

Effectiveness of Adhering to a Behavioral Weight Loss Program to Address Metabolic Syndrome

Abstract

Chronic conditions such as diabetes or cardiovascular diseases bring suffering to many people in the rich and developing world alike. The fact that they are becoming more frequent is also a significant financial burden for the patients and society alike, because of the cost of the drugs used to treat them and also because of the time lost in sick leave. Many of these conditions are linked to the metabolic syndrome, an underlying disorder of energy utilization and storage.

A German trial followed 472 patients of a nutritional commercial program for 12 months and concluded in a significant reduction of the occurrence of the metabolic syndrome and also of cardiovascular risk factors.

This study demonstrates that providing an educational nutritional program to sufferers of the metabolic syndrome is a viable option to reducing the occurrence of chronic conditions.

Keywords: Metabolic syndrome; Weight loss; Syndrome X; Pre-Diabetes; Insulin resistance; Cardiovascular disease; Metabolic balance

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Introduction

The public health authorities, at least in Western Europe, have woken up to the challenges of obesity and of the metabolic syndrome problem in particular. This is specifically acute in areas with ageing population as the prevalence of metabolic syndrome rises with increased life expectancy.

The cost of treating diabetes, cardiovascular diseases and other chronic conditions is bringing severe pressure on the public health systems, such as the NHS in the United Kingdom. Beside the financial cost, treating such disorders with conventional drugs may involve suffering from side-effects and is often only palliative.

Definition of Metabolic Syndrome

Metabolic Syndrome, or Syndrome X as it was termed by Gerald R [1], a medical doctor and researcher at Stanford University, is an underlying disorder of energy utilization and storage. It is diagnosed with a cluster of interrelated symptoms that is linked to a higher risk of cardiovascular disease, diabetes and overall of many other chronic issues.

The underlying factor in Metabolic Syndrome is elevated insulin levels and insulin resistance. This is why it is also termed sometimes "pre-diabetes".

Different definitions of the metabolic syndrome have been proposed by different public health organizations, but recently the International Diabetes Federation (IDF) and other health institutes have proposed the following definition [2]:

- Central obesity must be present: this is defined as a waist circumference of over 94 cm in men and 80 cm in women. Central obesity can also be assumed for patients with a Body Mass Index (BMI) of over 30.

- Two or more of the following factors must also be present:

- 1) Blood triglyceride levels higher than 150 mg/dl or the administration of treatment for hyper-triglyceridemia.
- 2) A concentration of HDL cholesterol smaller than 40 mg/dl for men and smaller than 50 mg/dl in women.
- 3) Glycemia levels of more than 1.0 g/l or the administration of treatment for diabetes.
- 4) Systolic blood pressure of more than 130 mmHG and/or diastolic blood pressure of more than 85 mmHG or the administration of treatment for high blood pressure.

Metabolic syndrome is also known as cardio-metabolic syndrome, insulin resistance syndrome and Reaven's syndrome.

Occurrence of Metabolic Syndrome

Approximately 20 to 25 % of the world's adult population are at risk of developing metabolic syndrome. Obesity and metabolic syndrome was primarily an issue of the Western rich world. However, due to changes in lifestyle and rising living standards, the developing world is seeing a very rapid increase of metabolic syndrome as well.

For example, approximately 32% of U.S. adults had the metabolic syndrome in 2000. In more recent years that figure has climbed to 34%, with a prevalence of 9% among the age group 20-29 years, rising to 50% among the age group of 60 to 69-year olds. At least 50% of diabetics in the US are obese or have metabolic syndrome [3].

For sub-Saharan Africa, it is estimated that 14 millions of its residents suffer from diabetes and that this number will double by 2030 [4]. Various reports showed a very high prevalence rate of metabolic syndrome among African diabetic patients

(for example as high as over 80% in Lagos Nigeria). The rise of metabolic syndrome in Africa is generally attributed to the adoption of western lifestyle and food as a substitution to the traditional African diet rich in fruits, and vegetables [5].

Metabolic Syndrome Impact on Health

Patients who suffer from the metabolic syndrome are three times as likely to have a heart attack or stroke compared with people without the syndrome. They are also five times more likely of developing type 2 diabetes. The clustering of cardiovascular disease risk factors that typifies the metabolic syndrome is now considered to be the driving force for a new cardiovascular disease epidemic [2].

Obesity, which is one of the criteria of metabolic syndrome, is also a significant element of poor health and death. For example, there is an increase of 18% of mortality risks for people with a BMI over 30 [6].

How Nutritional Programs can Help Sufferers of Metabolic Syndrome

The over-consumption of refined carbohydrates, sugar and hydrogenated oils, so prevalent in the Western modern diet, is one of the primary factors behind poor energy utilization and storage insulin resistance.

Here are the findings of a long-term German study of patients of the Metabolic Balance, a commercial nutritional program for weight management [7]. The study followed 472 patients for 12 months, and showed the following results (Table 1)

Table 1: Weight Change.

	Start of Program	After 12 Months
Body Mass Index (BMI) - Mean average	30.3 (SD* = 5.7)	27.7 (SD* = 4.8)
Weight Reduction of 10 percent or more	-	31.10%
Weight Reduction of 5 percent or more	-	62.50%

(*): SD = Standard Deviation

The Metabolic Balance program allows some flexibility in terms of following the suggested nutritional plans. However, the study points that the patients who had the most significant a weight loss (more than five per cent) had a significantly lower program adherence (Table 2).

Table 2: Positive Effect on Metabolic Syndrome.

	Start of Program	After 12 Months
Blood Pressure - Higher than 130/85	30%	15%
LDL- Higher 1.60 gram / liter	24%	17%
Triglycerides - Higher than 1.50 gram/liter	28%	16%
Metabolic Syndrome	14%	4%

The program allowed for a significant reduction of the metabolic syndrome, from 14% to 4%. We can also see a significant reduction in cardiovascular risks on this table.

The achievement of weight loss of 5 to 10% can be sufficient to improve insulin sensitivity and reduce the likelihood of complications arising in the risk factors of metabolic syndrome.

The effectiveness of the program was also attributed to the high degree of adherence to the program's basic rules. The main reasons for such adherence were considered to be that the metabolic balance provides an individually designed nutrition plan and also personal counseling that assist the patient during their nutritional program.

Conclusion

This study shows that a behavioral weight loss nutritional program can significantly reduce the occurrence of the metabolic syndrome. It can also lead to clinically meaningful weight loss in overweight/obese patients.

Given the rise of chronic conditions in the rich and developing world, which can be related to the metabolic syndrome, providing an educational nutritional program to sufferers of the metabolic syndrome would make financial sense and also possibly provide a drug-free alternative.

These findings support the need to conduct additional studies to test nutritional programs that support sustained weight loss to examine the potential benefit on the occurrence of metabolic syndrome.

Conflict of Interest

The study by Meffert C, Gerdes N. was financed from the Metabolic Balance Company (Isen, Germany).

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