

Effect of Yoga and Naturopathy Treatments on Psychological Burden in Obesity: A Single Case Report



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ABSTRACT

Obesity is defined as abnormal or excessive fat accumulation in the body and is a major risk factor for various non-communicable diseases (NCDs), such as diabetes mellitus, cardiovascular diseases, hypertension, and hyperlipidemia. According to the World Health Organization, more than 1 billion people worldwide are obese—650 million adults, 340 million adolescents, and 39 million children. The often ignored component of obesity is the psychological burden associated with the condition impacting multiple aspects such as low self-esteem, depression, and anxiety. This case report shows the effect of an integrated yoga and naturopathy-based lifestyle in a patient with morbid obesity, with special reference to his psychological status. A 19-year-old male college student diagnosed with obesity underwent integrated yoga and naturopathy management for a period of 20 days. Outcome measures such as anthropometric measurements, positive and negative affects scale (PANAS), depression, anxiety, and stress scale (DASS), and day-to-day activity scale were taken before and after the 20-day intervention period. Results showed improvements in negative affect, depression, and anxiety levels, along with a reduction in body weight. Further studies with adequate sample sizes and experimental study designs are required to validate our findings.

Key Words Depression, anxiety, stress, integrated approach

INTRODUCTION

Obesity is a multifactorial disease, caused by genetic, biological, psychological, cultural, and social factors in addition to many other determinants of health. Lifestyle, family history, and psychological factors play an intertwining role in the pathogenesis of obesity. Globally, there has been a significant increase in the prevalence of obesity in the past 50 years.¹ In general, body mass index [BMI (kg/m²)] greater or equal to 30 kg/m² is considered obesity. Several studies showed that 20% to 60% of persons with obesity, and extreme obesity in particular, suffer from psychological illness.² The prevalence of obesity continues to rise, severely impacting physical and mental well-being. Current evidence shows that obesity is associated with serious mental disorders, particularly anxiety and depression.³ In spite of remarkable advancements in the pharmacological management of various disease conditions, lifestyle modification still remains a cornerstone in the management of obesity. Yoga and naturopathy are an alternative system of medicine popularized in India that emphasizes salutogenesis,⁴ which is the intentional focus on health promotion and adopting healthy lifestyle behaviours rather than solely focusing on disease management.⁵ Naturopathy uses all the five elements of Nature to treat various diseases and also to promote health and

well-being. Hydrotherapy, mud therapy, heliotherapy, fasting, and diet therapy are various modalities of treatment in naturopathy. Yoga includes the practice of asana, pranayama, mudra, bandha and meditation for therapeutic purpose.⁵ In this case report, we aimed to examine the effect of yoga and naturopathy-based lifestyle interventions on physical and psychological well-being in a patient with obesity.

CASE DESCRIPTION

A 19-year-old male college student, diagnosed with morbid obesity (BMI 45 kg/m²) since 2020, visited our hospital for holistic yoga and naturopathy treatment for weight reduction and mental well-being in February 2022. A general physical examination revealed no pallor, icterus, cyanosis, or edema. A systemic examination showed normal functioning of all the systems, and no abnormalities were detected. He did not present with any metabolic disorders (diabetes, thyroid dysfunction) other than obesity. On naturopathy diagnosis, he had mixed encumbrance, and iris diagnosis revealed open and closed lesion in regions in zones 4, 6, and 7 in both eyes. According to yogic *tridosha* theory, *vata* is dominant. He also admitted that he often felt disinterested in carrying out day-to-day activities, was upset about his physical

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appearance and felt guilty for not caring for his health properly. At the onset of his treatment, body weight was 131.5 kilograms, height 1.71 meters with a BMI of 45 kg/m². After explaining the intervention procedures, written informed consent was obtained.

Therapeutic Intervention

The intervention involved yoga practices (including surya namaskar, *nadi shodhana*, and *bhramari* pranayama) and naturopathy (natural raw diet [Table 1], massage therapy, cold hip bath).

Yoga

Surya namaskar, or sun salutation, is a component of Hatha yoga consisting of 12 postures (asanas), performed rhythmically, involving major components of the spine, joints, and muscles of the body.⁶ *Nadi shodhana*, or alternate nostril breathing, is a slow, rhythmic, alternate nostril breathing technique, consisting of inhaling through one nostril, exhaling through the other nostril and repeating the procedure through the other nostril.⁷ *Bhramari* pranayama, or humming bee breathing, is done by closing the ears using the index fingers, and after a full inhalation exhaling, making a soft humming sound.⁸

Natural Diet

The natural raw uncooked diet included raw fruit salad, raw vegetable salad, sprouts, fruit and vegetable juices [656 kcal to 858 kcal] (Table 1).

Cold Hip Bath

A cold hip bath was taken once a day (20 minutes) for 20 days. The hip bathtub was filled with cold water at 10–18°C, enough to cover the hips and reaching up to the umbilical region of the bather.⁹

Massage Therapy

Massage therapy included manipulation of tissue in the body for therapeutic purposes. Partial massage was given to the abdomen on alternate days for the period of 20 days.

TABLE 1 Naturopathy diet menu

Time	Natural Diet (Raw/Uncooked)
6:30 am	200 ml of vegetable or green juice (bottle gourd, ash gourd, plantain pith)
9:30 am	Sprouts – 25 g (green gram, ground nut, pearl millets); vegetable salad – 200 g (carrot, beet root, cucumber, chow chow, yellow pumpkin); fruit salad – 200 g (guava, muskmelon, watermelon, orange, pineapple, papaya, grapes)
12:00 pm	Greens and fruit juices – 200 ml (curry leaves, mint, lemon, coriander, grapes, watermelon, muskmelon)
2:00 pm	Sprouts – 50 g (green gram, ground nut); fruit salad – 200 g (guava, muskmelon, watermelon, orange, pineapple, papaya, grapes)
4:30 pm	Greens and fruit juices – 200 ml (curry leaves, mint, lemon, coriander, grapes, watermelon, muskmelon)
7:00 pm	vegetable salad – 200 g (carrot, beet root, cucumber, chow chow, yellow pumpkin); fruit salad – 200 g (guava, muskmelon, watermelon, orange, pineapple, papaya, grapes)

Outcome Measures

Psychological well-being outcome measures, such as positive affects, negative affects scale (PANAS),¹⁰ were used. The Negative Affect portion of the PANAS evaluates 10 emotions (guilty, hostile, ashamed, afraid, irritable, scared, nervous, upset, distressed, jittery) using a Likert scale ranging from 1 (very slightly or not at all) to 5 (extremely). The depression, anxiety, and stress scale (DASS),¹¹ day-to-day activity scale, and anthropometric measures were used for assessment before and after the 20-day intervention.

RESULTS AND DISCUSSION

After the 20 days of integrated yoga and naturopathy treatments, a reduction in body weight from 131.5 kg to 124 kg, with a corresponding reduction in BMI from 45 kg/m² to 42.2 kg/m², in negative affects from 44 to 5, and in depression score from 23 to 11, were observed (Table 2). However, stress level and positive effects were unfavorable because the patient was preparing for exams during the intervention period. It was hard for him to adapt to the natural raw diet initially since he loved eating non-vegetarian food and rarely consumed fruits and vegetables. Moreover, the patient himself admitted that he was gaining interest in building his career and was very proud of the physical transformation he achieved during the 20 days. He also gained confidence in facing society and fellow beings.

Yoga is a safe and cost-effective modality to reduce depression and anxiety and improve quality of life. A cold hip bath capable of inducing shivering has been shown to encourage the production of irisin, an adipokine that facilitates white adipose tissue mimicking functions similar to brown adipose tissue and enhances metabolism.¹² Naturopathy and yoga have been found to be effective in reducing inflammation, anxiety, and depression.¹³ A restricted calorie diet has been shown to reduce obesity-induced

TABLE 2 Baseline and post-test assessment of the patient

Parameters	Baseline (Day 1)	Post (Day 21)
Height (centimeters)	171	171
Weight (kilograms)	131.5	124
Body mass index (kg/m ²)	45	42.4
Waist hip ratio	1.02	0.9
Mid-arm circumference	Right (cm)	42
	Left (cm)	45
Mid-thigh circumference	Right (cm)	78
	Left (cm)	76
Positive affect	28	26
Negative affect	44	5
Depression	23	11
Anxiety	18	8
Stress	19	21
Day-to-day activity scale	62	52

anxiety among college students.¹⁴ Calorie restriction also leads to activation of silent information regulator 1 (SIRT1), which controls the key aspects of lipid and glucose metabolism through interaction with transcription factors.¹⁵ SIRT1 regulates many endocrine functions, preventing cells from oxidative stress damage, and promotes DNA stability as well as decreasing various disorders, such as cancer, neurodegenerative disorders, and metabolic abnormalities.¹⁶ Obesity and its psychological burdens are related to circadian rhythms, which control energy homeostasis by controlling glucose and lipid rhythms in animals and humans,¹⁷ as a misalignment of circadian rhythms has been reported in obesity.¹⁸ Integrated yoga and naturopathy treatment are documented as regulating circadian rhythms, known as the biological clock, located in the hypothalamic suprachiasmatic nucleus, functioning as a metabolic, endocrine, and sleep regulator.¹⁹ A previous pilot study on naturopathy treatment focused only on naturopathy showed significant changes in anthropometric measures (BMI, weight, waist circumference).²⁰ The current case study is unique in documenting a reduction in body weight, along with a reduction in depression and anxiety, in a patient with obesity through yoga and naturopathy.

CONCLUSION

Yoga and naturopathy treatments may be effective in a more holistic approach to the management of obesity and a reduction in the psychological burden associated with obesity. However, further studies with a larger sample size and high-quality study design are required to confirm the findings described here.

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CONFLICTS OF INTEREST DISCLOSURE

We have read and understood the *CAND* Journal's policy on conflicts of interest and declare that we have none.

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