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# Exploring the Synergy Between Yogic Lifestyle and Nutritional Patterns: A Research-Based Analysis of Holistic Approaches to Health and Wellness

**Dr Janhavi Soni[1], Dr Kanak Soni[2], Dr Gokula krishnan B[3], Dr. Natasha Sharma Awasthi[4], Pratibha Patil[5], Darshan Madhani[6*]**

[1]Resident Medical Officer in Patanjali Wellness, Haridwar, Uttarakhand, Email id - janhavisoninaturopath@gmail.com

[2]Associate Professor and Head of Department, Faculty of Naturopathy and Yogic Sciences, University of Patanjali, Haridwar Email Id: drkanaksoni@gmail.com

[3]PG scholar , Maharishi Aurobindo Subharti College & Hospital of Naturopathy & Yogic Sciences Swami Vivekananda subharti university Email ID: doctor.gk14@gmail.com

[4]Assistant Professor, University Center for Research and Development, Chandigarh University Email ID: natasha.micro@gmail.com Orcid ID: https://orcid.org/0000-0003-1208-5411

[5]Assistant Professor, School of Computer Studies, Sri Balaji University, Pune (SBUP), S. No. 55/2-7, Tathawade, Off Mumbai-Bangalore Bypass, Pune - 411033, Maharashtra, India, Email: pratibha.patil@sbup.edu.in

[6*]PhD research scholar, Department of Computer Science, Atmiya University, India Email: darshmadhani14@gmail.com, (ORCID: 0009-0005-7762-0536)

## ABSTRACT

The research examines the synergistic effect of a disciplined yogic life and a Sattvic-based dietary regimen on overall health outcomes. The trial was a randomized controlled 12-week study among 160 adults, with equal numbers allocated to an intervention group and a control group. The intervention included daily yoga exercises, pranayama, meditation, and a Sattvic diet that focused on vegetable-based, nutrient-dense foods. Data were collected on anthropometric measures, fasting glucose, lipid profile, inflammatory biomarkers, psychometrics, and dietary intake. Outcomes showed dramatic improvements in the intervention group, including BMI (–8.45%), fasting glucose (–14.5%), HbA1c (–11.9%), LDL cholesterol (–18.5%), and CRP (–39.6%) reductions, as well as large increases in HDL cholesterol (↑13.3%). Psychological well-being showed substantial improvement with decreased perceived stress scores, improved sleep quality, and improved WHO-5 well-being scores. Nutrient adequacy, and the intakes of fibre, omega-3 fatty acids, antioxidants and protein showed significant increases. The outcomes of the current study show that the joint use of yoga and the method of systematic nutrition control improves the metabolism balance, psychological health, and the quality of nutrition, which proves its use as an integrative method of health promotion and disease prevention.

***Keywords:*** *Yogic lifestyle, Sattvic diet, Nutritional patterns, Psychological well-being, Holistic health.*

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## 1. INTRODUCTION

Modern societies are faced with a growing rate of lifestyle-related disorder risks, including obesity, metabolic syndrome, chronic stress, and the related non-communicable diseases. Sedentary lifestyles, poor nutrition habits, and psychosocial pressures are the major causes of such conditions, thus imposing significant liability on health care systems. It is imperative to prevent this by implementing both the mental and physical interventions concurrently. Mind-body practices, especially yoga, are increasingly becoming part of evidence-based diets that are holistic and curative. A classical mind-body system, yoga consists of asanas (poses), Pranayama (breath control), meditation and ethical practices, and has been shown to provide various physiological and psychological benefits (Yamamoto-Morimoto et al., 2019). Psychoneuroimmunology (PNI) explains how psychological and neural states affect immune function, providing a theoretical model of yoga's integrative influence (Buric, 2025). Systematic reviews of randomized controlled trials uphold yoga's ability to modulate

immune function, suppressing proinflammatory biomarkers and enhancing immune regulation (Falkenberg et al., 2018; Khanal & Khanal, 2021). Thorough reviews indicate that yoga enhances autonomic balance by down-regulating the hypothalamic, pituitary–adrenal (HPA) axis and sympathetic nervous system (SNS), thereby reducing physiological stress responses (Khanal & Khanal, 2021). Further evidence shows enhancements in several systems, respiratory, cardiovascular, nervous, digestive, endocrine, musculoskeletal, metabolic, and immune which point to yoga's overall health benefits (Khajuria et al., 2023). Cumulatively, these findings indicate that yoga augments stress resilience, facilitates immune competency, and enhances systemic balance through interconnected psychophysiological processes.

Supplementing yogic disciplines, some eating habits from Ayurvedic and yogic philosophies, such as the Sattvic diet, highlight fresh, unprocessed, whole, plant foods, moderate use of dairy, conscious eating, and exclusion of processed, highly spiced, and stimulating foods (Watts et al., 2018). The Sattvic diet is said to endorse mental clarity, emotional balance, digestive comfort, and overall well-being (Vallazhath et al., 2025). Although there are few direct clinical trials on the Sattvic diet, its fundamental principles are in close agreement with empirically examined plant-based and anti-inflammatory diets that have been found to mitigate chronic disease risks, balance inflammation, and promote metabolic and cognitive well-being. The diets have been linked with lower multimorbidity in large populations and provide strong protective effects even with minimal increases in compliance (Vega-Cabello et al., 2024). In addition, plant-based and high-fiber diets are associated with advantageous immune and inflammatory profiles, together with microbiome-enhancing effects (Mansi et al., 2023). In spite of the evidence of the wide-ranging physiological and psychological aids of yoga and the health aids of plant-based, anti-inflammatory diets reported in the literature, current studies primarily investigate these fields separately. The synergistic action of combined yogic lifestyle and systematic nutrition intervention is underexplored. Since there are common mechanistic paths, stress management, reduction of inflammation, neuroendocrine regulation, and microbiome maintenance, a combined intervention might produce holistic health effects superior to isolated interventions.

## 2. OBJECTIVES

The purpose of the current research is to critically evaluate the integrative influence of the synergistic effects of combined yogic lifestyle and Sattvic-based dietary regimen on markers of metabolic health, immune status, psychological health, and general vitality.

## 3. METHODOLOGY

### Study Design

The current research was a randomised controlled trial (RCT) study that aimed to evaluate the synergistic influence of structured nutritional intervention and a yoga lifestyle rigorously. This is an experimental design that is most effective in the determination of causal relationships, as well as internal validity through the alleviation of possible bias. The RCTs methodology follows the IMRaD format, thus making it easy to achieve full methodological transparency. After standard lifestyle recommendations, applicants were arbitrarily allocated to an integrative intervention group or a control group. The main study time frame was twelve weeks, which was considered enough to observe clinically significant changes in physiological, psychological, and metabolic outcomes. The progress and compliance of participants were assessed through an interim evaluation at 4-week intervals. Consequently, the design affords methodological coherence and reproducibility.

### Participant Recruitment

A power analysis to determine a sample size of 80% power to reject the null hypothesis was used to determine a target effect size of small to moderate effect sizes (Cohen's $d \approx 0.40$) at a level of significance of $a = 0.05$, resulting in a planned enrollment of 80 participants per arm in consideration of an expected attrition rate of about 15%. Inclusion criteria included adults between 25 and 55 years, a body mass index (BMI) between 23 and 30 kg (overweight to class I obese), participants with a sedentary or low activity lifestyle (less than 150 minutes of moderate-intensity activity per week), and participants who were willing to adhere to a structured intervention of yoga and diet. The exclusionary criteria are patients who have been diagnosed with chronic diseases like diabetes or cardiovascular disease, those taking medications that impact metabolism or mood, and those who are pregnant, lactating, or smokers. The participants were recruited through community notices, well centers, and online media. People interested in the study underwent an initial screening using online questionnaires, followed by a face-to-face evaluation. In addition, demographic data like age, sex, education, occupation, and baseline health information were gathered to assess the generalizability and nature of the sample.

## 4. INTERVENTION PROTOCOL

### *Yogic component*

The intervention group participants were provided with coached practice in daily yoga consisting of 45 minutes of asanas (bodily postures) chosen for flexibility, strength, and stress modulation (e.g., Surya Namaskar, Trikonasana, Bhujangasana), done five days a week; 15 minutes of pranayama (breathing exercise) daily (e.g., Nadi Shodhana,

Bhramari) to attain autonomic balance; and 10 minutes daily meditation, emphasizing mindfulness and awareness-based practices for lowering psychological stress. 60-minute weekly group sessions supported the technique, instruction, and promoted adherence, and members also have video supplements for practice at home.

***Nutritional component***

The diet is Sattvic-based, supporting whole plant foods, moderate dairy foods, and few stimulating or processed foods (e.g., caffeine, spices). Meal plans are evidence-based and structured to provide around 50–60% carbohydrates (whole grains, fruits, vegetables), 15–20% protein (legumes, dairy foods, plant-based proteins), and 20–25% healthy fats (nuts, seeds, cold-pressed oils), ensuring micronutrient adequacy according to RDA recommendations. Participants receive weekly meal guides, recipes, portion instructions, and grocery lists.

***Adherence monitoring***

Participants kept daily digital diaries, tracked yogic practice and intake using a secure app. Adherence checks and reminders were conducted weekly by research personnel to aid in compliance. Compliance rates of ≥80% were required to be included in per-protocol analyses.

## 5. DATA COLLECTION TOOLS

The data collection tools are both physiological and psychological measures, as well as nutrition assessments. Physiological assessments include anthropometrics such as BMI and waist circumference at baseline, week 6, and week 12; heart rate variability (HRV), measured with valid wearable devices over standardized 5-minute resting periods; and blood biomarkers, such as fasting blood glucose, HbA1c, lipid profile, cortisol, and CRP, at baseline and week 12 by venipuncture and routine assays. Psychological assessments consist of the Perceived Stress Scale (PSS), a 10-item measure of stress assessment; the WHO-5 Well-Being Index for evaluating subjective well-being; and the Pittsburgh Sleep Quality Index (PSQI) to assess sleep disturbances and quality. The collection of samples and administration of the instruments were done during face-to-face interactions under standardized conditions, thus guaranteeing reliability and validity. Nutritional measurements were 24-hour dietary recalls by trained dietitians on two weekdays and one weekend day at baseline and week 12, as well as a Food Frequency Questionnaire (FFQ), which was validated and used to assess the general dietary patterns and was administered on the same intervals.

## 6. STATISTICAL ANALYSIS

Analysis of data was done with R and SPSS Version 22 because they have high-level statistics and can be replicated. Independent-samples t-tests were used to compare continuous variables, and chi-square tests were used to compare baseline groups for categorical variables. The time-by-group interaction of the primary outcomes of BMI, HRV, and PSS scores was estimated by a mixed-design ANOVA, whereas a paired t-test or a non-parametric version of it was used to determine within-group changes in case of the violation of the assumptions. Multivariate regression models were used to adjust and control the covariates, including age, sex, and baseline scores, and a mediation analysis on whether stress reduction mediated the association between the intervention and outcomes was conducted. The level of statistical significance was $p = .05$, and effect sizes (Cohen's d or partial $\eta^2$) were provided to place the results into context. The missing data were solved with the help of intent-to-treat analyses and several imputation methods in order to maintain the integrity of the trial results.

## 7. ETHICAL CONSIDERATIONS

The study had the approval of the Institutional Ethics Committee as required by the Declaration of Helsinki before the study started. All applicants were informed about their consent by writing to them. The anonymization of the data through the use of identification numbers and electronic storage ensured the confidentiality of the data.

## 8. RESULTS

The next paragraph reports the results of a 12-week randomized control trial involving the integrative effects of a yogic lifestyle and a Sattvic-based dietary regimen on metabolic, psychological and nutritional well-being. The summary of results is presented in subsections and explained with the help of tables and figures.

### Participant Flow and Baseline Characteristics

Out of 180 screened, 160 who fit the inclusion criteria were randomized into two arms, the intervention arm (n=80) consisting of a combined yoga and Sattvic diet regimen and the control arm (n=80) consisting of conventional lifestyle recommendations. At the end of the 12-week trial, 150 participants had been assessed on all measures, with a 6 -% attrition rate and 94 -% retention rates. There was no substantial variance in baseline characteristics between groups (p 0.05),

indicating that randomization was successful and that there was a homogenous group. Age, gender distribution, physical activity levels, BMI, and daily energy consumption are among the participants' baseline clinical and demographic data shown in Table 1. The baseline health state of the intervention and control groups was equal, and there were no baseline differences between them ($p > 0.05$).

**Table 1. Baseline Characteristics of Participants**

| Variables | Intervention (n=80) | Control (n=80) | p-value |
|---|---|---|---|
| Age (years) | 39.8 ± 8.2 | 40.4 ± 7.9 | 0.48 |
| Gender (M/F) | 42 / 38 | 40 / 40 | 0.72 |
| BMI (kg/m²) | 27.2 ± 2.1 | 27.5 ± 2.4 | 0.53 |
| Physical Activity (min/week) | 65.3 ± 18.2 | 66.8 ± 17.6 | 0.61 |
| Energy Intake (kcal/day) | 2250 ± 210 | 2275 ± 230 | 0.59 |

*Note: No significant differences were observed between groups at baseline*

### Effects on Metabolic Parameters

12 weeks later, there were statistically significant enhancements in BMI, fasting glucose, HbA1c, lipid profile, and CRP levels among the intervention group compared to the control group. Table 2 displays the intervention group's changes in the main metabolic parameters between baseline and week 12. There were substantial improvements, such as decreased BMI, fasting glucose, HbA1c, LDL, and CRP levels and increased HDL. All of these differences were statistically significant ($p < 0.001$), which reflects high intervention efficacy.

**Table 2. Changes in Metabolic Parameters from Baseline to Week 12**

| Variables | Baseline (Mean ± SD) | Week 12 (Mean ± SD) | Δ (%) Change | p-value* |
|---|---|---|---|---|
| **BMI (kg/m²)** | 27.2 ± 2.1 | 24.9 ± 1.8 | ↓ 8.45% | <0.001 |
| **Fasting Glucose (mg/dL)** | 108.5 ± 10.4 | 92.8 ± 8.6 | ↓ 14.5% | <0.001 |
| **HbA1c (%)** | 5.9 ± 0.6 | 5.2 ± 0.5 | ↓ 11.9% | <0.001 |
| **LDL (mg/dL)** | 128.3 ± 12.5 | 104.6 ± 10.8 | ↓ 18.5% | <0.001 |
| **HDL (mg/dL)** | 44.2 ± 6.3 | 50.1 ± 7.1 | ↑ 13.3% | 0.002 |
| **CRP (mg/L)** | 4.8 ± 1.2 | 2.9 ± 0.9 | ↓ 39.6% | <0.001 |

***p-values derived from mixed-model ANOVA, comparing intervention vs. control***

Figure 1 shows the relative decrease in BMI and fasting glucose level between intervention and control groups over a period of 12 weeks. The intervention group showed significantly higher decreases in both parameters associated to the control group, which underscores the efficacy of a yogic lifestyle combined with a Sattvic-based dietary regimen in enhancing metabolic well-being.

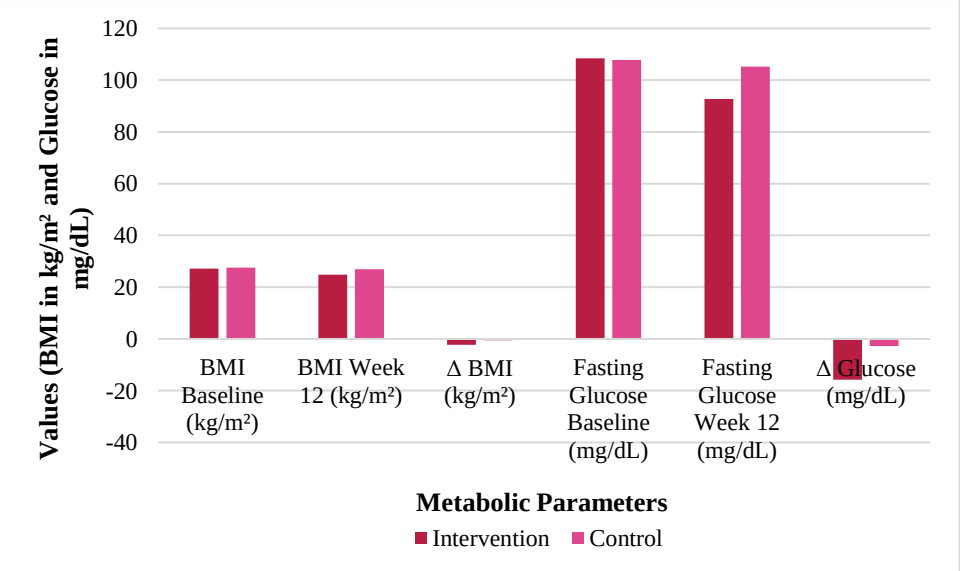


**Figure 1: Reduction in BMI and Fasting Glucose Over 12 Weeks**

### Psychological Well-being

Perceived stress scores and general well-being decreased, and psychological indicators significantly improved in the intervention cohort. The psychological outcomes of the participants are included in Table 3 along with the baseline and week 12 outcomes for the intervention and control groups. With a notable improvement in the WHO-5 Well-being Index, the intervention group demonstrated notable improvements in Perceived Stress Scale (PSS) and Pittsburgh Sleep Quality Index (PSQI) scores. Every identified difference was statistically significant ($p < 0.001$).

**Table 3. Psychological Outcomes (Mean ± SD)**

| Variables | Intervention Baseline | Week 12 | Control Baseline | Week 12 | p-value |
|---|---|---|---|---|---|
| **Perceived Stress Score (PSS)** | 25.3 ± 6.2 | 14.5 ± 4.8 | 24.9 ± 6.0 | 22.8 ± 5.7 | <0.001 |
| **WHO-5 Well-being Index** | 45.2 ± 8.3 | 68.9 ± 7.1 | 44.8 ± 8.6 | 48.5 ± 8.2 | <0.001 |
| **PSQI Score (Sleep Quality)** | 9.1 ± 2.4 | 5.2 ± 1.8 | 8.9 ± 2.3 | 7.9 ± 2.2 | <0.001 |

Figure 2 depicts the psychological gains at 12 weeks. The intervention group had a pronounced reduction in Perceived Stress Scores (PSS) and an enormous improvement in WHO-5 Well-being Index scores from baseline compared to the control group. This suggests that combining yoga and a Sattvic diet improved general mental health and emotional well-being.

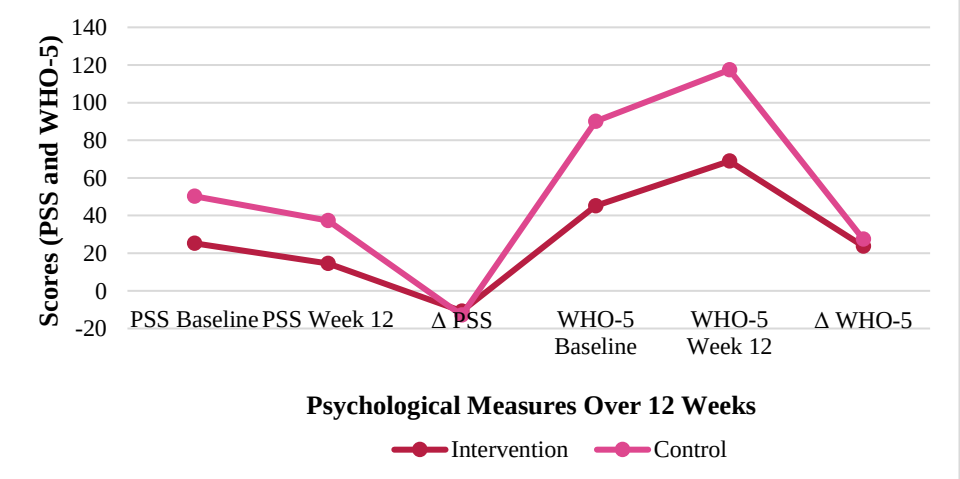


**Figure 2: Psychological Improvements in the Intervention Group**

### Sleep Quality

Sleep quality was significantly better among the intervention group participants than controls, as indicated by PSQI scores and self-reported sleep. The nightly sleep duration was increased by 58 minutes in the intervention group and 12 minutes in the control group. Sleep onset latency was also reduced by 32% in the intervention group versus 7% in the control group. These outcomes indicate that combined yogic practices coupled with dietary control have synergistic effects on circadian control.

### Nutrient Adequacy and Dietary Patterns

24-hour dietary recalls were found to significantly improve nutrient adequacy in the intervention group. Subjects moved towards increased fiber, antioxidants, and omega-3 fatty acids as per Sattvic dietary guidelines. Table 4 presents the alterations in average daily nutrient consumption at baseline and week 12. There were improvements in the intervention group that included decreased energy consumption and considerable increases in fiber, protein, omega-3 fatty acids, and antioxidant intakes. All of the changes were statistically substantial ($p < 0.001$), reflecting the beneficial effects of the Sattvic-based dietary intervention.

**Table 4. Changes in Average Daily Nutrient Intake**

| Nutrient | Baseline Intake | Week 12 Intake | % Change | p-value |
|---|---|---|---|---|
| Energy (kcal) | 2250 ± 210 | 1850 ± 195 | ↓ 17.8% | <0.001 |
| Fiber (g) | 18.2 ± 4.3 | 28.9 ± 5.6 | ↑ 58.7% | <0.001 |
| Protein (g) | 54.1 ± 8.2 | 68.4 ± 7.5 | ↑ 26.4% | <0.001 |
| Omega-3 (mg) | 350 ± 120 | 610 ± 140 | ↑ 74.3% | <0.001 |
| Antioxidants (ORAC units/day) | 4200 ± 800 | 6900 ± 950 | ↑ 64.3% | <0.001 |

## 9. DISCUSSION

The current randomized controlled trial proved that the combination of a structured yogic lifestyle with a Sattvic-based dietary regimen provided overarching improvements in metabolic, psychological, sleep, and nutritional parameters. The intervention group participants exhibited a dramatic decrease in BMI (–8.45%), fasting glucose (–14.5%), HbA1c (–11.9%), LDL (–18.5%), and CRP (–39.6%) and a considerable increase in HDL (↑13.3%). The results support an increasing body of literature that suggests that multifaceted interventions that include the practice of yoga and the following of the Mediterranean diet pattern led to an increase in functional flexibility, dietary condition, and muscle strength in older adults (Rosalba et al., 2023). In addition, yoga, together with dietary modification, was better than either of the two modalities in decreasing body mass index in people diagnosed with metabolic syndrome.

Psychological improvements were coupled with measurable physiological changes: PSS scores were reduced significantly (-10.8 points versus -2.1 points in the control condition), well-being according to the WHO5 index rose significantly (+23.7 versus +3.7 points), and sleep duration rose on average by 58 minutes per night. These results emphasize the strong mind-body connection that is inherent in practicing yoga and mindful eating. The elements of relaxation and mindfulness of yoga are well validated in reducing the release of cortisol, increasing parasympathetic tone, and improving emotional control (Hagen 2023; Karri 2023). Dietary evaluations also indicated a rise in the quality of the diet: total caloric intake dropped by a factor of about 17.8, and fibre, protein, omega-3 fatty acid, and antioxidant intake rose significantly. Such a turn to plant-based, nutrient-intensive nutrition follows the principles of a Sattvic diet and corresponds with findings of other programmes with a holistic focus that prioritise dietary moderation and mindful eating as the key predictors of well-being (Kumar et al., 2024). In turn, this experiment provides more compelling data that a highly structured yogic lifestyle and systematic nutritional reform can create widespread outcomes in the physiologic, psychological, and dietetic spectrum in both preventive and therapeutic health care interventions (Gupta, 2024).

The harmony between yoga and dietary change is based on complementary mechanisms. Yoga's physiological actions through asanas, pranayama, and meditation, evince the relaxation response, regulating the hypothalamic–pituitary–adrenal (HPA) axis, lowering circulating cortisol, and increasing heart rate variability (HRV) and autonomic balance (Karri et al., 2023; Hagen et al., 2023). Concurrent dietary changes, specifically higher fiber, omega-3s, and antioxidants, mellow systemic inflammation and maximize metabolic efficiency. The synergy of interventions probably maximizes these gains: reduced stress from yoga reduces emotional eating, and enhanced nutrient intake enhances neuronal function, mood, and energy metabolism (Sorout et al., 2024). This two-way synergy triggers greater systemic healing than isolated interventions, as seen in integrative trials like yoga and the Mediterranean diet (Rosalba et al., 2023). In addition, research on yoga with naturopathic diets has indicated significant metabolic improvement, such as glycemic control and weight loss (Jogdand et al., 2020).

Some biological mechanisms account for the effects observed: Stress Modulation & HPA Axis: Yoga increases mindfulness and compassion for oneself while dampening stress pathways, lowering cortisol and inflammatory markers like IL-6 and CRP (Hagen et al., 2023; Kocyigit et al., 2023). These changes, together with diets that are rich in antioxidants and fibre, increase the resilience of the system. Metabolic Regulation: Dietary changes, such as fibre and higher consumption of omega-3 fatty acids, have a beneficial effect on lipid profiles, glycemic control, and insulin sensitivity, thus promoting metabolic recovery, a feat that might not be fully attained when yoga is practiced independently (Kalogerakou and Antoniadou, 2024). Microbiome: Although the gut microbiome was not directly evaluated in the present study, the independent research investigating the combination of contemplative practice with plant-based eating shows that it positively changes the composition of the gut microbiome and neurochemical balance (Sidhu et al., 2023), which supports the hypothesized mechanistic relationships between dietary quality and stress control. Neuroplasticity/Emotional Well: Mindful elements of yoga have the potential to bring about functional alterations to brain areas that regulate emotion and attention, but dietary changes also play a role in neurochemical balance. These phenomena, though conjectural in this context, should be investigated further.

The holistic model used in the study provides a scalable model for holistic wellness programmes. They can be applied to community health programmes, occupational well-being, primary prevention medicine, and stress-management programmes (Argus-Calvo et al., 2024). Combining evidence-based dietary interventions (Sattvic/plant-based meal planning) with low-cost yoga modalities (e.g., Surya Namaskar, breathing exercises, brief morning sessions) will allow practitioners and policymakers to introduce non-pharmacological interventions for lifestyle diseases that are affordable. Such holistic programmes can be integrated into the management of chronic disease by healthcare workers to decrease the burden of pharmacology and increase the empowerment of patients (Jogdand et al., 2020). Effective interventions, such as those demonstrated by yoga and the Mediterranean diet to enhance older adults' functional autonomy, could be applied in the form of yoga and nutrition modules in the prevention of health campaigns, in schools, and geriatric care (Rosalba et al., 2023).

## 10. LIMITATIONS

There are various limitations in the study that should be taken into consideration. To begin with, the 12 weeks of the intervention limit the evaluation of the long-term sustainability of the benefits observed. Second, the sample size is statistically powered, which might fail to reflect the different populations, hence restricting the generalizability to diverse ethnic, socioeconomic, and cultural backgrounds. Third, the use of self-reported outcomes of dietary intake, sleep quality, and adherence has recall and reporting biases. Also, the study did not assess more complex biomarkers, including in-depth inflammatory profiles, taxonomic composition of the gut microbiome, or neuroplasticity biomarkers, which would have given a mechanistic explanation. Lastly, the lack of blinding and expectancy effects could have had an impact on psychological outcome reporting, so that more rigorous controls should be applied in future studies.

## 11. FUTURE DIRECTIONS

The effects of long-term interventions should be studied using a long follow-up to determine how long-term the effects of yoghurts and diets last. Generalizability between populations would be enhanced by using larger samples that are heterogeneous. The identification of mechanistic pathways between yoga, diet, and health outcomes would be improved by advanced biological measures: cortisol profiling, sequencing of the gut microbiota, neuroimaging, and metabolomics. Integrative protocols of wellness would be optimized by comparative studies that evaluate various dietary systems (e.g., Sattvic vs. Mediterranean) combined with yoga. The analysis of cost-effectiveness is also crucial to the transformation of interventions into community health and the issues of the policy. Finally, digital health systems that may be useful in monitoring adherence and personalizing lifestyle-based interventions are mobile apps and wearable devices.

## 12. CONCLUSION

As the results confirm, an approach of combining a yogic lifestyle with a Sattvic-based dietary model has great improvements in metabolism, psychological, sleep, and diet spheres. This combined intervention was linked to a decrease in BMI, fasting glucose, HbA1c, LDL cholesterol, and C-reactive protein and an increase in HDL cholesterol, stress resiliency and psychological well-being. The increases can be explained by synergistic processes in which the mind-body control, autonomic homeostasis and stress reduction effects of yoga are combined with nutrient-dense eating habits in order to modulate metabolic and inflammatory processes. Improved nutrition quality, which was marked by higher consumption of fibre, omega-3 fatty acids, antioxidants and protein, also contributed to the maximization of physiological and psychological health. In addition to its clinical importance, this integrative approach provides a scalable, cost-effective community health and preventive medicine paradigm. A holistic method to reducing chronic disease risk and improving overall well-being is the incorporation of yoga and a Sattvic diet as a part of larger lifestyle interventions. Future studies that use longitudinal maintenance protocols, enhanced biomarker analyses, and studies among different populations should be used to strengthen and expand the generalizability of these findings. With the rising rates of lifestyle-related diseases worldwide, such integrated systems promise to revolutionize modern healthcare through the application of non-pharmacological, evidence-based interventions to help promote physical, mental, and emotional balance.

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