

Effect of Integrated Naturopathy and Yoga on BMI and Stress Levels among Obese Young Adults

Dr Deepa V^{1*}, Dr. V. Seviga Devi², Dr. Vasunthara. M³, Dr. Ishwariya⁴,
Dr. Raja Vinayagam. S⁵, Dr. Keerthana K⁶, Dr. Inparithika S⁷

¹Principal cum Medical Superintendent, Department of Naturopathy, GTN Medical College of Naturopathy and Yogic Science Research Centre, Dindigul, Tamil Nadu, India.

ORCID ID: 0009-0003-9156-621X

²Associate professor, Department of Biochemistry, GTN Medical College of Naturopathy and Yogic Science Research Centre, Dindigul, Tamil Nadu, India

ORCID ID: 0009-0006-1586-2289

³Lecturer, Department of hydrotherapy, GTN Medical College of Naturopathy and Yogic Science Research Centre, Dindigul, Tamil Nadu, India

ORCID ID: 0009-0009-6172-476X

⁴Assistant Professor, Department of Naturopathy and Yoga, G.T.N. Medical College of Naturopathy and Yogic Sciences Research Centre, Dindigul, Tamilnadu, India

⁵Lecturer, Department of Naturopathy and Yoga, G.T.N. Medical College of Naturopathy and Yogic Sciences Research Centre, Dindigul, Tamilnadu, India

⁶Assistant professor, Department of Naturopathy and Yoga, G.T.N. Medical College of Naturopathy and Yogic Sciences Research Centre, Dindigul, Tamilnadu, India

ORCID ID: 0009-0008-3971-6934

⁷Tutor, Department of Naturopathy and Yoga, G.T.N. Medical College of Naturopathy and Yogic Sciences Research Centre, Dindigul, Tamilnadu, India

ORCID ID: 0009-0006-1500-5068

DOI: <https://doi.org/10.5281/zenodo.20824878>

Published Date: 24-June-2026

Abstract: Background: Obesity in young adults is linked to metabolic disorders, psychological distress, and reduced quality of life (QoL). Integrated Naturopathy and Yoga (IN&A) have emerged as holistic interventions targeting both physical and mental health.

Methods: A randomized controlled trial involving 120 obese young adults compared a 12-week IN&A program (n=60) with conventional lifestyle advice (n=60).

Results: The experimental group (EG) showed noteworthy reductions in body weight (BW), BMI, waist circumference (WC), body fat percentage (BFP), fasting blood glucose (BG), lipid profile, and blood pressure (BP), alongside improvements in stress, anxiety, depression, sleep quality, and quality of life (p<0.001). Conversely, the control group (CG) showed no noteworthy changes during the 12-week intervention period.

Conclusion: IN&A effectively improved obesity-related physical and psychological parameters, supporting its use as a safe complementary treatment.

Keywords: Obesity, Young Adults, Naturopathy, Yoga, Body Mass Index, Stress, Anxiety, Lifestyle Intervention, Quality of Life, Holistic Health.

1. INTRODUCTION

Obesity is a critical public health problem across young adults, and it seems strongly related to sedentary lifestyle, poor diet routines, psychological stress. Also, it increases the risk for cardiovascular disease, hypertension, metabolic syndrome and type 2 diabetes mellitus, in other words it's not just about extra weight. Beyond that there are emotional and psychological health implications too like anxiety, depression, emotional eating, sleep disturbances and just a lower QoL. Traditional ways to drop weight can seem helpful at first, but over time they often work less well because they don't really consider the psychological side of things, and they rarely improve compliance enough. For that reason, holistic, lifestyle centered approaches have become more and more popular. IN&A kind of merge the ideas behind natural medicine—like diet regulation, fasting therapy, hydrotherapy, plus everyday routine adjustments, and then they pair that with yoga practices such as asanas, Pranayama, meditation, and relaxation methods, to back up physical balance and mental steadiness in a fuller, more rounded fashion. Yoga and naturopathy have been reported previously to show noteworthy effects in the management of obesity. For example, increased muscle mass alongside dropped BMI and body fat mass were observed in obese adolescents who practiced yoga continuously for more than three months, according to Nongkhai et al. (2021).

Asiah et al. (2023) reported quite notable reductions in BW, WC, total cholesterol, and triglycerides (TGCs) after yoga interventions among people with obesity. In the same direction, Sorout et al. (2024) showed that yoga paired with dietary therapy improved metabolic risk factors, and also health-related QoL. Breedvelt et al. (2024) then demonstrated that yoga interventions can significantly lower depression, anxiety, stress levels, while Saraswati and Kumar (2022) pointed out how it helps with healthy lifestyle actions, and obesity prevention. Even so, although the evidence backs the separate advantages of yoga and naturopathy, very few studies have actually looked at how they work together, in terms of BMI and stress among obese young adults. So, the current study was set up to check whether IN&A are effective for BMI and stress levels in this group.

2. METHODOLOGY

Study Design

The present study was a randomized controlled experimental study to assess the effect of IN&A on Body Mass Index (BMI) and Stress levels in obese young adults. A 12 weeks pre-test–post-test design was used, more like a before and after setup. A total of 120 obese young adults were recruited through purposive sampling technique, and then randomly allocated to the groups. The EG had 60 participants, and the CG also had 60 participants. The participants were drawn from outpatient wellness clinics, naturopathy centers, yoga institutes, and also from community health screening programs.

Inclusion and exclusion criteria

Inclusion Criteria

1. Young adults aged between 18 and 30 years
2. Body Mass Index (BMI) ≥ 30 kg/m²
3. Individuals experiencing moderate to high perceived stress levels
4. Participants willing to participate in yoga and naturopathy interventions for 12 weeks
5. Participants able to provide written informed consent

Exclusion Criteria

1. Individuals having severe cardiovascular, neurological, or even psychiatric disorders
2. Pregnant or even lactating women
3. Participants undergoing bariatric surgery or any weight-loss pharmacotherapy
4. Individuals practicing regular yoga or any naturopathy therapies within the previous six months
5. Participants having severe musculoskeletal limitations preventing yoga practice

Intervention Protocol

The EG was treated with IN&A as a blended approach over time for a 12-week intervention. Intervention included Yoga postures (Surya Namaskar, Bhujangasana, Trikonasana, Naukasana, Pawanmuktasana) and Pranayama practices (Anulom Vilom, Kapalabhati and Bhramari). There was Meditation as well. In addition, Relaxation techniques were added, as well

as Dietary regulation, Fasting therapy and Lifestyle counselling, all of it in an organised way. Expert yoga and naturopathy practitioners conducted supervised yoga sessions for 60–75 minutes, 5 days per week. In contrast, the CG received general advice on diet, physical activity, hydration, and sleep hygiene without comparable monitoring.

Data Collection

Baseline assessments were done prior to the intervention and the post intervention assessments were done at the very end of the 12-week period. Anthropometric measurements such as BW, height, BMI, WC, hip circumference and BFP were obtained by standardised procedures. For the psychological side we also used validated standardised questionnaires to capture perceived strain, anxiety, depression, sleeping conditions and QoL, basically all the key stuff. Information was carefully collected by trained investigators, supporting data consistency alongside reliability and was stable across the study.

Data Analysis

The collected data were put in and assessed using (SPSS) version 26.0. For the overall view, descriptive statistics like mean, standard deviation, frequency, and percent were applied to describe the demographic and clinical background. A paired t test was then used to check the values from pre-test to post-test inside each group, while an independent t-test was used to see how the Experimental and CGs differed from each other, in terms of those outcomes.

3. RESULTS

In all, 120 obese young adults took part in the study and they were randomly assigned into the EG (IN&A Intervention, n = 60) and the CG (Conventional Lifestyle Advice, n = 60). At the start, both groups looked similar enough, with no statistically meaningful differences in the demographic or clinical details, ($p > 0.05$).

Table 1. Demographic and Baseline Characteristics of Experimental and CGs.

Variables	EG (n = 60)	CG (n = 60)	p-value
Age (years)	22.8 ± 2.4	22.5 ± 2.6	0.584
Gender (Male/Female)	28 / 32	27 / 33	0.851

Table 1: post 12-week intervention, EG showed noteworthy progress in anthropometric parameters across participants inside EG as likened with CG.

Table 2. Comparison of Anthropometric Parameters Before and After Intervention.

Parameter	EG Pre-test	EG Post-test	p-value	CG Pre-test	CG Post-test	p-value
Height (cm)	166.4 ± 7.2	166.4 ± 7.2	1.000	165.9 ± 6.8	165.9 ± 6.8	1.000
Body Weight (kg)	87.2 ± 9.4	79.4 ± 8.1	<0.001	86.8 ± 8.9	84.9 ± 8.5	0.172
BMI (kg/m ²)	32.1 ± 3.1	28.8 ± 2.7	<0.001	31.9 ± 3.0	31.2 ± 2.9	0.149
Waist Circumference (cm)	102.6 ± 8.3	93.7 ± 7.1	<0.001	101.9 ± 7.8	99.8 ± 7.4	0.113
Hip Circumference (cm)	113.4 ± 8.7	106.1 ± 7.6	<0.001	112.9 ± 8.2	110.7 ± 7.9	0.138
Body Fat Percentage (%)	37.1 ± 4.2	31.5 ± 3.6	<0.001	36.8 ± 4.0	35.4 ± 3.8	0.164

Table 2: After 12 weeks, the experimental group (EG) showed noteworthy reductions in body weight (87.2 ± 9.4 to 79.4 ± 8.1 kg), BMI (32.1 ± 3.1 to 28.8 ± 2.7 kg/m²), waist circumference (102.6 ± 8.3 to 93.7 ± 7.1 cm), hip circumference (113.4 ± 8.7 to 106.1 ± 7.6 cm), and body fat percentage (37.1 ± 4.2% to 31.5 ± 3.6%) ($p < 0.001$). Height remained unchanged.

The CG showed only slight reductions in BW, BMI, WC, hip circumference, and BFP, but none were statistically noteworthy ($p > 0.05$). Overall, the findings indicate that IN&A effectively reduced obesity-related anthropometric measures and improved body composition in young adults having obesity.

Table 3. Comparison of Metabolic Parameters Before and After Intervention.

Parameter	EG Pre-test	EG Post-test	p-value	CG Pre-test	CG Post-test	p-value
Fasting BG (mg/dL)	114.8 ± 11.2	98.2 ± 8.9	<0.001	113.6 ± 10.9	109.8 ± 10.1	0.087
Total Cholesterol (mg/dL)	218.5 ± 19.6	188.3 ± 17.2	<0.001	216.7 ± 18.9	210.5 ± 18.1	0.104
Triglycerides (mg/dL)	184.6 ± 23.4	148.2 ± 19.7	<0.001	181.9 ± 22.8	174.6 ± 21.3	0.118
Systolic BP (mmHg)	138.2 ± 9.5	124.6 ± 8.1	<0.001	137.5 ± 9.1	133.8 ± 8.7	0.092
Diastolic BP (mmHg)	89.1 ± 5.8	80.3 ± 5.0	<0.001	88.5 ± 5.6	85.7 ± 5.2	0.109

Table 3: After the intervention EG showed noteworthy improvement in metabolic parameters with reduction in fasting BG, total cholesterol, TGCs, systolic BP alongside diastolic BP ($p < 0.001$). However, the CG had marginal changes with respect to all parameters ($p > 0.05$).

Table 4. Comparison of Stress and Psychological Parameters Before and After Intervention.

Parameter	EG Pre-test	EG Post-test	p-value	CG Pre-test	CG Post-test	p-value
Perceived Stress Score	29.2 $\pm$ 4.5	17.8 $\pm$ 3.7	<0.001	28.9 $\pm$ 4.2	26.5 $\pm$ 3.9	0.096
Anxiety Score	17.1 $\pm$ 2.9	9.1 $\pm$ 2.3	<0.001	16.8 $\pm$ 2.7	14.8 $\pm$ 2.5	0.121
Depression Score	15.8 $\pm$ 2.6	8.5 $\pm$ 2.1	<0.001	15.4 $\pm$ 2.5	13.7 $\pm$ 2.3	0.137
Sleep Quality Score	12.1 $\pm$ 2.3	5.8 $\pm$ 1.9	<0.001	11.8 $\pm$ 2.1	10.5 $\pm$ 2.0	0.144
QoL Score	47.9 $\pm$ 5.8	72.4 $\pm$ 6.5	<0.001	48.3 $\pm$ 5.5	54.2 $\pm$ 5.9	0.088

Table 4: After the intervention, EG showed some rather noteworthy decreases in stress, anxiety, depression, and also the sleep disruption scores alongside a clear increase in QoL ($p < 0.001$). CG, in contrast, exhibited no statistically noteworthy changes in the psychological measures ($p > 0.05$).

Table 5. Mean Difference and Percentage Improvement After 12-Week Intervention.

Outcome Variable	EG Mean Difference	CG Mean Difference	% Improvement in EG	p-value
Body Weight	-7.8 $\pm$ 2.1 kg	-1.9 $\pm$ 1.2 kg	8.9%	<0.001
BMI	-3.3 $\pm$ 0.9 kg/m ²	-0.7 $\pm$ 0.4 kg/m ²	10.3%	<0.001
Waist Circumference	-8.9 $\pm$ 2.4 cm	-2.1 $\pm$ 1.3 cm	8.7%	<0.001
Body Fat Percentage	-5.6 $\pm$ 1.8%	-1.4 $\pm$ 0.9%	15.1%	<0.001
Stress Score	-11.4 $\pm$ 3.5	-2.4 $\pm$ 1.5	39.0%	<0.001
Anxiety Score	-8.0 $\pm$ 2.2	-2.0 $\pm$ 1.1	46.7%	<0.001
Depression Score	-7.3 $\pm$ 2.0	-1.7 $\pm$ 1.0	46.2%	<0.001
QoL	+24.5 $\pm$ 6.1	+5.9 $\pm$ 3.2	51.1%	<0.001

As was shown in table 5, EG seemed to have much greater improvements in BW, BMI, WC, BFP, stress, anxiety, depression, and QoL compared to the CG ($p < 0.001$). The most noticeable gains were found in QoL (51.1%), anxiety (46.7%), depression (46.2%) and stress reduction (39.0%), so this really points toward how IN&A work well for both physical well-being and mental wellbeing outcomes.

4. DISCUSSION

The present study revealed that Naturopathy and Yoga had noteworthy dropped BMI, body composition, metabolic disturbances, stress level and psychological stress in obese young adults. BW, BMI, WC, BFP, BP stress, anxiety, depression, and sleep disturbances were significantly lower in the participants who received the 12-week intervention compared with the CG. Per these results, it can be inferred that IN&A can be an effective holistic approach for handling both the physical discomfort and the mind-related issues in obesity. This drop in BW and BMI in the present study is similar to previous results. Cramer et al. (2016) found yoga to be a safe and effective supportive method of BMI reduction in overweight and obese people. Likewise, Pathak & Bhardwaj (2023) observed that yoga-based interventions were effective for enhancing anthropometric parameters and overall well-being in obese adults. Similarly, noteworthy drops in BMI, WC, skin-fold thickness and hip circumference were observed after Integrated Yoga and Naturopathy Management by Madhav et al. (2020). The improvements could be due to dietary regulation, yogic practice, fasting therapy, and increased physical activity, all of which increase energy expenditure and weight control. The current study also revealed a substantial drop in metabolic and cardiovascular parameters. In the same way, Asiah et al. (2023) reported drops in waist size, total cholesterol and TGCs after yoga practices in obese people. Adolescent obesity was found to significantly drop BMI, BFP and BP after a 12-week yoga training program, as reported by Pramanik et al. (2023). On top of that, Wasityastuti et al. (2026) stated that yoga interventions significantly lowered SBP and DBP, and also positively influenced the cardiometabolic health of overweight plus obese adults. These improvements might happen because yoga and naturopathic treatments can support better insulin sensitivity, help restore autonomic equilibrium, and improve cardiovascular regulation too, in a noticeable way. There was also a substantial drop in stress, anxiety, depression and sleep disturbances in the current study. These results are consistent with Suganthi et al. (2025) who stated that Yoga and Naturopathy intervention led to improvements in obesity-related parameters and to a drop in stress, anxiety, and depression. Similarly, in multiple studies, the use of yoga-

based practices was shown to significantly drop stress, anxiety, and depression by Breedvelt et al. (2024). Chobe et al. (2022) also said that overweight and obesity people who did yoga had better sleep quality, self-esteem and QoL. In the present study, the psychological changes we found could mean something for how pranayama, meditation, mindfulness, and relaxation techniques are used, since they tend to help with emotional control and also drop stress responses, a lot. Overall, the results indicate that IN&A is a holistic, safe and affordable pathway for obesity management, with gains for BMI, metabolic well-being, coping with stress, and overall QoL, specifically in young adults who are obese.

5. CONCLUSION

The IN&A program helped a lot, improving both physical and mental outcomes in obese young adults over 12 weeks, and it was pretty clear there were strong drops in anthropometric measures and psychological distress, plus a better QoL as well ($p < 0.001$). Overall, these results back the idea that this could be a realistic, non-pharmacological and long-term method for caring about obesity in a more holistic way, also for reducing stress, sustainably.

REFERENCES

- [1] Asiah ASS, Norhayati MN, Muhammad J, Muhamad R. Effect of yoga on anthropometry, quality of life, and lipid profile in patients with obesity and central obesity: A systematic review and meta-analysis. *Complementary Therapies in Medicine*. 2023;76:102959. DOI: 10.1016/j.ctim.2023.102959.
- [2] Breedvelt JJF, Amanvermez Y, Harrer M, et al. The effects of yoga on stress, anxiety, and emotional well-being: A systematic review and meta-analysis. *Frontiers in Psychiatry*. 2024;15:1324578. DOI: 10.3389/fpsyt.2024.1324578.
- [3] Chobe MP, Nanjundaiah RM, Chobe S. Effect of Yoga on Sleep, Self-Esteem and Wellbeing among Overweight and Obese – A Randomized Controlled Trial. *Indian Journal of Science and Technology*. 2022;15(43):2297–2302. DOI: 10.17485/ijst/v15i43.1301.
- [4] Cramer H, Lauche R, Langhorst J, Dobos G. Yoga for obesity and weight management: A systematic review. *Preventive Medicine*. 2016;87:213–232. DOI: 10.1016/j.ypmed.2016.03.013.
- [5] Na Nongkhai MP, Yamprasert R, Punsawad C. Effects of Continuous Yoga on Body Composition in Obese Adolescents. *Evid Based Complement Alternat Med*. 2021 Aug 25;2021:6702767. doi: 10.1155/2021/6702767. PMID: 34484400; PMCID: PMC8410386.
- [6] Pathak N, Bhardwaj A, Yoga for managing Anthropometric Measures in Adult Obese: A review based on RCTs. *J Ayu Int Med Sci*. 2023;8(9):160-166. Available From <https://jaims.in/jaims/article/view/2636>
- [7] Pramanik, Mou & Rajkumar, Navaraj & Elayaraja, Masilamani & Gogoi, Hemantajit & Govindasamy, Karuppasamy. (2023). Effects of a 12-Week Yoga Training Intervention on BP and Body Composition in Obese Female Adolescents: A Randomized Controlled Pilot Study. *Physical rehabilitation and recreational health technologies*. 8. 162-171. 10.15391/prrht.2023-8(3).05.
- [8] Saraswati P, Kumar R. Yoga as a complementary therapy for obesity prevention in children and adolescents. *International Journal of Health Sciences*. 2022;6(S2):7669–7676.
- [9] Sorout J, Kacker S, Saboo N, Kumar M. Yoga and nutritional therapies for promoting health-related quality of life in persons with metabolic syndrome. *Journal of Family Medicine and Primary Care*. 2024;13(8):3017–3025. DOI: 10.4103/jfmpc.jfmpc_1845_23.
- [10] Suganthi, S., Vijay, A., Mooventhana, A., Venkateswaran, S., Arunthathi, R., & Lakshmi, K. (2025). A Case Report: Impact of Yoga and Naturopathy on C-Reactive Protein in an Individual with Severe Obesity and Prediabetes. *Diabetes Technology and Obesity Medicine*, 1(1), 265–270. <https://doi.org/10.1089/dtom.2025.0037>
- [11] Wasityastuti, W., Pramaningtyas, M. D., Wibowo, R. A., Adnan, M. L., Prabowo, R., Tsurayya, Z., Dhamarjati, A., Nugroho, J. P. A., Wangiyana, N. K. a. S., Bhagat, O. L., Hidayat, M. M., Al-Mhanna, S. B., Putri, V. P., Alghannam, A. F., & Batrakoulis, A. (2026). Impact of yoga on cardiometabolic health in adults with overweight or obesity: A systematic review and meta-analysis of randomized controlled trials. *PLOS Global Public Health*, 6(4), e0006174. <https://doi.org/10.1371/journal.pgph.0006174>