

2014 Nutrition Bulletin

A.R. Leeds Review – Formula food-reducing diets: A new evidence-based addition to the weight management tool box (DOI: 10.1111/nbu.12098) Nutrition Bulletin 2014. **39**. 238-246

1) Very low-calorie diets (VLCDs) (<800 kcal/day) and low-calorie diets (LCDs) (800–1200 kcal/day) delivered as liquid foods (*i.e.* as soups and shakes) have been available for use in the UK for about 30 years.

2) Formula diets cause weight reduction by creating a greater energy deficit between energy requirement and dietary energy supply than is usual with a conventional food-reducing diet with a 500–600 kcal/day deficit. Formula diets can supply anywhere between just over 400 kcal/day to about 1200 kcal/day and can be composed of mixed formula diet and conventional food at the higher levels.

3) Conventional food diets below 1000 kcal/day cannot be constructed to supply all micronutrients on a daily basis, hence the principle of manufacturing formula food products providing a full 100% Dietary Reference Value (DRV) supply within a defined number of portions (usually 3 or 4).

4) When the evidence for nutritional deficiency in obese people is considered, there may be merit in losing weight using a method that may replete nutrient levels rather than further depleting them.

5) Very low dietary energy intakes result in high levels of blood ketones and these may suppress hunger in many individuals, an effect mediated by suppression of the hunger hormone ghrelin (Sumithran *et al.* 2013). At higher dietary energy intake levels, blood ketone levels may not be so high. The protein level supplied is intended to meet metabolic requirements and limit lean tissue loss.

Review Conclusion:

The changing pattern of obesity – related disease has created a need for a greater range of weight management options for the increasing number of people for whom **weight loss and maintenance cannot be addressed by conventional dietary methods.**

1) **Formula diets**, with an education and support programme, can deliver weight loss and maintenance of **10% of initial weight with sustained health benefit in osteoarthritis, obstructive sleep apnea and psoriasis.**

2) Initial weight **losses of 10-20kg** are associated with rapid improvement of symptoms and **metabolic variables.**

3) **Weight maintenance of 10% reduction of initial weight has been demonstrated 4 years of weight maintenance.**

4) **The safety profile are known, lean masses losses appear to be less than expected,** but there is an increased risk of gallstones after VLCDs, and gout can occur.

5) **The effect of blood pressure lowering,** which can occur rapidly on commencement of weight loss, means that warnings about postural hypotension and blood pressure measurement and medication adjustment need to be followed carefully, especially in older individuals.

6) The possibility of improved nutritional status needs to be investigated in detail, especially as bone health appears to be maintained more than expected in elderly obese people with **osteoarthritis.**

7) Weight loss with formula diet programmes is an underused option in weight management. However, there is already sufficient published information to justify formula diet weight loss programmes as an option in **diabetes, obstructive sleep apnoea, osteoarthritis and psoriasis**.