Weight Loss: Diet Options

Khawla F. Ali

1 Introduction

The cornerstone therapy for obesity treatment is lifestyle modification. Adaption of a healthy lifestyle is founded by healthy dietary options, behavioral training and an increase in physical activity. In this chapter, we discuss the healthy dietary options available for weight loss, emphasizing on the behaviors that form the backbone of most dietary programs.

2 Principles in Dietary Therapies

Numerous dietary programs currently exist that are targeted to assist with the weight loss journey. A shared theme in most of these programs is the need for creating a caloric deficit that results in a negative energy balance [1]. A general approach to creating such a deficit is to reduce caloric intake by 500 kcal/day, or to restrict it by approximately 30% of total daily caloric need. The latter roughly translates to 1200–1500 kcal/day for women and 1500–1800 kcal/day for men [1].

The choice of a specific dietary program depends on several factors: degree of obesity, existence of comorbidities such as diabetes mellitus and patient preference. It is important to emphasize that no diet out there has been shown to consistently produce superior weight-loss results when compared to other diets. However, a strong predictive factor of success with any dietary program is patient adherence.

K. F. Ali (✉)
Department of Medicine, Royal College of Surgeons in Ireland-Medical University of Bahrain, Muharraq, Bahrain
e-mail: khawlafouad@hotmail.com

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The programs that have shown to have the best weight-loss outcomes are those with the highest scores for patient adherence [2].

Most dietary programs produce mild-to-moderate weight loss of 5–15%. Additionally, most dietary interventions will reach their maximum efficacy 6-months post-initiation, with some patients re-gaining some or most of the weight in the months to follow. Therefore, it is essential for medical practitioners to discuss such figures with patients to ensure that their perceived weight goals and expectations align with the expected outcomes. It is also important to emphasize that weight loss and maintenance of as little as 5–7% still bears significant impact on health and wellbeing, and can lead to substantial improvements in medical comorbidities. The benefits of 5–7% weight loss were demonstrated in several landmark clinical trials. The Diabetes Prevention Program (DPP) is a good example. In the multicenter DPP trial, intensive lifestyle interventions aimed at weight loss of 7% showed significant reduction in the risk of progression from impaired glucose tolerance to diabetes by 58% [3]. Additionally, the landmark Look AHEAD study (**A**ction for **Hea**lth in **D**iabetes) for patients with type 2 diabetes mellitus and body mass index (BMI) >25 kg/m^2, showed that modest weight loss can lead to significant improvements in many comorbidities, such as, diabetes mellitus, sleep apnea, urinary incontinence, depression, physical function, mobility and overall quality of life [4, 5].

Several key principles should be emphasized in any dietary program. Increasing intake of fiber-rich foods such as fruits, vegetables, legumes and minimally processed whole grains is essential. Patients should also be advised to limit any processed or refined carbohydrates and meats, in addition to food items high in sodium and trans fats. The following are simple tips that can be provided to patients for improving their health and eating behaviors, regardless of whether a specific dietary program is being prescribed or not:

1. The plate method: patients should be encouraged to limit their plate size to a 9-inch plate. Half of the plate should contain non-starchy vegetables, such as lettuce, spinach, arugula, etc. A quarter of the plate should contain lean meats such as chicken, turkey or fish, and a quarter should contain whole grains such as brown rice, brown bread, etc.
2. Avoid sugar-sweetened beverages such as sodas, creamers, syrups and juices. Instead, patients should rely on water as a healthy liquid alternative.
3. Replace white carbohydrate options with whole grain ones. For instance, replace white bread with whole grain bread, replace white pasta with whole grain pasta, etc.
4. Avoid high-calorie, high-sugar snacks, such as cookies, chocolate and cakes. Instead, replace these with healthier snacks such as nuts, Greek yogurt and fruits.

Finally, dietary programs should always be combined with physical activity, particularly resistance anerobic training, for maximum preservations of muscle mass during the weight loss period.

3 Diet Options for Weight Loss

Several dietary interventions exist. Here, we outline a few of the most commonly prescribed diets in clinical practice.

- The Mediterranean Diet

The Mediterranean diet is typically rich in fruits, vegetables, nuts and whole grain sources of carbohydrate. The primary source of fat in this diet comes from the monounsaturated fatty acids of olive oil. Lean meat, such as chicken and fish are the primary sources of protein, with red meats being consumed as little as possible. Additionally, dairy sources should be low-fat or fat-free. The diet also allows low-to-moderate wine consumption.

The Mediterranean diet has been shown to have significant health benefits. In the large Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Study (PREDIMED), the Mediterranean diet was associated with a 30% relative risk reduction in primary cardiovascular events, and a 40% relative risk reduction in the incidence of stroke [6]. Additionally, several observational studies have found a negative association between the Mediterranean diet and the incidence of cancers, such as colorectal, prostate and esophageal cancers [7].

The Mediterranean diet has also been shown to have significant impact on glycaemic measures in subjects with diabetes mellitus. In a recent meta-analysis examining its effects on type 2 diabetes patients, the Mediterranean diet resulted in significant reductions in haemoglobin A1c (HbA1c), fasting plasma glucose and fasting insulin levels compared to controls. Additionally, there were improvements in lipid profiles seen as reductions in total cholesterol and triglycerides, and increase in high-density lipoprotein (HDL) [8].

- Intermittent Fasting

Intermittent fasting refers to cyclic short periods of feeding followed by prolonged periods of fasting. An increased volume of literature supports the beneficial effects of intermittent fasting on disease modification and aging [9]. Additionally, recent studies have shown its beneficial effects on insulin resistance and glycemic control [10]. It has been theorized that the beneficial effects of intermittent fasting are not only due to its effects on weight reduction. Rather, it is thought to be due to adaptive cellular responses to fasting states. During prolonged periods of fasting, cells activate pathways that combat oxidative and metabolic stress, aiding in the process of cellular damage repair and reducing inflammation [9].

Several variations of intermittent fasting exist. Alternate-day fasting and daily time-restricted feeding are the most widely adapted variations. In the former, fasting is done on specific days of the week (one or more), when calories are reduced to less than 25% of the daily caloric requirements. The second form of intermittent fasting restricts caloric intake to certain hours of the day, typically ranging between 8 and 10 hours.

- Low-Carb and Very Low-Carb Diets

With the rise of diabetes mellitus prevalence worldwide, more specialists are advocating for low-carb and very-low carb diets as means of improving both glycemic measures and weight. Several short-term studies have demonstrated the efficacy of such diets on glycemic control, lipid profiles and weight in those with obesity and/or type 2 diabetes mellitus [11, 12].

Low-carbohydrate diets are usually composed of 60–130 g of carbohydrates per day. Very-low carbohydrate diets on the other hand, are usually composed of no more than 50 g of carbohydrates per day. The reduction in carbohydrate intake to less than 50 g per day typically depletes glycogen stores, and thus leads to the breakdown of fatty acids for the generation of ketone bodies and energy production. In both diets, the initial weight loss can be rapid, but is usually due to glycogen breakdown and water losses rather than true fat loss. The long-term superiority of low-carb and very-low carb diets versus other diets for weight loss has not been demonstrated [13]. Additionally, with lower carbohydrate intake, there is a higher likelihood for occurrence of adverse events, particularly with the very low-carb diets, such as constipation, headaches, generalized weakness and muscle cramps [14].

- Very-Low Calorie Diets

Very-low calorie diets (VLCD) refer to diets that provide less than 800 kcal per day. VLCD are effective at inducing rapid weight loss on the short-term. However, long-term outcomes of VLCD have not been demonstrated to be more superior compared to the more conventional diets. For instance, in a meta-analysis comparing the conventional low-calorie diets to VLCD, the short-term weight reduction was more pronounced in the VLCD (16% vs. 10% of initial body weight, for VLCD and conventional low-calorie diets, respectively). However, weight loss beyond one year did not differ (6.3% vs. 5%, for VLCD and conventional low-calorie diets, respectively) [15].

4 The Weight-Maintenance Diet

A major challenge post-weight loss via dietary methods is the maintenance of the weight loss achieved. The bodyweight is theorized to be set at a defined set point programmed at the level of the hypothalamus. Any attempt at lowering bodyweight via dieting and/or exercise would be met by internal resistance, in efforts to bring the body back to its original set point, no matter how pathological and disease-provoking this point may be. Resistance is typically seen in the form of increases in hunger signals such as ghrelin hormone, decreases in satiety signals such as glucagon-like peptide-1 and peptide YY, and decreases in basal metabolic rate [16].

Attempts at combatting weight regain have been investigated by several groups. Recent research has suggested a critical role of macronutrient composition on weight regain in the weight maintenance period. Diets composed of high-protein and low-glycemic index foods have been shown to be superior at maintaining weight loss, compared to low-protein and high-glycemic index diets [17].

5 Summary

Several dietary therapies exist. No single diet has been shown to be more superior or linked to more weight loss success. Rather, adherence is the key to weight loss success in any dietary program.

References

1. Garvey WT, Mechanick JI, Brett EM, et al. American association of clinical endocrinologists and american college of endocrinology comprehensive clinical practice guidelines for medical care of patients with obesity. Endocr Pract. 2016;22(Suppl 3):1.
2. Dansinger ML, Gleason JA, Griffith JL, et al. Comparison of the Atkins, Ornish, Weight Watchers, and Zone diets for weight loss and heart disease risk reduction: a randomized trial. JAMA. 2005;293:43.
3. Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. N Engl J Med. 2002;346:393.
4. Look AHEAD Research Group, Pi-Sunyer X, Blackburn G, et al. Reduction in weight and cardiovascular disease risk factors in individuals with type 2 diabetes: one-year results of the look AHEAD trial. Diabetes Care 2007; 30:1374.
5. Look AHEAD Research Group, Wing RR, Bolin P, et al. Cardiovascular effects of intensive lifestyle intervention in type 2 diabetes. N Engl J Med 2013; 369:145.
6. Estruch R, Ros E, Salas-Salvadó J, et al. Primary prevention of cardiovascular disease with a Mediterranean diet [retracted in: N Engl J Med. 2018 Jun 21;378(25):2441–2442]. N Engl J Med. 2013;368(14):1279–1290.
7. Schwingshackl L, Hoffmann G. Adherence to mediterranean diet and risk of cancer: a systematic review and meta-analysis of observational studies. Int J Cancer. 2014;135(8):1884–97.
8. Huo R, Du T, Xu Y, et al. Effects of Mediterranean-style diet on glycemic control, weight loss and cardiovascular risk factors among type 2 diabetes individuals: a meta-analysis. Eur J Clin Nutr. 2015;69(11):1200–8.
9. de Cabo R, Mattson MP. Effects of intermittent fasting on health, aging, and disease. N Engl J Med. 2019;381(26):2541–51.
10. Horne BD, Muhlestein JB, Anderson JL. Health effects of intermittent fasting: hormesis or harm? A systematic review. Am J Clin Nutr. 2015;102(2):464–70.
11. Boden G, Sargrad K, Homko C, et al. Effect of a low-carbohydrate diet on appetite, blood glucose levels, and insulin resistance in obese patients with type 2 diabetes. Ann Intern Med. 2005;142:403.
12. Gannon MC, Nuttall FQ. Effect of a high-protein, low-carbohydrate diet on blood glucose control in people with type 2 diabetes. Diabetes. 2004;53:2375.
13. Nordmann AJ, Nordmann A, Briel M, et al. Effects of low-carbohydrate vs. low-fat diets on weight loss and cardiovascular risk factors: a meta-analysis of randomized controlled trials. Arch Intern Med. 2006;166:285.

14. Yancy WS Jr, Olsen MK, Guyton JR, et al. A low-carbohydrate, ketogenic diet versus a low-fat diet to treat obesity and hyperlipidemia: a randomized, controlled trial. Ann Intern Med. 2004;140:769.
15. Tsai AG, Wadden TA. The evolution of very-low-calorie diets: an update and meta-analysis. Obesity (Silver Spring). 2006;14:1283.
16. Sumithran P, Prendergast LA, Delbridge E, et al. Long-term persistence of hormonal adaptations to weight loss. N Engl J Med. 2011;365:1597.
17. Larsen TM, Dalskov SM, van Baak M, et al. Diets with high or low protein content and glycemic index for weight-loss maintenance. N Engl J Med. 2010;363:2102.