

## MANAGEMENT OF DIABETES, OBESITY, AND GASTRIC DISORDERS USING THE “INTEGRATED APPROACH” AT HEALTH TOTAL: A CASE STUDY

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### ABSTRACT

It has been found that high prevalence of hypertension and Type II diabetes is coincidental to obesity. A well-defined nutrition therapy is one of the most effective methods of managing and slowing down the rate of development of Type II diabetes, gastrointestinal (GI) problems, and hypertension. A healthy diet or plan for the above-mentioned complications should be one that is naturally rich in phytochemicals and low in glycemic index, bad fats, and excess calories. This case study deals with the benefits of an “Integrated approach” in the management of diabetes, hypertension, gastric disorders, and obesity. The “integrated approach” includes patient-specific nutritional therapy, ayurvedic herb support, vitamins and dietary supplements, stress management, and regular exercise. The subject in this study was a 39-year-old obese female with a clinical history of Type II diabetes, borderline hypertension, and GI issues. Apart from these she also complained of low immunity, low energy levels, and high levels of stress. During the 10-month treatment, significant weight loss was achieved along with normalization of blood sugar levels and steady lowering of blood pressure with subsequent improvement in gastric problems and improved energy levels. Hence, the case report aptly illustrates that an integrated approach can help, not only manage diabetes, hypertension, and obesity but also reduce drug dosage and significantly improve quality of life.

**Keywords:** Integrated approach, Diabetes, Obesity, Hypertension, Nutritional therapy.

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### INTRODUCTION

The increasing incidence of Type II diabetes coupled with hypertension and obesity is one of the leading causes of mortality worldwide, mainly due to the many complications leading to disease [1], such as increased risk of cardiovascular diseases and kidney failure. This metabolic disorder results from defects in insulin action, insulin secretion, or both. Type II diabetes accounts for over 85% of all diabetes cases. Diabetes and hypertension frequently occur together and are often associated with obesity [2]. There is substantial overlap between diabetes and hypertension, reflecting significant overlap in their etiology and disease mechanisms [3]. Obesity is also associated with chronic gastrointestinal (GI) complaints such as acidity, bloating, and constipation and as much as a fifth of the population experiences, at some time, the symptoms of decreased bowel frequency, acidity or the associated symptoms of abdominal bloating and discomfort [4].

The diet plan for people with diabetes, high blood pressure (BP), and gastric problems was based on clinical research findings as well as personalized lifestyle change recommendations. The one-size-fits-all approach simply does not work any longer. The “Integrated Approach” adopted in the present case study combined the benefits of a healthy diet plan, ayurvedic herbs, along with the incorporation of lifestyle modifications and moderate regular physical activity.

### CASE REPORT

The patient, a 39-year-old morbidly obese female presented to the center for evaluation and treatment of Type II diabetes, borderline BP, obesity, and gastric disorders. She had a history of diabetes for the past 7 years and was taking glimepiride in doses 1 mg and 2 mg for the same. She was diagnosed with borderline BP in 2009, for which she was taking telmisartan-amlodipine. She also suffered from gastric problems, such as acidity and flatulence. She complained of low immunity and energy levels simultaneous with high levels of stress. She had a propensity to catch cold easily, especially due to seasonal changes. Her appetite was good; she had a sound sleep and had regular bowel movements.

The patient’s medical history was unremarkable. Her family history showed diabetes in both parents. She did not smoke and generally did not exercise, but did attend gym infrequently.

The patient’s pathology test results showed a fasting blood sugar of 173 mg/dl (with oral anti-diabetic medication). Her glycosylated hemoglobin (HbA1c) level was 10% (very high compared to normal values). Her BP was 190/100 mmHg, and her Hb level at the start of the program was considerably low (8.3, explaining her low energy levels). Her height was 5’4” and weight 118.4 kg. Her body mass index (BMI) was 44.8 kg/m<sup>2</sup>, which lies in the morbidly obese range.

### Treatment and follow-up

The patient’s first visit to our center was in the month of January 2016. After completing 5 months on the program, she was relieved of most of her symptoms and wanted to continue the same program for another 5 months. Nutritional management consisted of a well-defined diet plan of the low glycemic index, high fiber, complex carbohydrate diet, and moderate protein with each meal. A regular exercise program consisting of moderate brisk walking for 30–45 min for 6 days a week was initiated to improve insulin sensitivity. Along with the nutritional therapy, she was advised to take herbs such as Triphala, Bhumyamlaki, Green Tea, Amalaki, and seaweed and vitamin supplements (multivitamins, magnesium, Vitamins B, and Vitamin D).

### DISCUSSION

An assessment of the patient’s medical history showed that her diet recall consisted of light breakfast followed by moderate vegetarian lunch, pasta, or pizza almost every day for dinner, along with daily intake of sweets and diet coke. She used to eat out 4 to 5 times a week. Post the assessment, she was put on diabetes and hypertension management program that was designed so as to help her lose weight, as well as reduce her gastric complaints.

The main objective of the integrated approach was to help the patient lose weight, which, in turn, would help manage her Type II diabetes and

subsequently help lower her BP. Her diet was replaced with a high-fiber, low glycemic index (GI) complex carbohydrate, and moderate-to-high protein diet. The principle of eating in balance, antioxidant-rich, and frequent small meals are all included in our nutritional management of lifestyle diseases. Therapeutic lifestyle changes to bring about the desired results were also introduced simultaneously. Another objective of the program was to boost her energy and immunity levels to protect her from seasonal disease patterns and to lower her stress levels.

For the above-mentioned objectives, we used ayurvedic herbs such as Nishoth (*Operculina turpethum*) (for managing obesity and digestive issues) [5], Haritaki (*Terminalia chebula*) (lowers blood cholesterol and BP) [6], Vibhitaki (*Terminalia bellirica*) (antihypertensive agent) [7], Punarnava ghanvati (*Boerhavia diffusa*) [8], (hepatoprotective, hypoglycemic agent, anti-stress agent, and also helps control dyspepsia), *Phyllanthus niruri* (hepatoprotective and liver cleanser), *Rauwolfia serpentina* (antihypertensive agent) [9], *Garcinia cambogia* (weight reduction agent) [10], green tea (antioxidant, anti-diabetic and anti-obesity effects) [11], *Embllica officinalis* (aids digestion), and

**Table 1: Integrated approach in the management of Type II diabetes, hypertension, and body weight**

Parameters	Before treatment	After treatment
FBS (mg/dL) [Fig. 1]	173	73
Postprandial blood sugar (mg/dL) [Fig. 1]	193	123
HbA1c (in %)	10	5.7
BP (mmHg)	190/100	120/80
Hb	8.3	12.7
Weight (in kg) [Fig. 2]	118.4	89.9
BMI (kg/m <sup>2</sup> )	44.8	34

FBS: Fasting blood sugar, BP: Blood pressure, Hb: Hemoglobin, BMI: Body mass index

**Table 2: Management of gastric disorders using the integrated approach**

Symptoms	Acidity	Flatulence
30/01/2016	++	++
06/02/2016	No acidity	Decreased by 50%
13/02/2016	No acidity	Decreased by 80%
20/02/2016	No acidity	Decreased by 90%
05/03/2016	No acidity	No flatulence
02/04/2016	No acidity	No flatulence
21/05/2016	No acidity	No flatulence
Up to 07/01/2017	No acidity	No flatulence

Where, "+" sign indicates the relative amount of the indicated symptoms

natural iodine in the form of seaweed (helps in thyroid/hormone imbalance) [12]. The patient was also given vitamins and dietary supplements that included essential oils, Vitamins B, Vitamin D3 supplements, probiotics, and antioxidants, both in natural and supplemental forms to boost her immunity and energy levels.

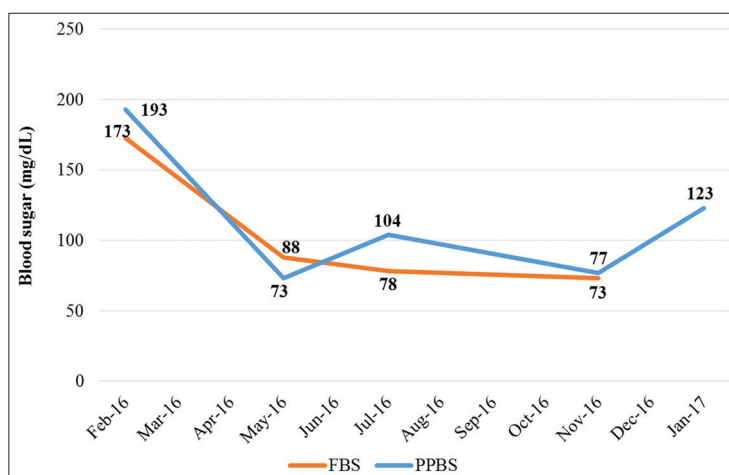
The patient showed a gradual and sustained reduction in weight and BMI with no side effects. She visited the center weekly for diabetes, BP, and weight monitoring and to provide an update on her other symptoms such as acidity, gas, energy level, and appetite, which were noted on a weekly basis. During each visit, her food plan was modified in accordance with her progress. All health issues were managed with the use of herbs, vitamins, and diet.

After following the integrated approach, the patient's blood report improved significantly, as reported in Table 1. Dosage of anti-diabetic drugs that she was on was also halved by the completion of the programme.

The patient reported remarkable relief in her gastric issues (Table 2), and her digestion improved considerably. She also reported improvement in energy levels (corresponding to the increase in Hb levels) and her immunity improved significantly as well. These changes brought about a positive impact on her quality of life by the end of the program.

Hypertension and Type II diabetes are often concurrent with obesity that represents a huge risk factor vis-à-vis morbidity and escalating health conditions. It is a well-known fact that overweight (BMI between 23 and 27.5 kg/m<sup>2</sup>) and obese (BMI ≥ 27.5 kg/m<sup>2</sup>) [13] individuals are at an increased risk for many serious health conditions. Several studies have documented the association between obesity and cardiovascular disease, hypertension, diabetes, insulin resistance, etc. [14]. Therefore, scientific weight reduction along with lifestyle management is necessary to prevent these disease conditions. At this juncture, it is interesting to note that the patient lost 28.5 kg, but her BMI still reflected that she was obese at the end of the program. However, all her blood reports showed significant improvement along with symptomatic relief. This leads us to understand the power of correct eating and appropriate lifestyle changes in the management of disease versus simply losing weight. Obviously, the Integrated Approach helped her overcome her disease condition with a greater magnitude than just the fact that she lost weight.

One study reported a positive association between the use of Ayurveda and lifestyle modifications for the management of Type II diabetes. This worked by ameliorating diabetes symptoms and by improving its biochemical parameters [15]. Similarly, two randomized controlled trials showed that weight loss achieved with the help of increased physical activity and certain dietary changes (such as reduced saturated



**Fig. 1: Effect of the "integrated approach" in the management of blood sugar. FBS: Fasting blood sugar and PPBS: Postprandial blood sugar**

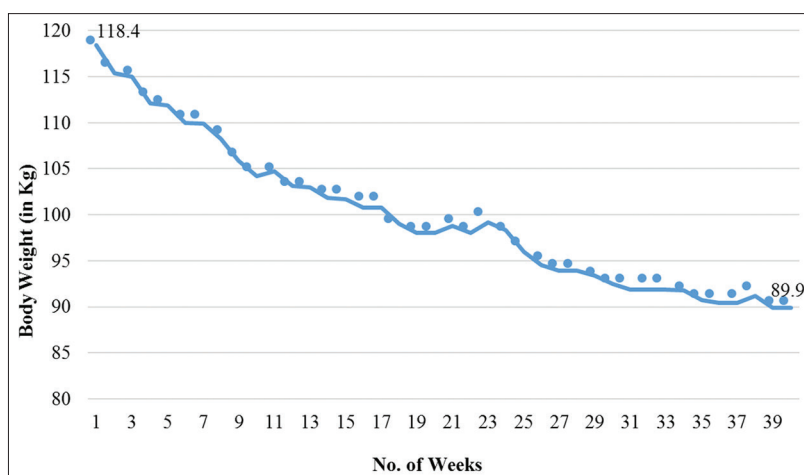


Fig. 2: Effect of the "integrated approach" in the management of body weight

fat intake and increased dietary fiber intake in the form of vegetables and eating low glycemic index carbohydrates) significantly helped reduce the incidence of Type II diabetes [16].

The use of the "integrated approach" for this subject helped her to not only lose weight but also reduce BP, blood sugar, improve energy, immunity, reduce her drug dosage, and improve her general state of well being. This was done with the help of low glycemic index functional foods, ayurvedic herbs, therapeutic lifestyle management, and moderate exercise.

#### CONCLUSION

Food and lifestyle correction is a valuable tool as the first line of treatment against Type II diabetes and hypertension. This case study data reflects that dietary patterns, changes in lifestyle choices, and physical activities play an important role in the etiopathogenesis of diabetes, hypertension, and gastric problems.

#### CONFLICTS OF INTEREST

The authors declared that they have no conflicts of interest.

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