



Case Report: Low-Calorie Diet and Exercise in Management of Obesity, Affect the Overall Health Condition, a Successful Story

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Abstract

The rising prevalence of obesity and its associated morbidity and mortality are placing significant strain on Saudi's health-care system. The present case study examines the weight loss attempts of a 53-year-old male patient weighing 200 kg (body mass index 57.3 kg/m²) in the setting of an acute hospital outpatient clinic. The patient is known case of morbid obesity, DM, Hypertension (HTN) on medications, gout, secondary infertility, and sleep apnea on C pap. The patient was referred to nutrition clinic for his weight control, as case of secondary infertility and uncontrolled diabetes, hypertension beside other health problems related to his obesity. Because of the need for rapid weight reduction, a novel inpatient approach to weight loss was adopted, using low-calorie diet (LCD) and regular exercise (45 - 60 minutes daily). The LCD intervention was prescribed in conjunction with medical management, regular physical activity, and dietary counseling. Serial anthropometric and biochemical measurements were obtained throughout the treatment period. The patient achieved a 90-kg weight loss (45% initial body weight) over a ten-month of follow up. Improvements in obesity-related co morbidities and the patient's overall health condition were also observed during his follow up. Total weight loss at 10 months of follow up 90 kg (45% initial body weight), improved in Hba1c to normal reference range and stopped oral hypoglycemic (OHG), Controlled HTN pt back to normal Blood Pressure reading and stopped medication, sleep apnea management and no C. pap use. His wife get pregnancy after weight loss occurred (patient secondary infertility and weight loss help in its management). The use of LCD with exercise in a motivated individual in a controlled hospital outpatient clinic, along with input from the multidisciplinary team, resulted in substantial and sustained weight loss with improved health outcomes. In conclusion obesity is preventable and treatable. LCD and physical exercise can produce weight loss that can be maintained and help in improving the overall health of obese patient.

Keywords: Low-Calorie Diet; Obesity; Exercise; Obesity Management; Health Condition

Introduction

Obesity is a major public health and economic problem of global significance, and it is increases overall mortality Men, Prevalence rates are increasing in all parts of the world. Women and children are also affected [1]. Worldwide obesity has nearly doubled since 1980, and it is leading to health problems and a rising number of deaths. The problem of obesity is raising globally as estimated by the WHO. In 2008, worldwide nearly 300 million women and over 200 million men were obese. Overweight and obesity are the 5th leading risk for global deaths. At least 2.8 million adults die each year as a result of being overweight or obese. 44% of the diabetes burden, 23% of the ischemic heart disease burden and between 7% and 41% of certain cancer burdens are attributable to overweight and obesity. A rising number of deaths is resulting from diseases attributable to excess weight [2]. The figure shows that Saudi Arabia is the world 15th most obese country, with an overall obesity rate of 33.7% [3].

Saudi Arabia has a relatively high rates of obesity, which is significantly increasing over the years. According to World Atlas data, Saudi Arabia is in list of most obese counties in the world. Obesity in the county is a major cause of concern, where 7 out of 10 people are experiencing the problem. Previous studies related to prevalence of obesity in the Saudi Arabia indicate an increasing trend in obesity, which is major sources of a number of other diseases, including diabetes, hypertension, hyperlipidemia, obstructive sleep apnea, osteoarthritis and some malignancies [4].

The main cause of obesity is an imbalance between calories consumed and calories expended, Sometimes there are complicated reasons behind all of these factors including genetics and diseases such as hypothyroidism, depression, and use of medications such as antidepressants and anticonvulsants. Obesity has serious effects on the individual and the society. The biggest effect is on the individual. First of all, being obese has health risks. Obesity can

lead to heart disease, diabetes, high blood pressure, increased risk for cancer, stroke, infertility, arthritis, breathing difficulties and/or depression. and other conditions. Obesity is costing us dearly in increased medical expenses and in the health of the people in the country. It is proven to have serious hazardous implications on general health. And lead to a greater risk of developing chronic conditions that compromise the general health and may even result in premature death [5].

Saudi Arabians suffer from obesity, which contribute significantly to the poor control of diabetes mellitus (DM) and hypertension (HTN) and many other medical problems.

It is important, therefore, to recognize and treat obesity. Obesity can be managed by different ways, Surgery, Pharmacotherapy and Lifestyle Modification: Diet, Physical Activity. The main treatment for obesity is dieting with physical exercise. Calorie-restriction strategies are one of the most common dietary plans. Low-calorie diet (LCD) refers to a diet with a total dietary calorie intake of 800 - 1500 daily. These dietary regimes need to be balanced in macronutrients, vitamins, and minerals. A balanced restricted energy diet is the most widely prescribed method for weight reduction. The diet should be nutritionally adequate except for energy which is decreased to the point at which fat stores must be mobilized to meet daily energy needs. A caloric deficit of 500 to 1000 kcal daily usually meet this goal. The energy level varies with the individual size and activities, usually ranging from 1200 to 1800 kcal daily. LCD should be individualized for carbohydrate (50 - 55%) of total kilocalories using sources such as vegetable, fruits, beans and whole grains. Generous protein, approximately 15% to 25% of kilocalories, is needed to prevent conversion of dietary protein to energy. Fat content should not exceed 30% of total calories. Extra fiber is recommended to reduce calorie density, to promote satiety by delaying stomach emptying time, and to decrease to a small degree the efficiency of intestinal absorption. Vitamins and minerals supplements that met age related requirements usually are recommended when there is a daily intake of less than 1200 for women and 1800 kcal for men. Or when it is difficult to choose foods that will meet all nutrient needs at the restricted energy intake [6].

Regular physical exercise enhances the efficiency of diet through increase in the satiating efficiency of a fixed meal, and is useful for maintaining diet-induced weight loss. Adequate levels of physical activity appear to be 60 to 90 minutes daily, as recommended by USDA. obese adults if unable to achieve this level of activity, significant health benefit can be realized by participating in at least 30 minutes of daily activity of moderate intensity.

The recommendation of exercise from American college of sport medicine are, physical activity less than 150 minutes/week has a minimal effect on weight loss, physical activity more than 150 minutes/week usually result in modest weight loss (define as 2 - 3 kg), with physical activity between 225 and 420 minutes/week resulting in the greatest weight loss (5 to 7.5 kg). While researches on maintaining weight indicates that moderately vigorous physical ac-

tivity of 150 to 250 minutes/week at an energy equivalent of 1200 to 2000 kilocalories/week (about 12 to 20 miles per week of jogging or running) is sufficient to prevent weight gain [6,7].

Case Presentation

The present case study examines the weight loss attempts of a 53-year-old male (σ) patient, who was referred to nutrition outpatient clinic for his weight control, as case of secondary infertility and uncontrolled diabetes, hypertension beside other health problems related to his obesity. a registered dietitian (RD), perform a comprehensive initial evaluation and make recommendations for obesity treatment.

The patient is known case of morbid obesity, diabetes (DM) on oral hypoglycemic, hypertension (HTN) on medications, secondary infertility, and sleep apnea on C pap. His hemoglobin A_{1c} (A1C) level is 8.8%, which is high, He weighs 200 kg and has a BMI of 57.3 kg/m².

Because of the need for rapid weight reduction, dietary management program to weight loss was adopted, using low-calorie diet (LCD) and regular exercise (45 - 60 minutes daily). The LCD intervention was prescribed in conjunction with medical management, regular physical activity, and dietary counseling. Serial anthropometric and biochemical measurements were obtained throughout the treatment period.

The patient achieved a 90-kg weight loss (45% initial body weight) gradually without any complications. Improvements in obesity-related co morbidities and the patient's overall health condition were also observed during his follow up. With following LCD and regular exercise. This weight loss is help in lower the treatment cost, HTN controlled and medication stopped, DM controlled and medication stopped, Sleep apnea was managed and Cpap stopped, Infertility treated and wife get pregnancy.

Discussion

Obesity is a major public health problem worldwide. It is also one of the most important risk factors for many diseases. Prevalence rates are increasing in all parts of the world in both sex and all ages. Which effect on almost every aspect of health. Additionally, the rising obesity rates worldwide are leading to a chronic diseases, increases the risk of several debilitating, and deadly diseases.

The condition most strongly influenced by body weight is type 2 diabetes, lose weight is important With diabetes, Exercising and diet (as well as taking medication, if necessary) can help lower blood sugar and help prevent serious complications, which may allow to delay or cut back on medication [8]. Our case report shows good improvement in control of diabetes. The HbA1c is dropped to normal reference range and diabetes medication (oral hypoglycemic) was stopped after weight loss of 45 % of patient's body weight.

In obese hypertensive patients, a combined exercise and weight-loss intervention has been shown to decrease systolic and diastolic blood pressure (BP) by 12.5 and 7.9 mm Hg, respectively. There is evidence to suggest that these decreases in BP are associated with improvements in left ventricular structure and function, and peripheral vascular health [9]. In our case report weight loss have been shown to decrease both systolic and diastolic blood pressure, from 196/90 mm Hg to 130/70 mm Hg. Which help to Controlled hypertension and lead patient back to normal Blood Pressure reading and stopped medication.

Obesity is the strongest predictor of obstructive sleep apnea (OSA), Weight loss is frequently recommended to improve OSA among obese patients. and helps reduce OSA severity [10]. Our case study shows good improvement after weight reduction and help in Sleep apnea management. Patient feel comfort and stopped using C pap.

Obesity is coincident with an increase in male infertility, Being obese can affect the hormonal signals to the testes weight loss can lead to a decrease in an important hormonal "message" that the brain sends to the testes in men. The release of gonadotropin-releasing hormone (GnRH) leads to the release of the hormonal messengers LH and FSH. LH and FSH are critical for the development of eggs in the testes. Obese men have worse sperm quality than men of healthy weight. diet and exercise help in management of infertility among men [11,12]. This case report shows the result of weight loss and its effect on infertility, pregnancy occur with the wife after 45% weight loss of husband.

Weight loss of 45 % body weight affect in improvement of overall health condition.

Conclusion

The use of LCD with regular exercise in a motivated individual in a controlled hospital outpatient clinic, along with input from the multidisciplinary team, resulted in substantial and sustained weight loss with improved health outcomes.

In conclusion obesity is preventable and treatable. LCD and physical exercise can produce weight loss that can be maintained and help in improving the overall health of obese patient.

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