Research Article

A Successful Weight Loss Strategy

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Abstract

Background: Obesity occurred as a result of imbalance between energy intake and energy expenditure. It became a global epidemic in all age groups in both developed and developing countries. In addition to health complications of obesity, costs and social difficulties has been reported. Weight loss goal should be gradual, easy to achieve and maintainable. Developing skills required to successfully change problematic eating and activity patterns is an important factor in weight reduction. A combination of calorie reduction, increased physical activity and behavior therapy are the basic principles for better outcomes.

Method: Calorie restriction (-500 cal/day) diet, increase physical activity (45 minutes of moderate intensity for at least five days/week) and behavioral therapy (food selection, slow eating, well chewing, calorie counting, etc.) were followed.

Results: Weight and body mass index were reduced by 23.5%, while waist circumference and% of body fat were reduced by 21.3% and 30% respectively. Total cholesterol, triglycerides, LDL-c and uric acid were significantly reduced post intervention; HDL-c and vitamin D were significantly improved.

Conclusion: Weight reduction goal is achievable through a combination between calorie restriction, increase physical activity and behavioral therapy.

Keywords: Obesity; Weight Reduction; Behavioral; Strategy

Introduction

Obesity is a major risk factor for the development of several non-communicable diseases and significant disability. Obesity became a globally epidemic in all age groups in both developed and developing countries. Obesity mostly result from a changing lifestyle, such as increased daily energy intake and a sedentary lifestyle, yet both are preventable by lifestyle modification [1].

A large burden on health care use and costs as well as significant health and social difficulties for obese people has been reported as a result of increasing prevalence of obesity (D Withrow and DA Alter 2011). Weight loss as the first choice in management of obesity is associated with significant health and economic benefits (MJ Armystrong., *et al.* 2011). Effective weight loss strategies must include diet, physical activity and lifestyle modification (Robert F 2014) (Figure 1).
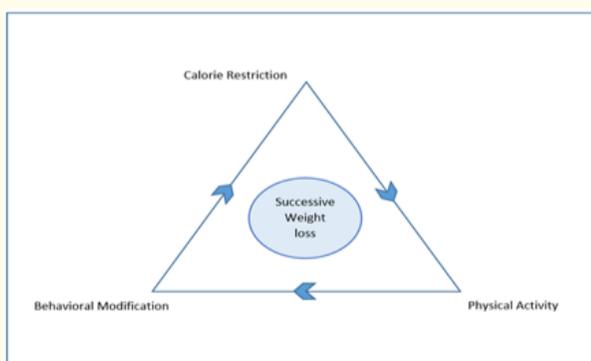

Figure 1: Components of a successful weight loss strategies.

Body mass index (BMI) which is usually calculated using Quetelet's formula: weight (kg)/height (m)^2 commonly used to diagnose overweight (BMI: 25 and 29.9) and obesity (BMI ≥ 30) (Lee and Nieman, 2010). Obesity as a comorbid disease should be recognized and treated accordingly. In obese individuals the risk for other diseases commonly associated with obesity may be significantly reduced when 5 - 15% of weight loss is achieved (lung and blood institute [2].

Despite growing recognition of the problem, the prevalence of obesity over the past three decades has steadily increased in both developed and developing countries with large disparities between population [3-5]. There is clear evidence that obesity rates are increasing in the world [6,7] and the latest estimates are approximately reached 34% of adults and 15 - 20% of children and adolescents in United States (US). Although, a large amount of research and public health efforts has been directed toward better understanding and management of obesity, obesity rates are still accelerated. To date, however, there is a little evidence of success in reversing the epidemic of obesity. Much health, social, psychological and economic consequences may be resulted from obesity on individual and community level [8]. One of the consequences of uncontrolled weight of the obese individuals is shorter life expectancy rate [9]. Another one is the negative economic impact on health-care costs [10]. Recently in US the medical expenditure attributed to overweight and obesity was estimated by 9.1% of the total US medical expenditures [11]. Accordingly, as the prevalence of obesity and related health care continue to increase the cost will continue to rise [10]. Therefore, the objective of this study was to develop a weight loss strategy to reduce weight of obese individuals attending dietetics clinic at Al-Khor hospital.

Methods

A 38-year-old Caucasian Obese man was referred to dietetics clinic at AL-Khor hospital - Hamad Medical Corporation - Qatar for weight reduction. Measurements of body composition and anthropometry were as follows: height 169 cm, weight 95.7 kg, BMI 33.5 kg/m2, Waist Circumference (WC) 108 cm, and the body fat percentage was 33.4%. Three years medical history was remarkable and it shows that he has poorly controlled hyperlipidemia, his fasting lipid profile results was 5.7 mmol/l for total serum cholesterol was, triglycerides (TG) were 1.9 mmol/l, high-density lipoprotein cholesterol (HDL-c) was 1.2 mmol/l, and Low density lipoprotein cholesterol (LDL-c) was 4.1 mmol/l, uric acid was 341 Umol/l and vitamin D was 21 ng/ml.

Based on Haris - Benedict equation the calculated total energy requirement for this case was 2500 calories per day. A weight reduction management dietary program and strategy was planned and followed for fourteen weeks which consist of: (a) calorie restricted, low fat diet of 1800 calories/day. (b) Comprehensive dietary counseling sessions including food groups, exchange list, meal timing and frequency, and calorie count. (c) Behavioral modification including regular exercise through a designed physical activity program of moderate intensity aerobic exercise for 45 minutes daily. In addition, the patient was asked to record his weight weekly and maintained a log of food consumption to assess his dietary compliance. Follow up plan was created to be every other week. Unfortunately, most of obese individuals do not maintain the weight loosed for long periods [12]. Although, diet restriction and exercise are considered useful strategies for losing weight in moderately obese adults. Therefore, for an effective and permanent weight loss our intervention include and promote behavior and lifestyle changes including self-monitoring, stress management and social support. Our weight reduction strategy was depending on the integration between caloric restriction, physical activity, behavioral and lifestyle modification for obesity management. Finally, statistical analysis was performed using SPSS statistical package (IBM, SPSS version 22, 2013). Descriptive statistics of means before and after intervention was calculated. Paired sample t-test was used to determine the significant differences between means of biochemical analysis before and after treatment and p-value < 0.05 was considered significant.

Results

After fourteen weeks of follow up, the body composition and anthropometric measurements of weight, BMI, WC and % body fat showed a statistically significant (p < 0.05) reduction (Figure 2). Weight and body mass index were reduced by 23.5%, while waist circumference and body fat% were reduced by 21.3% and 30% respectively as shown in figure 3.
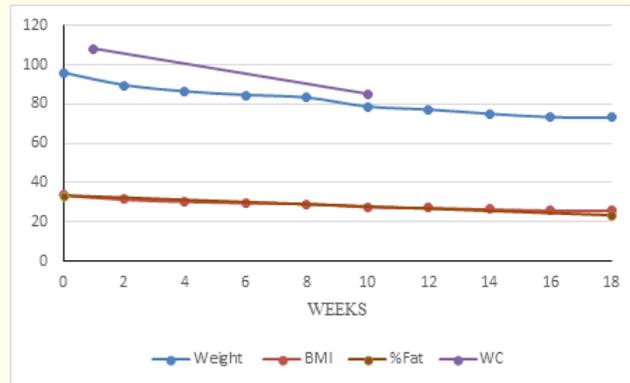
Figure 2: Progression of Anthropometric Measurements Post Intervention.
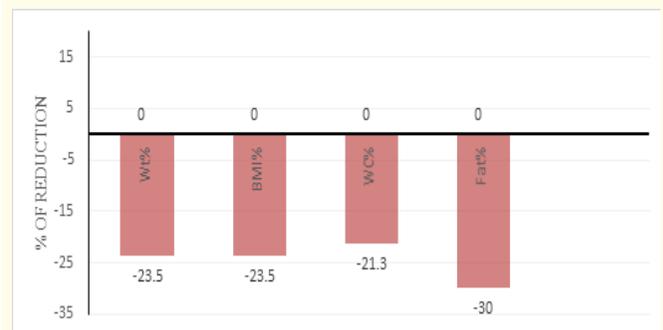
Figure 3: Percentage of Anthropometric and % Body Fat Reduction.

On the other hand, biochemical blood analysis of total cholesterol, triglycerides, LDL-c and uric acid were significantly (P ≤ 0.05) reduced post intervention. Meanwhile, of HDL-c and vitamin D were significantly (p ≤ 0.05) increased post intervention (Table 1).

Parameter	Pre-Intervention	Post-Intervention	P -Value
Cholesterol (mmol/l)	5.7	5.1	0.03
Triglyceride (mmol/l)	1.9	1.1	0.001
LDL-c (mmol/l)	4.1	3.2	0.002
HDL-c (mmol/l)	1.2	1.5	0.04
Vitamin D (ng/ml)	21	27	0.002
Uric Acid (umol/l)	341	264	0.01

Table 1: PBiochemical Parameters Pre and Post Intervention.

Discussion

The present case report weight management results indicate that calorie restriction, exercise and behavioral modification led to a significant weight loss and positive blood biochemical changes. The magnitude of weight reduction after intervention matched with clinically significant benefits including the reduction of cardiovascular risk factors through the decrease in total cholesterol, Low Density Lipoprotein cholesterol (LDL-c) cholesterol, triglycerides and uric acid and the significant increase in High Density Lipoprotein cholesterol (HDL-c), and vitamin D concentrations. In 1998 the national heart lung and blood institute (NHLBI) [2] and Coutinho and his colleagues in 2000 reported similar results [12].

Allison and Saunders [13], reported that weight gain, high BMI and abdominal fat distribution are important risk factors for the development of type 2 diabetes and it is estimated that 90% of individuals with type 2 diabetes are obese Unfortunately, we did not measure our case fasting blood glucose, insulin and glycated hemoglobin (HbA1C). Moreover, visceral obesity is associated with elevated triglycerides, low HDL cholesterol, and increased small dense LDL particles [14]. Our case achieved a significant increase in HDL and a significant decrease in TG and LDL-c with a significant reduction in waist circumference and % body fat which is associated with decreased visceral obesity. Consistent with this case study results [15] studied the effect of loss of body weight on lipid profile in overweight Bahraini individuals and found that patients who completed the designed weight reduction program had a reduction in body weight, body mass index, and lipid level and an increase in physical activity and dietary readiness to control overeating and there was a significant drop in all the parameters. Recently Moradi., et al. [16] reported that Serum concentration of HDL and its sub-fractions decreased significantly due to the weight loss which disagree with our result. This difference could be related to the variations of people response to environmental and dietary changes due to genome variability and it has been reported that HDL-c and HDL subfractions may be influenced by different genetic variations [17,18].

Conclusion

Obesity is a preventable prevalent disease. Physical activity, diet restriction and behavioral modification remain the interminable basis for weight control and they should be used collectively to achieve the intended weight loss.

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