures (asanas), breathing techniques (pranayama), and meditation [6].Yoga, as an ancient Indian system of health and well-being, has shown promise in improving cardiovascular function, reducing body mass index (BMI), promoting parasympathetic activation, and regulating autonomic balance[7]. The holistic nature of Yogic practices addresses not only the physical dimensions of obesity and hypertension but also the psycho-emotional factors such as stress and anxiety[8]. However, the specific impact of selected Yogic interventions on blood pressure control in obese individuals remains an area requiring further empirical investigation [9].This study aims to explore the efficacy of a structured Yogic module in managing systolic and diastolic blood pressure among obese individuals, thereby contributing to the growing body of evidence supporting[10]. Yoga as a therapeutic intervention in lifestyle-related disorders.Several studies have evaluated the effectiveness of Yogic practices on hypertension and obesity, though limited research has focused specifically on their integrated impact in obese hypertensive individuals [11].Patel and North (1975) were among the first to demonstrate that Yogic relaxation techniques significantly reduce both systolic and diastolic blood pressure[12]. More recent meta-analyses (Cramer et al., 2014) confirm that yoga is associated with a modest but clinically significant reduction in blood pressure, particularly when practiced regularly over a 12-week period or more[13]. Yogic interventions influence cardiovascular health by modulating the autonomic nervous system, enhancing baroreceptor sensitivity, and promoting nitric oxide-mediated vasodilation[14].Obesity is known to increase cardiac output, blood volume, and arterial stiffness, all of which contribute to elevated blood pressure (Hall et al., 2001). Adipose tissue in obese individuals secretes inflammatory cytokines (e.g., TNF-α, IL-6), which may impair endothelial function and promote vascular resistance[15]. Additionally, insulin resistance exacerbates sodium retention and sympathetic tone, creating a vicious cycle of obesity-induced hypertension.Several clinical studies have shown that regular Yogic practice can reduce BMI, waist circumference, and lipid levels (Ross & Thomas, 2010). Practices such as Surya Namaskara, Kapalabhati, and asanas like Ardha Matsyendrasana and Bhujangasana have shown metabolic benefits and fat-reducing potential[16]. The combination of asana and pranayama promotes internal heat, improves digestion, and facilitates hormonal balance, supporting weight loss.A study by Innes et al. (2005) highlighted the role of yoga in reducing both weight and blood pressure in high-risk populations. Similarly, Sharma et al. (2019) reported significant improvement in systolic and diastolic blood pressure along with weight reduction in obese individuals following a 12-week Yoga program[17]. Nonetheless, studies specifically targeting obese individuals with elevated blood pressure using selected Yogic modules are limited, and findings often vary depending on the type, duration, and intensity of the intervention [18]. Hagins, M., States, R., Selfe, T., & Innes, K. (2013). Effectiveness of yoga for hypertension: systematic review and meta-analysis. Evidence-Based Complementary and Alternative Medicine, 2013(1), 649836. in the obese population. Most existing studies either focus on general populations or use heterogeneous interventions, making it difficult to draw definitive conclusions. Hence, a focused investigation using selected, evidence-based Yogic techniques in this subgroup is warranted[19].

Material and methods:

Subjects:

A total of 200 participants ages 20 to 40 years were recruited for the study. Following their informed consent, each participant was interviewed at the screening visit and, if they met the inclusion criteria and none of the exclusion criteria, they were then allowed for the study. All the obsessed patients were recruited from Raipur city Chhattisgarh. The subjects were divided into two groups a control group and an experimental group, each consisting 100 volunteers who had not previously participated in any specialized yoga program.

Inclusion Criteria:

1. Both male and female gender.
2. Diagnosis of obesity.
3. Individuals diagnosed with hypertension(SBP 120–159 mmHg and/or DBP 80–99 mmHg)
4. Medically stable individuals not requiring emergency medical intervention
5. Sedentary or moderately active individuals not practicing yoga or any structured physical exercise
6. Written informed consent

Exclusion Criteria:

Severe Hypertension or Hypotension SBP ≥ 160 mmHg or DBP ≥ 100 mmHg; SBP < 90 mmHg or DBP < 60 mmHg.

Secondary Hypertension

Participants with renal, endocrine, or cardiovascular disorderscontributing to secondary hypertension.

Metabolic or Endocrine Disorders

Uncontrolled diabetes mellitus, thyroid disorders, or metabolic syndrome with severe complications.

Cardiovascular Disease

Pregnancy or Lactation

Psychiatric Illness

Severe depression, anxiety disorders, or psychotic conditions

Study Design:

Randomized Controlled Trial RCT with two parallel arms Experimental Group (receiving Yogic Intervention) Control Group (no intervention or standard care).

Randomization and treatment allocation:

To ensure unbiased distribution of participants and maintain the internal validity of the study, a computer-generated simple randomization method will be used for allocating participants into two groups such as experimental and control group. A total of 100 individuals received yoga therapy for three months, the remaining 100 patients did not receive any yoga therapy.

Intervention:

Table no:1

S. No	***Asana Practice***	***Time***	***Total time duration***
1	*Tadasana* *Tiriyakatadasana* *Katichakrasana* *Naukasana* *Suptapawanamuktasana* *Bhujangasana* *Dhanurasana* *Mandukasana* *Paschimottanasana* *Suryanamaskaraa* *Shavasana*	*15 minutes*	*15 minutes*
2	***Pranayama***	*10 minutes*	*10 minutes*
3	1. *Bhastrika* 2. *Nadishodhana* 3. *Bhramari*	*10 minutes*	*10 minutes*
4	*Laghu Sankhapraksyalana once in a week*	*morning*	*1hour*
5	*Guided Meditation* *Yoga nidra with sankalpa*	*30 minutes*	*30 mins*

Assessments:

The assessments should be comprehensive and aligned with both the primary and secondary objectives of the study. Below is a detailed breakdown of the assessments, categorized into baseline, midline, and post-intervention assessments Baseline Assessments (Week 0),Demographic and Anthropometric Assessments, Age, gender, occupation, lifestyle habits, Height (cm).Weight (kg).Body Mass Index (BMI). History of hypertension. Systolic Blood Pressure (SBP), Diastolic Blood Pressure (DBP).

Statistical Analysis:

Data were described using means and standard deviations. The normality of the data was assessed using the Kolmogorov–Smirnov test. Comparisons of quantitative variables were performed using the t-test. Correlations between variables were evaluated using a correlation test. A p-value of < 0.05 was considered statistically significant. Statistical analyses were conducted using SPSS version 23.0 (IBM Corporation, Armonk, NY, USA).

Results:

Body Weight:

		N	Mean	SD	t	df	pvalue
Experimental group	Body weight (pre)-Body weight (post)	100	10.89	5.86	18.55	99	0.000
Control group	Body weight (pre)-Body weight (post)	100	0.00	4.37	0.00	99	1.0

The mean value of the difference of body weight of experimental group with yoga is 10.89, SD 5.86 ($p< 0.05$),this shows the improvement in reduction of body weight. In control group without yoga the mean and SD is 0.00 and 4.37 ($p= 1.0> 0.05$) The improvement is not as compared to experimental group.

BMI:

		N	Mean	SD	t	df	p-value
Experimental group	BMI (pre)- BMI (post)	100	6.39	2.41	26.49	99	0.000
Control group	BMI (pre)- BMI (post)	100	-.63	1.56	-4.035	99	0.695

The mean value of the difference of BMI in experimental group with medicine is 6.39, SD is 2.41 ($p< 0.05$), this shows the improvement in reduction of BMI and in the control group without yoga it is -.63, SD is 1.56 ($p= 0.695$, $p> 0.05$).The improvement is not as compared to experimental group.

Table no: 3 Systolic Blood Pressure:

		N	Mean	SD	t	df	pvalue
Experimental group	Sys(pre)-Sys(post)	100	10.533	6.897	11.829	99	0.000
Control group	Sys(pre)-Sys(post)	100	0.467	3.022	1.196	99	1.196

The mean value of the difference of systolic blood pressure in experimental group is 10.533, SD is 6.897 ($p< 0.05$), this shows the improvement in reduction of systolic blood pressure in the control group without yoga it is 0.467SD is 3.022 ($p>0.05$). The improvement is not as compared to experimental group.

Diastolic Blood Pressure:

		N	Mean	SD	t	df	P value
Experimental group	Dia(pre)-Dia (post)	100	6.000	4.913	9.460	99	0.000
Control group	Dia (pre)-Dia (post)	100	2.367	8.328	2.201	99	0.256

The mean value of the difference of diastolic blood pressure in experimental group is 6.00, SD is 4.913 ($p< 0.05$), this shows the improvement in reduction of diastolic blood pressure but in the control group without yoga it is 2.367, SD is 8.328 ($p>0.05$). The improvement is not as compared to experimental group.

Discussions:

The present study with pre post design was conducted to investigate the effect of integrated approach of yoga with obesity on different parameters like body weight, BMI and blood pressure in Raipur city who willingly participated in the study for three months. Our results showed that there is reduction in above parameters in study group ($p<0.05$) where the control group did not show any significant results. This result shows that the effect of yogic intervention has got the positive result on above parameters.

Comparison with Body Weight:

Jain, V., Kumar, B., Sharma, A., et al. (2022) found that yoga combined with dietary modifications is as effective as standard weight management strategies. [20]. The results showed significant improvements in weight reductions. Telles, S., & Sharma, S. K. (2018). studied the impact of Yoga and Meditation on Obesity Management: A Systematic Review" systematic review analyzed multiple studies on yoga and meditation for obesity management[21]. It highlighted improvements in body composition, stress reduction, and metabolic health. K. Rioux, C. Ritenbaugh (2013) found effects of yoga on weight loss and obesity-related outcomes[22]. It found that yoga interventions were effective in reducing weight and

improving overall health. S. A. Ross, J. E. Williams (2016) found that yoga contributes to weight management, including stress reduction, improved mindfulness, and physical activity[23]

Comparison with BMI:

The Mama study (2019) reported that 12 weeks of yoga practice resulted in a significant decrease in body fat [24]. This reduction may be attributed to the sustained and unusual physical demands of yoga over time, leading to a lower body fat percentage. Yoga typically involves deep nasal breathing, enhanced flexibility of the limbs, and stretching of various body parts, all of which could contribute to this effect. Additionally, the reduction in body fat may influence overall body mass, and the current study also observed a significant decrease in body mass among the yoga participants. Similar findings have been reported in numerous other studies. Lauche R, Langhorst J, Lee MS, Dobos G, Cramer H. (2016)A systematic review and meta-analysis on the effects of yoga on weight-related outcomes that showed that yoga was effective with regard to anthropometric variables in overweight or obese persons[25].

Comparison with Blood Pressure :

In this present study there is significant reduction Pulse rate by 11.09%($p<0.01$) and breath rate by 54.86 %($p<0.01$). Hagins M, and et al found a significant reductions in SBP (mean –4.17 mmHg) and DBP (mean –3.62 mmHg); interventions with combined asana, breathing & meditation yielded greater effects (SBP –8.17; DBP –6.14) compared to controls[26]. Nalbant G, Hassanein ZM, Lewis S, Chattopadhyay K found BP reductions in both normotensive and hypertensive subjects, supporting yoga as an effective adjunct therapy although study quality varied. He showed yoga plus conventional therapy yielded SBP reductions of \~3.2–26.7 mmHg and DBP reductions \~1.5–19.8 mmHg versus control or conventional therapy[27].

Conflict of interest:

The authors of this research paper assert that there is no conflict of interest in order to publish this paper.

Suggestions of Future Work:

Studies on biochemical variables may throw light on the mechanisms.

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Conclusion:

Based on the above results the conclusions are as follows: The study demonstrates that a structured yoga intervention significantly reduces body weight, BMI, and blood pressure in obese individuals compared to the control group. Yoga, as a non-pharmacological and holistic approach, proved to be an effective tool for improving physical and psychological parameters in individuals suffering from obesity. The results suggest that incorporating yoga into obesity management programs may offer substantial health benefits beyond conventional care.

References:

1. Williams, E. P., Mesidor, M., Winters, K., Dubbert, P. M., & Wyatt, S. B. (2015). Overweight and obesity: prevalence, consequences, and causes of a growing public health problem. Current obesity reports, 4(3), 363-370.
2. Fuchs, F. D., & Whelton, P. K. (2020). High blood pressure and cardiovascular disease. Hypertension, 75(2), 285-292.
3. World Health Organization. (2000). Obesity: preventing and managing the global epidemic: report of a WHO consultation.
4. Kalil, G. Z., & Haynes, W. G. (2012). Sympathetic nervous system in obesity-related hypertension: mechanisms and clinical implications. Hypertension Research, 35(1), 4-16.
5. Carey, R. M., Moran, A. E., & Whelton, P. K. (2022). Treatment of hypertension: a review. Jama, 328(18), 1849-1861.
6. Antunes, P. D. C., & Fraga, A. B. (2021). Integrative mind-body practices: Concept proposal for the field of traditional and complementary medicine. Ciência & Saúde Coletiva, 26, 4217-4232.
7. Mamtani, R., & Mamtani, R. (2005). Ayurveda and yoga in cardiovascular diseases. Cardiology in review, 13(3), 155-162.
8. Singh, V., & Shah, S. R. (2025). Holistic benefits of yoga: A dual approach to cardiovascular health and obesity control. International Journal of Yoga and Allied Sciences, 14(1), 118-130.
9. Chakraborty, S., & Chakraborty, M. (2024). EFFECT OF YOGIC PRACTICES ON SELECTED PHYSIOLOGICAL VARIABLES AMONG MIDDLE AGED HYPERTENSIVE WOMEN. Article in International Journal of Yoga & Allied Sciences, 13(1), 31-39.
10. Venkata Giri Kumar, P., Deshpande, S., Joshi, A., More, P., Singh, A., & Nagendra, H. R. (2017). Effect of integrated yoga therapy on arterial stiffness: a pilot study on young and older adults with obesity. Integrative Medicine International, 4(1-2), 85-93.
11. Rakhshani, A., Nagarathna, R., Sharma, A., Singh, A., & Nagendra, H. R. (2015). A holistic antenatal model based on yoga, ayurveda, and vedic guidelines. Health Care for Women International, 36(3), 256-275.
12. Patel, C., Marmot, M. G., Terry, D. J., Carruthers, M., Hunt, B., & Patel, M. (1985). Trial of relaxation in reducing coronary risk: four year follow up. Br Med J (Clin Res Ed), 290(6475), 1103-1106.
13. Innes, K. E., & Selfe, T. K. (2016). Yoga for adults with type 2 diabetes: a systematic review of controlled trials. Journal of diabetes research, 2016(1), 6979370.
14. Pal, A., Srivastava, N., Narain, V. S., Agrawal, G. G., & Rani, M. (2013). Effect of yogic intervention on the autonomic nervous system in the patients with coronary artery disease: a randomized controlled trial. East Mediterr Health J, 19(5), 452-458.
15. Hall, J. E., do Carmo, J. M., da Silva, A. A., Wang, Z., & Hall, M. E. (2015). Obesity-induced hypertension: interaction of neurohumoral and renal mechanisms. Circulation research, 116(6), 991-1006.
16. Kotchen, T. A. (2010). Obesity-related hypertension: epidemiology, pathophysiology, and clinical management. American journal of hypertension, 23(11), 1170-1178.
17. Kumari, S. Vedic Words And Yogic Deeds. Wide vision: Personal Growth and Transformation, 54.
18. Hagins, M., States, R., Selfe, T., & Innes, K. (2013). Effectiveness of yoga for hypertension: systematic review and meta-analysis. Evidence-Based Complementary and Alternative Medicine, 2013(1), 649836.
19. Hagins, M., States, R., Selfe, T., & Innes, K. (2013). Effectiveness of yoga for hypertension: systematic review and meta-analysis. Evidence-Based Complementary and Alternative Medicine, 2013(1), 649836.
20. Bhardwaj, P., Kaur, N., Malik, N., Singh, G., & Pathania, M. (2024). Yoga and mindfulness in the prevention of metabolic diseases. In Neuroscience of Yoga: Theory and Practice: Part II (pp. 1-24). Singapore: Springer Nature Singapore.
21. Sharma, P., Yadav, R. K., Khadgawat, R., & Dada, R. (2022). A 12-week yoga-based lifestyle intervention might positively modify cellular aging in Indian obese individuals: a randomized-controlled trial. Journal of Integrative and Complementary Medicine, 28(2), 168-178.

22. Rioux, J. G., & Ritenbaugh, C. (2013). Narrative review of yoga intervention clinical trials including weight-related outcomes. Altern Ther Health Med, 19(3), 32-46.
23. Sindhuja, M., Verma, L., & Lal, P. R. (2024). Yogic Interventions for Weight Loss-A Narrative Review. Indian Journal of Nutrition and Dietetics, 61(1).
24. Kim, S. J., & Lee, Y. H. (2022). Effectiveness of yoga training programs to reduce depression and improve resilience of single mothers. Journal of exercise rehabilitation, 18(2), 104.
25. Lauche, R., Langhorst, J., Lee, M. S., Dobos, G., & Cramer, H. (2016). A systematic review and meta-analysis on the effects of yoga on weight-related outcomes. Preventive medicine, 87, 213-232.
26. . Foy, A. J., Filippone, E. J., Schaefer, E., Nudy, M., Ruzieh, M., Dyer, A. M., ... & Naccarelli, G. V. (2021). Association between baseline diastolic blood pressure and the efficacy of intensive vs standard blood pressure–lowering therapy. JAMA network open, 4(10), e2128980-e2128980.
27. Nalbant, G., Hassanein, Z. M., Lewis, S., & Chattopadhyay, K. (2022). Content, structure, and delivery characteristics of yoga interventions for managing hypertension: A systematic review and meta-analysis of randomized controlled trials. Frontiers in Public Health, 10, 846231.