Unit No. 4

DIETARY INTERVENTIONS FOR WEIGHT LOSS

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ABSTRACT

Obesity is a complex and chronic condition that requires continuing care. A variety of diet plans are available for use in the clinical setting. Exactly what type of diet may be most beneficial remains controversial. Numerous clinical trials have been carried out over the years comparing an array of dietary interventions for weight loss, including calorie restriction diets, altered macronutrient composition diets or specific dietary patterns. This paper will provide an overview of the evidence-based dietary interventions for clinical practice.

Keywords: Obesity, weight loss, dietary interventions, low carbohydrate diet, energy restriction

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Obesity is a serious global epidemic associated with numerous metabolic complications, including type 2 diabetes, hypertension, cardiovascular disorders and several cancers. The aetiology of obesity is multifactorial, involving an interplay of genetic, biological, environmental, social, cultural and behavioural factors. Even though a successful weight loss strategy should be individualised and address all the underlying causes of obesity, dietary and lifestyle interventions remain the cornerstone of treatment. However, the optimal dietary approach to weight loss is still a subject of many debates amongst experts, healthcare professionals, and the public as studies have failed to demonstrate the superiority of one diet plan over another in the long-term. Comprehensive assessment of an individual's dietary habits and lifestyle should be the first step in deciding on the best dietary intervention for weight loss and avoiding a one size fits all approach. There is evidence that even modest weight loss of 5-8 percent body weight achieved with diet and lifestyle interventions improves glycaemia, blood pressure, lipid profile, mobility and quality of life.¹⁻² Greater weight loss might be needed to produce health benefits in individuals with morbid obesity or multiple comorbidities.

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ENERGY FOCUSED DIET PLANS

Energy focused diet plans range from moderate to severe calorie restriction depending on the health status and weight loss goals of a patient or client. At least 500 -750 calorie energy deficit is recommended to achieve a weight loss of 0.5 - 1.0 kg per week, which is the standard approach in clinical practice. These moderate energy deficit meal plans are formulated using healthy eating principles and incorporate individual food preferences to increase compliance. However, specially formulated liquid meal replacements have also been employed to help achieve the necessary calorie deficit to drive weight loss in certain individuals after considering their health status, dietary preferences and cost.

On the other hand, very Low Energy Diets or VLEDs provide severe calorie restriction ranging from 400 to 800 calories per day, which results in a more rapid weight loss. VLEDs are based on liquid meal replacements, which are formulated to deliver adequate levels of essential nutrients. They are underutilised in clinical practice in view of concerns over the potential loss of lean body mass, binge eating behaviour, and subsequent weight regain due to rapid weight loss. However, when clinically supervised, there is no evidence of restrictive diets causing binge eating behaviour or resulting in worse outcomes on knee strength, handgrip strength or bone compared to moderate restriction diets in short term studies of 3-6 months duration.³⁻⁵ Use of VLEDs in supervised conditions for up to three months in patients who fail to meet a target weight loss with a standard approach is gaining support from institutions such as the National Institute for Health and Clinical Excellence and the National Obesity Forum.

Intermittent fasting (IF) is another dietary approach for weight loss that involves periods of fasting and eating with or without caloric restriction. Popular types of IF include alternate-day fasting, the 5:2 fast (five days of normal eating and two days of restricted eating per week), and time-restricted feeding.⁶ In time-restricted feeding trials the fasting window varies from 12 to 16 hours with an *ad libitum* diet during the feeding hours. The key appeal of IF is high compliance and easy sustainability compared to daily calorie restriction or low carbohydrate diets. However, it is important to counsel patients about making healthy food choices when they are not fasting to improve their clinical outcomes further.

The evidence suggests that IF is safe for most healthy adults and achieves comparable weight loss and metabolic improvements to continuous energy restriction.⁷⁻⁸ In a recent meta-analysis, both intermittent and continuous energy restriction resulted in a similar weight loss, maintenance and improvements in cardiovascular risk factors.⁹

However, feelings of hunger may be more pronounced during intermittent energy restriction. Many studies on IF are short-term and involve small numbers of subjects. Therefore, longer-term trials would help build confidence in recommending this eating plan.

MACRONUTRIENT FOCUSED DIET PLANS

Studies have demonstrated that eating plans with varying macronutrient composition can be used effectively and safely in the short term (1-2 years) to achieve weight loss. Low and very low carbohydrate diets, often referred to as "keto" diets, have gained popularity amongst healthcare professionals and the public as an effective tool for weight loss and means to reduce metabolic complications associated with overweight and obesity.

The ketogenic diet was initially developed to treat severe epilepsy in infants and children under medical supervision. It is a very low carbohydrate and very high-fat diet plan, resulting in a state of ketosis where fat is being burnt for fuel instead of glucose. True ketogenic diets used in clinical settings can limit carbohydrates to as little as five percent calories, primarily from non-starchy vegetables and up to 85 percent calories from fat with enough protein to preserve lean body mass but maintain ketosis. However, when used as a tool for weight loss, the "ketogenic" diet plans vary in the proportion of carbohydrates, fat and protein they provide. Furthermore, there is an individual variation in the level of carbohydrate and protein intake that is compatible with ketosis. Therefore, personalisation of the diet and monitoring of ketone levels helps to achieve weight loss goals. "Keto flu" is a frequent side effect of a "keto" diet which can include light-headedness, fatigue, headaches, nausea, and constipation, in particular during the adaptation phase. Multivitamin, mineral and fibre supplements can be considered in some individuals to reduce side-effects.

A recent review of evidence on low and very low carbohydrate diets was found to be effective but not superior to other weight-loss diets.¹⁰ There was no difference in weight loss between lower carbohydrate (4-45 percent calories) / higher fat (30-75 percent calories) diets compared to higher carbohydrate (50-65 percent calories) / lower fat (20-25 percent calories) diets when protein and energy levels are kept the same.^{11,12} However, studies in overweight, diabetic patients following a low carbohydrate diet show some improvements in triglycerides and HDL cholesterol levels, insulin sensitivity and glycaemic control with mixed effects on LDL cholesterol.^{13,14}

One advantage that "keto diets" may offer is controlling cravings and hunger often reported with other diet plans. A review published in 2015 found that individuals adhering to a ketogenic diet reported significantly less hunger and desire to eat compared with baseline.¹⁵ Even though wellformulated ketogenic diets may offer short-term health benefits in some individuals, they are difficult to sustain, and long-term risks and benefits are not fully understood in the absence of long-term studies.

DIETARY PATTERN FOCUSED DIET PLANS

Diets focusing on dietary patterns such as Dietary Approaches to Stop Hypertension (DASH) diet and Mediterranean diets have also been studied in weight loss trials.

Mediterranean diets emphasise the intake of vegetables, fruit, legumes, nuts, whole grains and olive oil as the main source of fat, with moderate amounts of fish and poultry, low intake of red meat and moderate consumption of wine. Meta-analysis of RCTs found that energy-restricted Mediterranean diets achieve as much or more weight loss than low carbohydrate and low-fat diets with or without energy restriction among overweight and obese adults when followed for at least six months.¹⁶

The DASH diet recommends specific servings of different food groups depending on daily caloric needs. It focuses on whole grains, fruit and vegetables, fat-free and low-fat dairy, lean meat, fish and poultry. A meta-analysis revealed that overweight and obese adults on the DASH diet lose more weight than controls following a standard diet in studies ranging from 8-24 weeks.¹⁷ Calorie restricted DASH diet led to even greater weight loss when compared to other low energy diets.

Both DASH and Mediterranean diets can be safe, effective and sustainable weight loss eating plans that also improve metabolic complications.

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LEARNING POINTS

- To date, studies have failed to demonstrate the superiority of one diet plan over another as patients can lose weight on any diet in the short term. Long-term studies are lacking.
- Any dietary approach to weight loss should be individualised and consider the health status, personal preferences, and ability of the person to sustain the recommendations in the plan.
- As healthcare professionals, we should be realistic when discussing treatment expectations and setting weight-loss goals with our patients.