Brief Communication

The role of celebrity diets versus medical nutrition therapy in type 2 diabetes

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ABSTRACT

With global obesity affecting 475 million people worldwide, the continued popularity of celebrity or fad diets is not surprising. Evidence for their sustainability and long-term positive benefits on weight loss and cardiometabolic risk is, however, limited. Modest weight loss of 5-10% in overweight or obesity is associated with improvements in blood lipids, glycemia, and insulin resistance. As overweight and obesity are the main risk factors for Type 2 diabetes (T2DM), medical nutrition therapy based on a balanced, reduced total energy diet, tailored to the individual, is recommended by the American Diabetes Association, Diabetes UK and transcultural diabetes-specific nutrition algrorithm (tDNA) guidelines.

Key words: American Diabetes Association, cardiometabolic health, Diabetes UK, modest sustainable weight loss, transcultural diabetes-specific nutrition algorithm (tDNA)

Introduction

Nutrition guidelines worldwide promote diet and lifestyle management as the cornerstone of Type 2 Diabetes (T2DM) prevention and treatment.[1] Knowing which diet to follow, however, is confused by the abundance of "diet" advice fed to the general public by the media. This review discusses "celebrity" or "fad" diets and their impact on society in general and more specifically in T2DM, and questions whether there is a requirement for a special diet for treatment of T2DM.

Celebrity Diets

Celebrity or fad diets are by no means a new phenomenon. Indeed Carl Malmberg devoted a whole book to them in 1935 including chapters on the "Hollywood Diet" where devotees could expect to consume 22 whole grapefruit with Melba toast over an 18-day period and the "Rocine Eliminative Beauty Diet" where followers fasted for 10 days on lettuce alone or naturopath Dr Rocine's own mysterious New Life Compound dissolved in water.[2] The 1930s also saw the publication of Woodyatt's paper on dietary trends in diabetes.[3] In addition to reviewing nineteenth century diabetes "cures" based on consumption of milk or potatoes and an early twentieth century oatmeal cure, Woodyatt discusses the potential positive and negative effects of different ratios of macronutrients in the treatment of diabetes while suggesting that a level of undernutrition supports "the preservation of natural carbohydrate tolerance".

Each year, the UK British Dietetic Association produces a top five of worst celebrity diets to avoid and in 2014, these included the "Breatharian", "Biotyping", "Gluten-Free", "Alcorexia" and "Dukan" Diets.[4] One of the better known commercial diets, favored by celebrities and promoted in the media, is the Atkins Diet with book sales exceeding 45 million.[5]

What is the Impact of Celebrity Diets?

With numbers of obese and overweight adults globally estimated at 475 million and 1 billion respectively and latest available data indicating adult obesity levels

Access this article online	
Quick Response Code:	Website: www.joshd.net
	DOI: 10.4103/2321-0656.140902

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of 35.9% in the USA and 24.8% in England, the vast number of commercially available miracle diets advertised in the media is hardly surprising.[6,7] The factor that most celebrity diets have in common is their restrictive nature whether by restricting carbohydates (CHO) in favor of fat or protein (Atkins, Dukan), food calories for alcohol (Alcorexia), foods containing gluten (Gluten-Free), defined foods based on dieter's blood group (Biotyping) or all forms of nutrition (Breatharian). When calories consumed equal energy expended from a combination of basal metabolic rate (BMR), thermic effect (energy required to absorb and digest food) and physical activity, weight is maintained (energy balance). Therefore, any diet that promotes negative energy balance by means of energy restriction will, over time, result in weight loss irrespective of macronutrient composition. Side effects, however, may include lack of energy (Alcorexia, Atkins, Dukan), liver disease, and other alcohol-related illness (Alcorexia), constipation and bad breath (Atkins, Dukan) or, in the most extreme restrictive diet, dehydration, malnutrition, and ultimately death (Breatharian). Restrictive diets which cut out food groups may also necessitate vitamin and mineral supplementation (Atkins, Dukan, Biotyping).[4,8]

Evidence to establish long-term safety and efficacy of fad diets is limited although two independent randomized controlled trials (RCTs) found that healthy obese subjects following a low-CHO/high-protein/high-fat diet (such as the Atkins) lost more weight in the short term than their counterparts who followed a high-CHO/low-fat (conventional) weight loss diet although weight loss at 1 year was similar.[9,10]

What is the Impact of Celebrity Diets in T2DM?

Over 312 million people worldwide have T2DM.[11] Overweight and obesity are the main predisposing factors for T2DM and modest weight loss may improve hypertension, blood glucose and/or blood lipid control.[12] Evidence, however, to support use of celebrity diets in T2DM is minimal.

A 2-year RCT (n = 419) found no difference in post-prandial glycemia or weight loss in T2DM patients who followed a high-protein (such as the Atkins) or high-carbohydrate diet although participants in the high-protein group found adherence to the diet difficult.[13]

While limited duration studies have demonstrated improved hemoglobin A1c (HbA1c) and reduced requirements for oral hyperglycemic medication in T2DM patients who followed a very-low-CHO ketosis inducing diet, this was not reflected in a longer term RCT which found no significant improvement in HbA1c in the low-CHO (Atkins) or high-CHO-low-fat (conventional weight loss) study arms after 1 year.[13,14]

The UK Nutrition Society advise patients with diabetes or pre-existing kidney disease to exercise caution with high-protein diets, whereas Diabetes UK highlight the lack of evidence for long-term safety and efficacy of low-CHO diets (Atkins, Dukan) while warning of the increased risk of hypoglycemia.[15,16]

Clinically Effective Sustainable Weight Loss

Celebrity diets generally lure dieters with a promise of rapid weight loss resulting in unrealistic expectation and yo-yo dieting.[17,18] Government guidelines for overweight/obesity commonly recommend adopting diet and exercise "lifestyle changes" with a more sustainable goal of 5-10% weight loss.[19,20]

A recently published 24-month weight loss RCT (n = 442 middle-aged obese women) found that weight loss ≥10% from baseline (but not ≤10%) was associated with significant reductions in cardiometabolic risk with improvements in triglycerides, glucose, insulin, and insulin resistance together with improved cardiopulmonary fitness.[21]

Medical Nutrition Therapy (MNT) for Type 2 Diabetes

Evidence-based T2DM nutrition guidelines from the American Diabetes Association (ADA), Diabetes UK and the more recently published transcultural diabetes-specific nutrition algorithm (tDNA), recommend sustainable weight loss in overweight and obesity to improve glycemic control and reduce diabetes-associated risk.[22-24] The various guidelines agree that weight loss should be achieved by reducing total energy intake while following a healthy, balanced diet and exercise program. While ADA and Diabetes UK adopt a flexible approach to overall macronutrient composition, the tDNA follows a more structured methodology based on 2008 ADA guidelines and recommends use of diabetes-specific formulas as part of a weight loss meal plan.[25] All the guidelines concur that nutrition therapy should be tailored to take into account individual risk factors, personal and cultural beliefs, patient lifestyle, and willingness to make changes.

Conclusion

While the long-term efficacy and safety of celebrity diets is disputable, weight loss of 5-10% in overweight or obese adults is associated with improvements in cardiometabolic health and glycemic control. Health-care professionals should familiarize themselves with local and national guidelines for healthy eating and MNT enabling them to provide tailored diet and lifestyle advice to their T2DM patients that is effective and sustainable. Ideally patients should be referred to a dietitian specializing in diabetes for individualized nutrition advice.

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How to cite this article: Scrivens SD. The role of celebrity diets versus medical nutrition therapy in type 2 diabetes. J Soc Health Diabetes 2015;3:61-3.

Source of Support: Nil. **Conflict of Interest:** None declared.