

# Management of Type II Morbid Obesity, Muscle Stiffness, Acidity and Constipation using an Integrated Approach

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**Abstract:** Healthy diet and lifestyle modifications are paramount for weight management in obese individuals. The purpose of this case study was to determine the effect of an Integrated Approach, that includes diet and lifestyle modifications, on the body weight of a morbidly obese individual. The subject of this case study was a 34-year old man who presented with 43% body fat and a BMI of 47.1 kg/m<sup>2</sup>. Upon reviewing the case history, the doctor decided to treat the subject for a period of 9 months using the Integrated Approach that included nutritional therapy, ayurvedic herb support, vitamins, minerals, dietary supplements, regular exercise and lifestyle modifications. Modifications to lifestyle and food plan were made by the nutritionist following each weekly visit based on the subject's progress. With the Integrated Approach the patient managed a 18% reduction in his body fat, in addition to experiencing relief from acidity and constipation. His weight reduced from 137.2 kg to 67.5 kg in 1 year and 9 months.

**Keywords:** Integrated Approach, Morbid Obesity, Nutrition, Ayurveda.

## I. INTRODUCTION

Obesity is a complex disease, influenced by environmental, genetics, physiological, and psychological factors, that should be treated on all fronts in order to lead a healthy life. Obesity is a chronic disease that affects many people and often requires long-term treatment to enable and sustain weight reduction. According to the National Family Health Survey (NFHS-4, 2015-2016), the number of obese people has doubled in India over the past 10 years [1].

Health risks associated with obesity include type 2 diabetes, coronary heart disease, dyslipidemia, hypertension, stroke, sleep apnoea, respiratory problems, and osteoarthritis. Obesity is also associated with gastrointestinal complaints such as acidity and constipation. About one-fifth of the obese population experiences, at some point, symptoms of decreased bowel frequency and acidity [2].

Body mass index (BMI) is used to classify the different degrees of obesity, as shown in Table I. According to the International Diabetes Federation, men with a waist measurement  $\geq 90$ cm are considered at risk and women with a waist measurement  $\geq 80$ cm are at risk of various comorbidities associated with obesity [3].

**TABLE I: NUTRITIONAL STATUS BASED ON THE WHO AND "ASIAN" CRITERIA [4]**

Nutritional Status	WHO criteria BMI cut-off (kg/m <sup>2</sup> )	"Asian" criteria BMI cut-off (kg/m <sup>2</sup> )
Underweight	<18.5	<18.5
Normal	18.5-24.9	18.5-22.5
Overweight	25-29.9	23-24.9
Pre-Obese	-	25-29.9
Obese	$\geq 30$	$\geq 30$
Obese Type I (obese)	30-40	30-40
Obese Type II (morbid obese)	40.1-50	40.1-50
Obese Type III (super obese)	>50	>50

The cornerstone of therapeutic interventions to treat obesity is weight management via lifestyle modifications, including hypo-caloric diets and increased physical activity along with behavioral modifications to support these changes [5]. Studies have found that weight loss in individuals who are obese may help reduce health risks and improve blood pressure, blood cholesterol, triglycerides and insulin resistance.

The first line of treatment at Health Total is to encourage the patient to make lifestyle modifications through counseling and medical support, to achieve and maintain the lost weight along with long-term intervention. This case study highlights strategies that Health Total implemented to improve the patient's health, to achieve and maintain a healthy weight, along with treatment of constipation and acidity.

## II. CASE PRESENTATION

AD, a 34-year-old man presented with complaints of obesity and associated complaints of joint and muscle stiffness, acidity and constipation, seeking treatment options for the same.

The patient was in despair due to his increasing weight and at the time he was at the highest weight he had ever been when he presented for treatment in January 2016. He had even considered bariatric surgery, prior to considering the Health Total protocol as an option to lose weight naturally. He expressed difficulty in walking due to knee pain and dyspnea. His past medical history was good with a blood pressure of 120/80 mmHg. His family history was negative for obesity; his father being healthy while his mother did have a history of being hypothyroid.

On physical examination, his height was 5' 6" and he weighed 137.2 kg, yielding a BMI of 47.1 kg/m<sup>2</sup> in the morbidly obese range. On laboratory testing, blood urea nitrogen (BUN), creatinine, cholesterol, triglycerides and liver function tests were found to be normal. Thyroid function tests were also normal.

### *Diet recall*

His diet recall consisted of three meals a day with two in-between snacks. For breakfast, he would usually have 2 cups of tea along with either bread, *poha*, oats, bread with omelette, *besan dosa* or sprouted moong. For mid-morning snacks he would have *khakhra*, puffed rice or fruits. He would also have an evening snack consisting of one cup of tea along with biscuits or *khakhra*. For lunch and dinner, he would usually have 2 chapatis along with *sabzi*, *dal-rice*, and either fish curry or chicken curry. He would eat out at restaurants 3 times a week. His alcohol intake consisted of two glasses of whiskey in a month. He would consume sweets about twice a week.

## III. DISCUSSION

### *Therapeutic intervention*

After reviewing AD's medical history, he was put on a weight loss programme, which was personalised to suit his lifestyle and also to help improve his digestion. To serve these objectives, a balanced, high-fibre, low glycaemic index (GI), complex carbohydrate and moderate-to-high protein diet along with therapeutic lifestyle changes (TLC) were prescribed, with special attention to a high-fibre intake. Vitamin A and C supplements were prescribed, along with multi-minerals and calcium.

### *Treatment and Follow-up*

The patient first visited the Health Total centre in January 2016. After completing 9 months on the programme, he felt much lighter and more energetic. He decided to continue the health programme for another year. Nutritional management helped him feel more satiated, energetic and healthy. He found that the recommended diet regimen was manageable and easily adoptable and that it blended perfectly in with his daily routine without him having to make any drastic dietary changes.

A regular exercise programme consisting of moderate brisk walking for 20-30 minutes 5 days a week was also recommended to the patient. The same was initiated by the patient at the start of the plan and with steady weight loss this was later upgraded to different types of physical activities, such as sit ups for 15-20 minutes 3 days a week and weight training for 10 minutes 4 days a week. He was also given Ayurvedic herbs to help detoxify his body and to improve digestion.

Ayurvedic herbs used were Nishoth (*Operculina turpethum*) (for managing obesity, digestive issues) [6] and Haritaki (*Terminalia chebula*) (to manage hyperacidity). A deep-level detoxification was done using herbs such as *Phyllanthus niruri* (hepato-protective and deep level liver cleanser) [7], and *Bauhinia variegata* (a powerful detoxifying agent, used to support healthy thyroid function and to cleanse the lymphatic system) [8]. *Garcinia cambogia* was used to support weight loss [9] and *Citrullus colocynthis* was used as a powerful laxative, good for treating constipation and also help improve liver function [10]. *Emblica officinalis* was used to aid digestion, while natural iodine in the form of seaweed was used as a metabolic booster to affect weight loss [11].

The patient was also given dietary supplements, which included B-vitamins, Vitamin D3 supplements, probiotics and antioxidants both in natural and supplemental forms to boost his immunity and energy levels.

Progress reports showed a gradual and sustained reduction in the patient's weight and BMI, along with reduction in his fat percentage and other body composition parameters (Table II). AD visited the centre weekly for treatment follow-ups. At each visit, his food plan was modified according to his progress. All health problems were managed with the use of herbs, vitamins, diet and physical exercise. After making dietary changes and putting the patient on a regular exercise regime as part of the Health Total protocol, the patient lost 69.7 kg (from 137.2 kg to 67.5 kg) by the end of the programme in 1.75 years and his BMI reduced from 47.1 kg/m<sup>2</sup> to 23.2 kg/m<sup>2</sup> (Table II). His acidity complaints improved and he also got relief from constipation.

**TABLE II: BODY COMPOSITION ANALYSIS COMPARISON SHEET OF AD**

	<b>Date: 03/01/2016</b>	<b>Date: 17/10/2017</b>	
<b>Parameter</b>	<b>First Reading</b>	<b>Last Reading</b>	<b>Ideal Range</b>
Body weight (in kg)	137.2	67.5	60.3 - 66.15 kg
Body Fat (in %)	43%	25%	8 - 19% (18-39years)
BMI (Body Mass Index) (in kg/m <sup>2</sup> )	47.1	23.2	≥ 23 is overweight
			≥ 28 is obese
Waist Circumference (in cm)	125	91	Women: ≥ 80 cm (increased risk for disease)
			Men: ≥ 90 cm (Increased risk for disease)
Waist:Hip Ratio	1.05	0.9	Women: should be less than 0.8
			Men: should be less than 0.9

In a pilot study by Rioux *et al.*, Ayurvedic medicines and exercise, along with extensive lifestyle modifications were employed to achieve weight loss in obese individuals. The study found that the above factors when employed together in combination were highly effective in bringing about weight loss. Such a treatment regimen was found to be particularly beneficial as it is a noninvasive and low risk treatment option for obesity [12]. Also, many population-based studies document evidence of a diet's glycemic effect on body fat in humans. In an observational study on 572 healthy individuals, a positive association was found between BMI and glycemic index of carbohydrates. Ebbeling *et al.*, in his study showed that a reduced glycemic load diet was found to be more effective at reducing both BMI and body fat over a period of 12 months, when compared to conventional energy-restricted, low-fat diet [13].

In keeping with such evidence, the Integrated Approach too personalises the food plan for every individual and the same was done for AD. As the patient gradually lost weight, he also began to feel more and more energetic and was able to move around freely without dyspnoea. He also reported improvement in energy and his stress levels reduced dramatically. The patient was satisfied with the customised health programme given to him, as it blended the Integrated Approach in well with his existing lifestyle. By the end of the programme his health and quality of life improved greatly. At the time this case study was being documented, the patient was consulting for an additional one-year maintenance programme to maintain his lost weight. As of the date of this case study, the patient's weight has been maintained at 67.6 kg.

#### IV. CONCLUSION

A three-pronged treatment regimen that includes a well-designed nutritious diet, ayurvedic herbs and a regular exercise plan along with lifestyle modifications has a significant impact on an individual to bring about substantial weight loss and significant decrease in body fat percentage. The 'Integrated Approach' utilising a bespoke, non-invasive nutritional methodology of treatment that supports an individual's metabolism and body requirements, was significantly successful in helping AD lose more than 50% of his initial body weight, which could have otherwise required more invasive methods, such as bariatric surgery, to achieve. In addition to weight loss, such a holistic treatment approach also has a positive impact on other concomitant symptoms, such as digestive complaints, which in the case of AD, improved along with his body composition and energy levels.

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