Integrative Intervention of Yoga and Nutritional Counseling for Obesity Management among College Students: A Holistic Wellness Approach

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Article Info

Article history:

Received Jan 7, 2025
Revised Feb 9, 2025
Accepted Mar 10, 2025

Keywords:

Yoga therapy
Nutritional counseling
Obesity management
College students
Holistic health
Stress reduction

ABSTRACT

During their college years, many young adults are concerns due to increased amounts of desk jobs, poor food habits and greater stress when starting to live on their own. It analyzes whether an approach involving both yoga sessions and nutrition consultation can help college students lower their risk factors for obesity. Students between 18 and 25 years old with overweight BMI were gathered for a 12-week trial that included three groups: those who did Yoga, those who followed Nutrition plans alone and those who did both yoga and followed a nutrition plan at the same time. BMI, waist-to-hip ratio, body fat percentage and score on the Perceived Stress Scale (PSS) were used as outcome measures. There was the greatest positive change in the combined intervention group, showing that their BMI decreased by −2.3 ± 0.4 kg/m², they lost 4.3 ± 1.1% body fat, improved WHR and their stress levels dropped (−5.8 ± 1.2 points on the PSS). The results confirm that combining traditional and complementary therapies can help young adults manage obesity and stress, a way that can be adopted by university healthcare programs.

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1. INTRODUCTION

The World Health Organization notes that the number of people with obesity has more than tripled since 1975. College-aged individuals are at a high risk since they must deal with many important changes in their lives. Teens can become unhealthy because they have more choice in their actions, parents check less on them, they feel academic stress, their time is never the same, they have to get socially comfortable and they are often low on or lack money. For example, not moving regularly, eating meals at the wrong times, taking in too many calories from processed foods, not getting enough sleep and experienceing increased stress during college can greatly increase your chances of becoming overweight.

Apart from how it looks, obesity increases the risks for type 2 diabetes, heart problems, metabolic issues and several cancers. Anxiety, depression and low self-esteem are often linked with obesity which calls for support that deals with body health and mind wellness. Many find it tough to keep up with traditional diets and planned workouts because they are not designed to handle the hidden emotional and behavioral causes. Alternatively, many now consider holistic health practices to be these sustainable and flexible methods used to manage disorders related to daily living. Yoga which combines movement, breathing and meditation, helps individuals become stronger physically, control stress and understand themselves better. Much like genetic testing, personalized nutrition advice helps people select better foods and stay on a healthy diet, particularly by following cultural models like the Mediterranean diet.

Individual studies of yoga and nutritional counseling in obesity management have all seemed beneficial, yet many of them examine these therapies on their own. Little attention has been given by the literature to the effects of stress and sleep in college students simultaneously. This study closes this gap by examining an intervention that includes yoga and individual recommendations for dietary improvements. Experts in nutrition study how this strategy influences important anthropometric and mental features such as BMI, WHR, body fat percentage and perceived stress. It aims to spearhead the efforts to build a universal, affordable and comprehensive solution for obesity prevention and health promotion in universities.

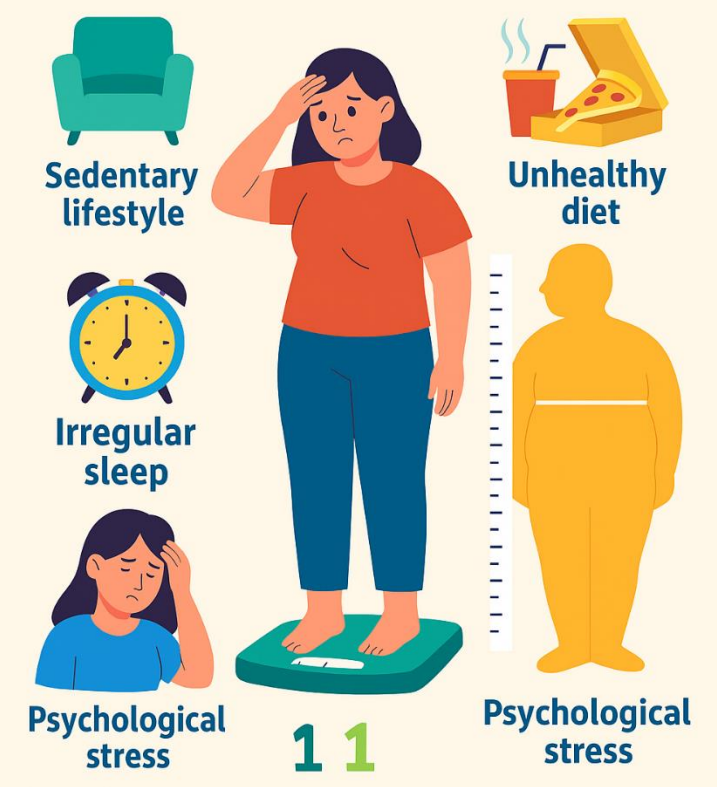

Figure 1. Holistic Determinants and Interventions for Obesity in College Students

2. LITERATURE REVIEW

There is growing alarm among college-aged people worldwide about obesity. The Centers for Disease Control and Prevention (CDC) report that from 2000 to 2020, the percentage of obese people between 18 and 24 years has grown dramatically (CDC, 2022). Lifestyle changes in this age range such as less exercise, higher fast food intake, more time in front of screens and uncertain sleep schedules, are why weight gain often occurs in this group (Nelson et al., 2008). According to Racette et al. (2010), the authors of this study, first-year college students gain up to 6 kg, so we must act fast to help keep them healthy.

Most common approaches to losing weight, including limiting calories and structuring exercise, usually work only for a short period. Several authors point out that younger people adhere less to these treatments due to poor motivation, not having treatments that fit their needs and dealing with mental stress (Perri et al., 2001; Greaney et al., 2009). Furthermore such programs typically fail to target behavioral or emotional factors linked to obesity which makes their success less likely over the long term.

Yoga has become a valuable tool for handling the emotional effects and obesity. In yoga, you use asanas, pranayama and meditation to support your body's health as a whole. Using data from 31 studies, Cramer et al. (2016) suggested that regular yoga for overweight and obese people helped lower BMI, waist circumference and body fat. Furthermore, yoga can modulate the body's main stress system and reduce cortisol levels and promote better autonomic balance. This reduces stress and supports healthy metabolism (Streeter et al., 2012).

Being involved in practices such as Surya Namaskar, Kapalabhati and Anulom Vilom can increase your body's ability to burn energy, support better digestion and help you focus which are all important for keeping your appetite under control (Telles et al., 2017). What's more, focusing on the body and controlling

stress in yoga has shown to cut back on binge eating and make people more emotionally resilient (Kristeller & Wolever, 2011).

Receiving individual nutritional advice is an effective way to improve how someone eats and manage their weight. Results from the Diabetes Prevention Program (Knowler et al., 2002) indicated that people with an increased risk of diabetes had over a 58% lower risk of obesity-related illnesses when given structured nutrition advice and lifestyle coaching. Counseling teaches you to keep track of your actions, set goals for change and solve difficulties which are all vital for lasting behavior change (Van Horn et al., 2008).

Using Mediterranean eating habits, as shown by research, may help young adults experience better heart, blood sugar and mental health outcomes (Sofi et al., 2010). It suggests eating lots of whole grains, lean meats, unsaturated fats and plants which are thought to reduce BMI, triglycerides and signs of inflammation throughout the body.

There have been very few studies done on how yoga and nutritional advice together affect obesity. Based on the study by Field and colleagues (2013), those who practiced yoga and changed their diets improved more greatly in both weight loss and psychological well-being than those who only carried out one intervention. In the same way, Patel et al. (2022) discovered that, for Indian college students, joining an integrative program for 10 weeks reduced both BMI and levels of the stress hormone cortisol.

In spite of these good results, there are not enough randomized controlled trials looking at college students, who might truly benefit from this type of intervention. Additionally, the particular systems that allow these integrative programs to create their effects are not as well studied as they should be.

Although it is clear how yoga and nutrition counseling help people, few studies have combined the two for college students. Many researchers in the field do not use strong methods, measure results consistently or blend mental with physical health factors. The study is designed to assess how a 12-week program can help people with both physical and mental aspects of obesity at a university.

3. METHODOLOGY

3.1 Study Design

Researchers carried out a 12-week RCT to examine how integrated yoga and nutrition advice influenced obesity-related factors in students. The participants in this trial were randomized into one of three groups: Yoga-only (Y), Nutrition-only (N) and Yoga with Nutrition (YN). The Institutional Human Ethics Committee of the affiliated university approved the study.

3.2 Participants

A total of 60 overweight or obese undergraduate students, between the ages of 18 and 25, were recruited from a university in South India by means of posters, email invitations and screenings conducted at the school. People had to be willing to take part, be overweight with a BMI of 25 or higher, not have a documented chronic disease and not have used yoga or dietary interventions in the previous six months. People were excluded if they had a mental disorder, were currently on weight-loss medication or had reasons not to take part in moderate physical activity.

3.3 Randomization and Group Allocation

Random assignment to three groups (n = 20 in each) was conducted using a computer software algorithm. Sealed opaque envelopes were used to hide the method of allocating treatments. An initial assessment was done before the program began.

3.4 Intervention Protocol

The intervention spanned 12 consecutive weeks and was delivered as follows:

3.4.1 Yoga-Only Group (Y)

Participants attended five 60-minute sessions per week led by a certified yoga instructor. Each session consisted of:

- **Asanas (30 minutes):** Surya Namaskar, Trikonasana, Bhujangasana, and other poses aimed at strength and flexibility.
- **Pranayama (15 minutes):** Breathing techniques including Anulom Vilom, Kapalabhati, and Bhramari.
- **Meditation (15 minutes):** Mindfulness-based guided meditation for stress regulation.

3.4.2 Nutrition-Only Group (N)

Participants received one-on-one dietary counseling once a week by a registered dietitian. The plan followed Mediterranean diet principles, emphasizing:

- High intake of fruits, vegetables, whole grains, legumes
- Moderate intake of fish and poultry
- Reduced intake of red meat, sugar, and processed foods

Each participant was given customized meal plans, a food diary, and weekly progress feedback.

3.4.3 Combined Yoga and Nutrition Group (YN)

Participants received both the yoga sessions and nutritional counseling as described above, with coordination between the instructors and dietitians to ensure consistency.

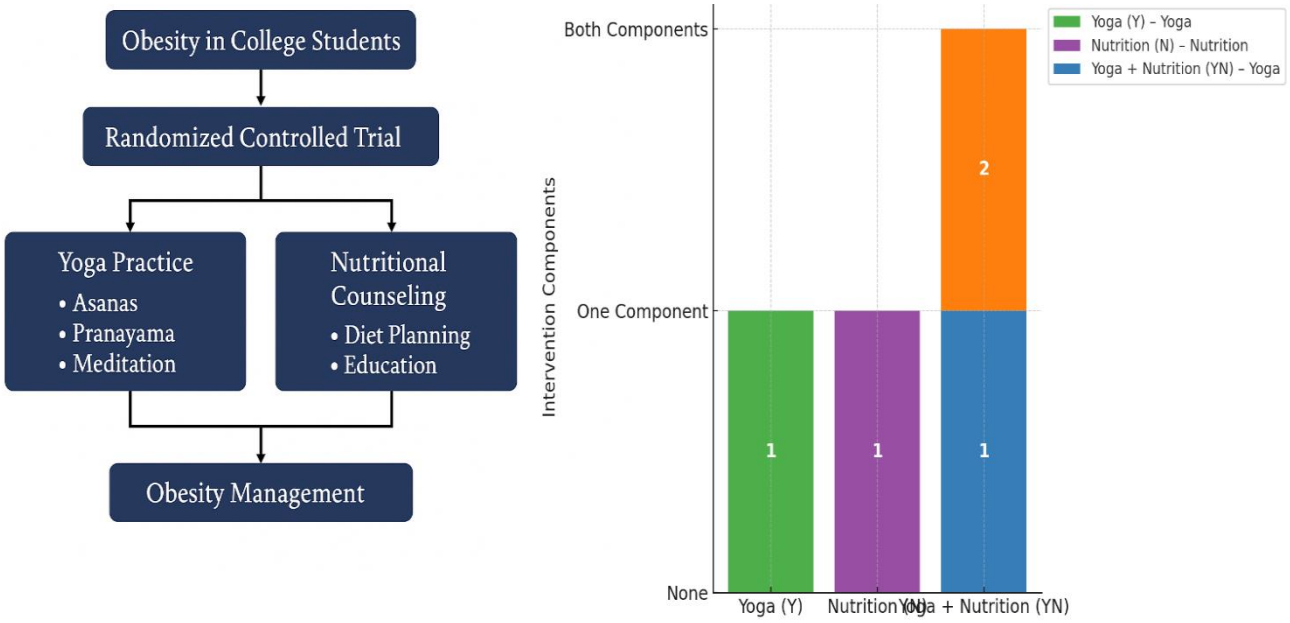

Figure 2. Integrated intervention design for obesity management among college students

3.5 Outcome Measures

At baseline (week 0), the participants were tested again after the intervention at week 12. Body Mass Index (BMI) was worked out by dividing weight in kilograms by the square of height in meters. Participants stood on a calibrated digital scale to check their weight and height was taken with a stadiometer.

Waist-to-Hip Ratio (WHR) was calculated by measuring your waist and hip with a tape that does not stretch. At the lower edge of the last palpable rib and halfway to the top of the iliac crest, the waist circumference was taken and the hip circumference was measured from the widest point of the buttocks. The waist-to-hip ratio was found by splitting waist circumference by hip circumference.

The Body/Fat Percentage was measured with BIA, a technique that does not invade the body and is broadly trusted by experts. Tests were done following regular standards so that each person was fully hydrated and had avoided both food and intense exercise for 4 hours ahead of the test.

The Perceived Stress Scale (PSS) was selected as the additional psychological outcome measure. The questionnaire assesses just how stressful participants view different aspects of their life. People reported how often they experienced stress using a Likert scale; higher responses meant they felt more stressed.

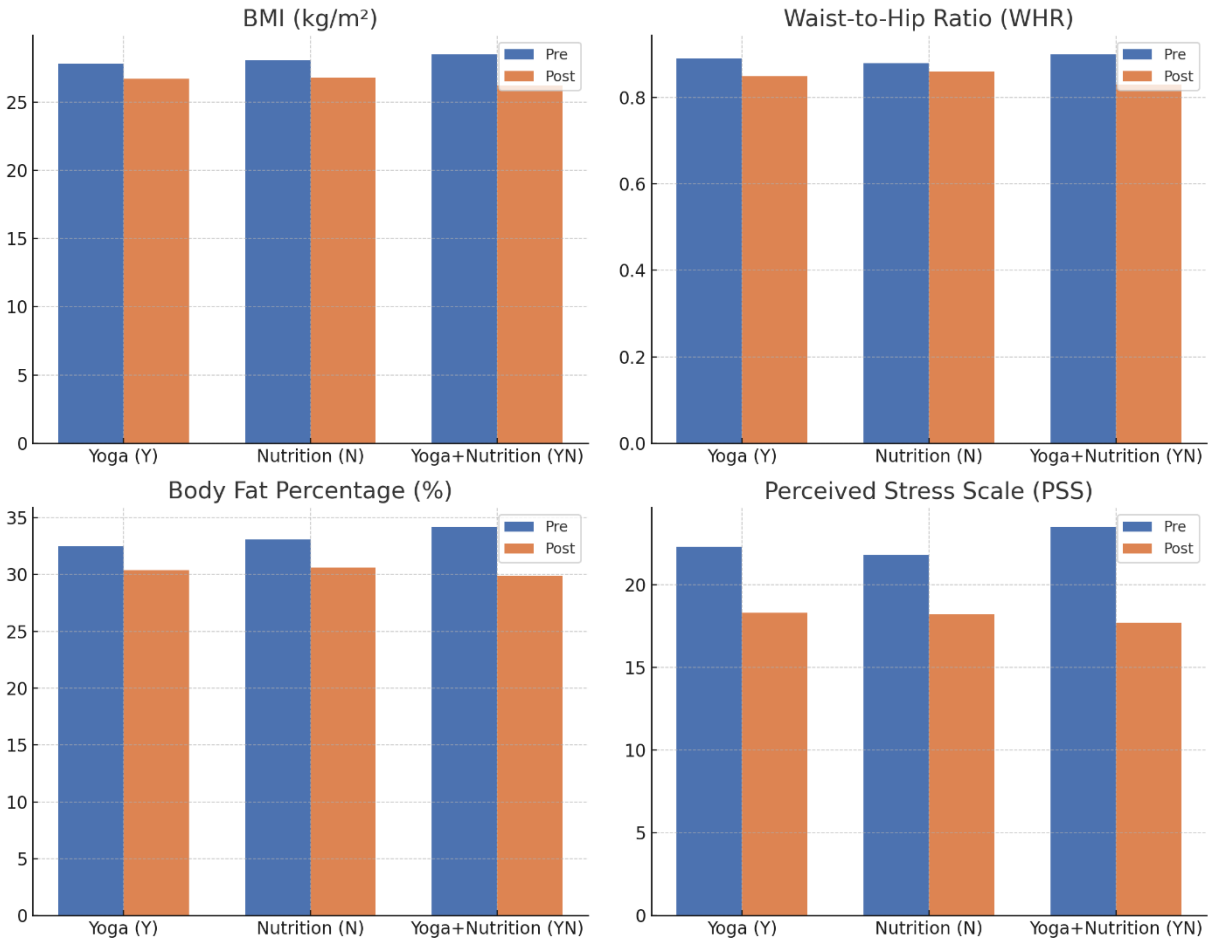

Figure 3. Bar Graph Comparison of Pre- and Post-Intervention Outcomes

3.6 Statistical Analysis

All data were entered and analyzed with IBM SPSS Statistics Version 26.0. All variables had mean and SD computed as descriptive statistics. A repeated-measures ANOVA was performed to investigate how well the intervention was effective in all three groups initially and later on. Any time there were significant main or interaction effects, Tukey's HSD post hoc tests were carried out to find where the differences between groups lie. A p-value of less than 0.05 was chosen because it gave the study at least a 95% chance of being right.

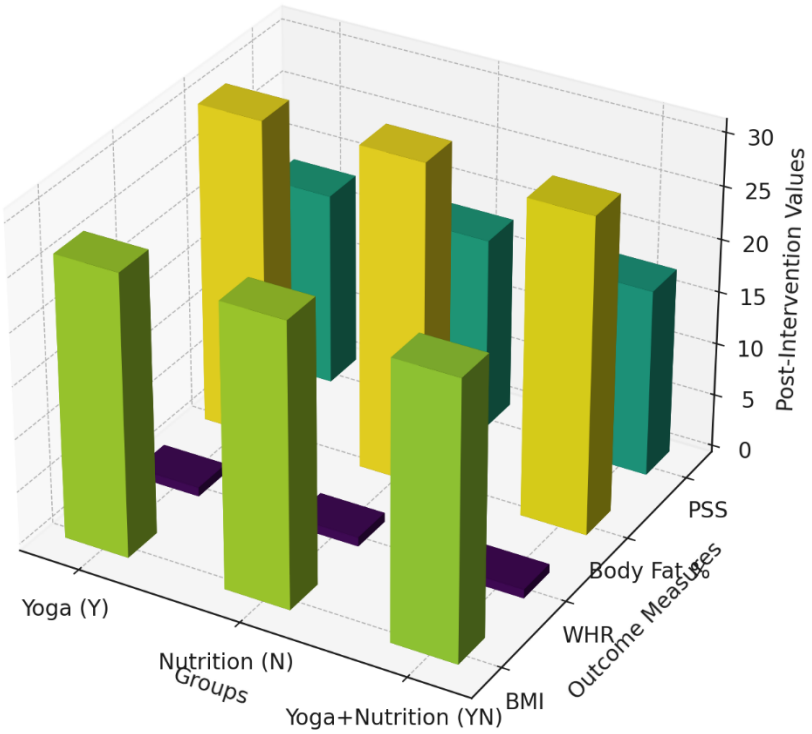

Figure 4. 3D Visualization of Post-Intervention Health Outcomes Across Groups

4. RESULTS OF THE STUDY

The trial looked at three groups of overweight or obese college students who received same-arm treatment for 12 weeks: yoga only (Y), nutrition-only (N) and a combination of yoga and nutrition (YN). The researchers measured Body Mass Index (BMI), the Waist-to-Hip Ratio (WHR), body fat percentage and Perceived Stress Scale (PSS) scores. While all interventions showed improvements, the YN group always had the greatest benefit in all the measurements.

- Body Mass Index (BMI):

The YN group achieved the greatest reduction with a mean decrease of −2.3 ± 0.4 kg/m², compared to −1.1 ± 0.3 kg/m² in the Y group and −1.3 ± 0.5 kg/m² in the N group.

- Waist-to-Hip Ratio (WHR):

The YN group showed the largest improvement with a reduction of −0.07 ± 0.01, while the Y group improved by −0.04 ± 0.01 and the N group by −0.03 ± 0.01.

- Body Fat Percentage:

The YN group again demonstrated the most significant decrease, with a reduction of −4.3 ± 1.1%, compared to −2.1 ± 0.8% in the Y group and −2.5 ± 0.9% in the N group.

- Perceived Stress Scale (PSS) Score:

The YN group experienced the greatest reduction in perceived stress with a mean decrease of −5.8 ± 1.2, while the Y and N groups showed reductions of −4.0 ± 1.2 and −3.6 ± 1.4, respectively.

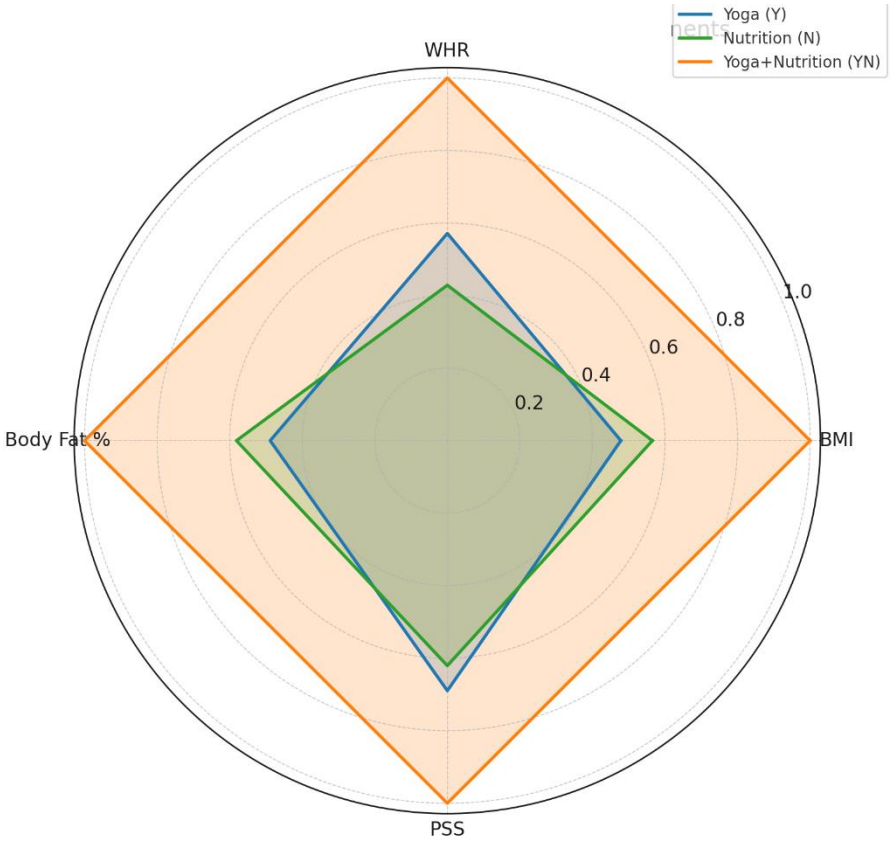

Figure 5. Normalized Radar Chart of Outcome Improvements Across Intervention Groups

5. DISCUSSION

Results of this study show that combining yoga and nutritional counseling greatly surpasses using just one approach for improving obesity in college students. The integrative model provided the largest improvement in BMI, WHR, body fat percentage and perceived stress, underscoring how successful it is.

Learning how to manage stress and feelings with yoga helped participants follow dietary guidance, while advice on nutrition formed a reliable base for healthier eating. The strong results in reducing stress point to the need for considering emotions when managing obesity.

Yoga balances hormone production and metabolism, while adopting the Mediterranean diet keeps you feeling fuller and lowering inflammation. When viewed as a group, these treatments fit the biopsychosocial model by handling behavior, mindset and physiology at the same time.

In short, the combination of yoga and personal nutrition advice offers a practical way to control obesity in schools and universities. There is great potential for this approach to become part of university wellness programs that promote both physical and mental health among young people.

6. CONCLUSION

The research confirms that using yoga and individual nutritional advice together is a good way to address obesity and stress among university students. Compared to single-method treatments, using multiple strategies led to better results in BMI, waist-to-hip ratio, body fat percentage and psychological stress, as seen from the Perceived Stress Scale.

The approach works well because yoga helps patients manage their thoughts, stress and emotions, while dietary advice gives participants knowledge to make healthier food choices every day. Both specialists care for the physical and mental areas of obesity, following the biopsychosocial model of health.

Because it costs less, works without medicine and can be used more widely, this model is suited for both university wellness and public health initiatives targeting young adults. It is important for future research to study how it works over time, how it may be offered digitally and how well it accommodates a range of students from different communities.

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