



All Foods Fit

Emerging Trends in Nutrition and the Impact on Diabetes Management

By: Marla Heathers RD, CDE

Trending FAD Diets

● intermittent fasting
Search term

● ketogenic diet
Search term

+ Add comparison

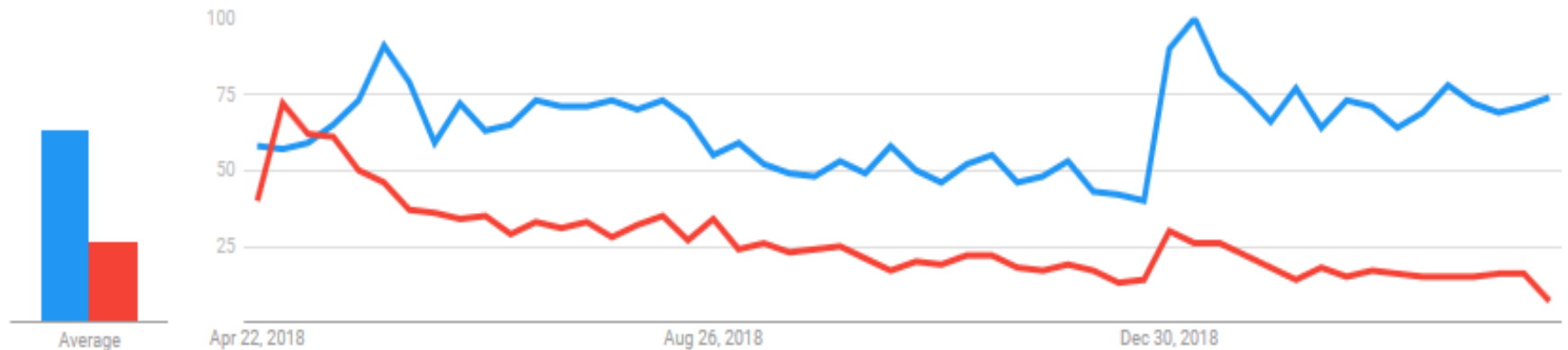
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Interest over time ?





Outline

- A review of popular nutrition trends
 - Ketogenic diet vs. Intermittent Fasting
- Review of the literature
- Diabetes Canada nutrition recommendations
- Considerations for diabetes management



History of the Ketogenic Diet

- **1911**: ketogenic diet was first documented.
- **1921**: reduction in seizures after 2-3 days of fasting.
- **1925**: documentation of ketogenic diet plan similar to today's: 1g/kg protein, 10-15g carb/day.
- **2005-2008**: first controlled and randomized trials were published for the treatment of childhood epilepsy



Currently being studied for:

- Obesity
- Metabolic syndrome
- T2DM, Insulin resistance, PCOS
- NAFLD
- Neurologic diseases – brain injury, Alzheimer's, Parkinson's, sleep disorders, brain cancer, autism, multiple sclerosis, ALS
- Cancer

The Ketogenic Diet

www.myketokitchen.com

THE KETOGENIC FOOD PYRAMID

Carbohydrates

Keep carbohydrates to a maximum of 5% of your total daily calorie intake. Making up of mostly green cruciferous vegetables. **Avoid all sugars, starches, grains, bread, pasta, fruits** (except avocado).

5%

Protein

Protein is essential for muscle retention and muscle building but **too much protein can keep you out of Ketosis**. Limit your protein intake to 25% of your daily calorie intake. Excellent sources of protein are: Fatty cuts of meat, eggs, full fat cheeses. Avoid milk, fat reduced chesses and creams.

25%

Fat

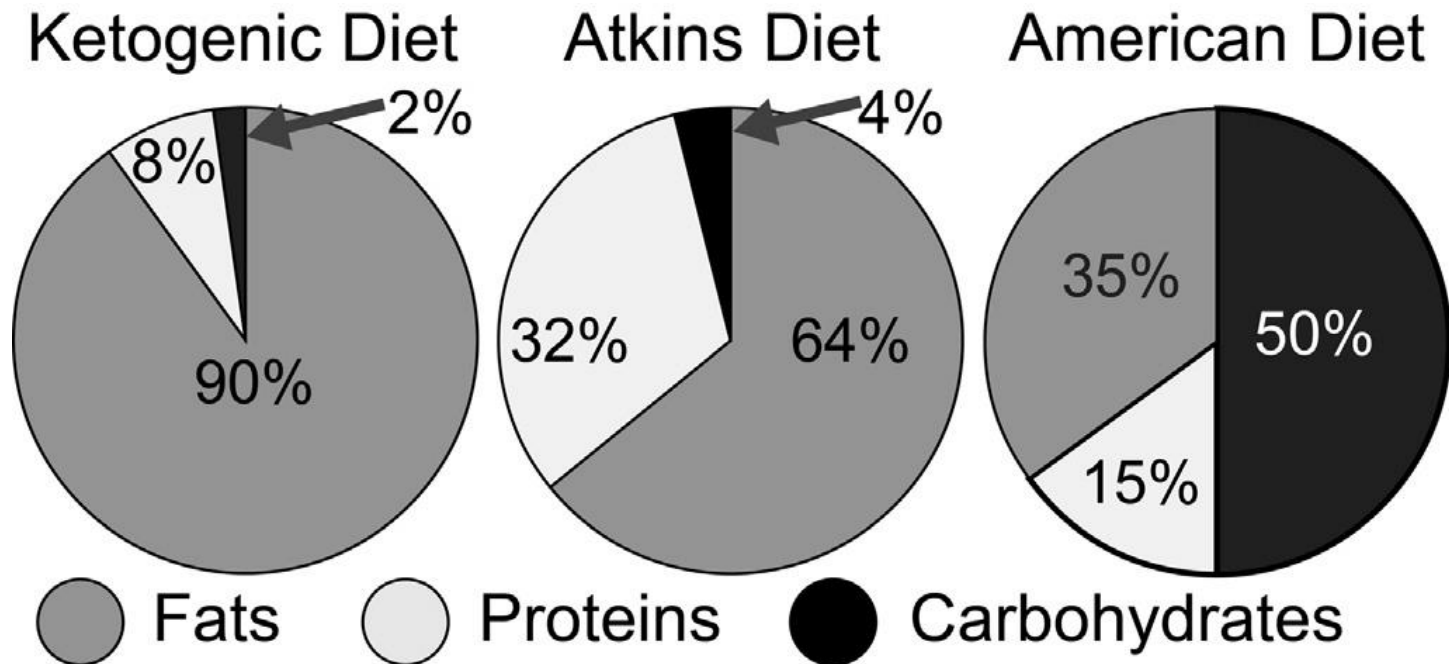
Fats will make up a dominant portion of a Ketogenic Diets macronutrients. When fat intake is high and carbs are low the body will resort to using fat as fuel through **Ketosis** (put simply). When possible your fat intake should come from **Saturated Fats** (Butter, Coconut Oil etc) & **Monounsaturated Fats** (Avocado, Macadamia Nuts etc). Ensure you get ample Omega-3's in your diet as well.

70%



www.myketokitchen.com/keto-resources/keto-food-pyramid-ketogenic-diets/

Ketogenic Diet vs North American Diet





How Does it Work?

- In normal metabolism, glucose is transported into the cell by insulin to be used for fuel.
 - Insulin is a storage hormone
- The central nervous system (CNS) can only use glucose for energy, can't use fat, so there needs to be a glucose source.



How Does it Work?

- When glucose is not provided, the CNS uses free fatty acids for fuel VIA conversion in the liver to ketone bodies.
- Therefore less circulating insulin, less storage hormone available, fat is used as the primary fuel source.



Ketogenic Diet Risks

- Unsustainable over the long term
- Socially isolating
- Headache, muscle cramping, fatigue
- Constipation, reflux, vomiting
- Cost – meat/avocados, coconut oils more expensive
- Hypoglycemia
- Nutrient deficiencies



Ketogenic Diet Risks

- Often not supervised by a Registered Dietitian.
- More long term research is needed to determine long term risks/benefits.
- Studies of 3 months, 24 weeks, 1 year, no studies for longer than a year. Often small sample size.

Review of the Literature

OPEN ACCESS Freely available online

PLOS ONE

A Randomized Pilot Trial of a Moderate Carbohydrate Diet Compared to a Very Low Carbohydrate Diet in Overweight or Obese Individuals with Type 2 Diabetes Mellitus or Prediabetes



Laura R. Saslow^{1*}, Sarah Kim¹, Jennifer J. Daubenmier¹, Judith T. Moskowitz¹, Stephen D. Phinney², Veronica Goldman¹, Elizabeth J. Murphy¹, Rachel M. Cox³, Patricia Moran¹, Fredrick M. Hecht¹

¹ University of California San Francisco, San Francisco, California, United States of America, ² UC Davis School of Medicine (Emeritus), Davis, California, United States of America, ³ Children's Hospital and Research Center, Oakland, California, United States of America

Abstract

We compared the effects of two diets on glycated hemoglobin (HbA1c) and other health-related outcomes in overweight or obese adults with type 2 diabetes or prediabetes (HbA1c>6%). We randomized participants to either a medium carbohydrate, low fat, calorie-restricted, carbohydrate counting diet (MCCR) consistent with guidelines from the American Diabetes Association (n=18) or a very low carbohydrate, high fat, non calorie-restricted diet whose goal was to induce nutritional ketosis (LCK, n=16). We excluded participants receiving insulin; 74% were taking oral diabetes medications. Groups met for 13 sessions over 3 months and were taught diet information and psychological skills to promote behavior



Review of the Literature

- **Participants:** greater than 18 yoa, type 2 or prediabetes, HbA1C >6%, BMI > or equal to 25, self motivated to make change to routines and sufficient control over their food. 34 participants in total.
- **Intervention:** participants were randomly assigned to either the Moderate carbohydrate diet (MCCR) or the low carbohydrate ketogenic diet (LCK). Study was 3 months in duration.

Review of the Literature

- **Results:**
- Change in A1C: statistically significant change in HbA1C in the LCK group
- Weight change: Both groups had significant weight loss, mean weight loss was larger in the LCK group, however the difference was not statistically significant.
- No statistically significant changes occurred in blood pressure, fasting blood glucose and lipids.



Limitations

- Small sample size of only 34 participants and short study duration (3 months duration).
- Upon participant recruitment, participants needed to have control over their food to follow the intervention instructions and already motivated to make change.

Intermittent Fasting





Intermittent Fasting

- Diet that cycles between brief periods of no food or significantly low calorie reduction, and periods of unrestricted eating.
- Alternate day fasting vs. Whole day fasting vs. time restricted feeding.
- Promoted to change body composition and improve health markers.



Intermittent Fasting Risks

- Risk of vitamin deficiencies.
- Difficult to maintain long term.
- Not appropriate for those with conditions that require food at regular time intervals. (ie: reactive hypoglycemia, diabetes, active growth stage, use of medications that require food intake etc.)

Review of the Literature



HHS Public Access

Author manuscript

JAMA Intern Med. Author manuscript; available in PMC 2018 July 01.

Published in final edited form as:

JAMA Intern Med. 2017 July 01; 177(7): 930–938. doi:10.1001/jamainternmed.2017.0936.

Effect of Alternate-Day Fasting on Weight Loss, Weight Maintenance, and Cardioprotection Among Metabolically Healthy Obese Adults:

A Randomized Clinical Trial

John F. Trepanowski, PhD, Cynthia M. Kroeger, PhD, Adrienne Barnosky, MD, Monica C. Klempel, PhD, Surabhi Bhutani, PhD, Kristin K. Hoddy, PhD, RD, Kelsey Gabel, MS, RD, Sally Freels, PhD, Joseph Rigdon, PhD, Jennifer Rood, PhD, Eric Ravussin, PhD, and Krista A. Varady, PhD

Review of the Literature

- **Participants:** 100 participants, between 18-65 years of age, BMI 25-39.9, exclusions: history of CVD, diabetes, currently smoking and pregnancy.
- **Intervention:** randomized in 1 of 3 groups: alternate day fasting (25% needs fast days, 125% needs on feast days), calorie restriction (75% energy needs each day) and no intervention. 1 year in duration, 6 month weight loss phase, 6 month maintenance phase.



Review of the Literature

- **Results:**
- Alternate day fasting did not produce superior adherence, weight loss, weight maintenance or improvement in risk indicators for CVD compared to daily calorie restriction.
- Drop out rate in the alternate day fasting group was higher (38%) than in the calorie restriction group (29%) and the control group (26%).
- Alternate day fasting group rated a higher dissatisfaction in diet.



Limitations

- Short duration in study
- Population was predominantly healthy



Diabetes Canada Guidelines

The following food styles are recommended for people with type 2 diabetes:

- ▶ Mediterranean style
- ▶ Vegan or Vegetarian diet pattern
- ▶ DASH diet pattern
- ▶ Food styles that emphasize pulses (e.g. beans, peas, lentils)
- ▶ Food style that emphasize fruits/vegetables and nuts



Diabetes Canada Guidelines

- Weight loss of 5-10% of your body weight may help improve blood sugars and reduce risk of complications
- There are many strategies that can help with weight loss, the best style of eating is one that is **nutritionally balanced that can be maintained for the long term**

Mediterranean Diet Pyramid

A contemporary approach to delicious, healthy eating

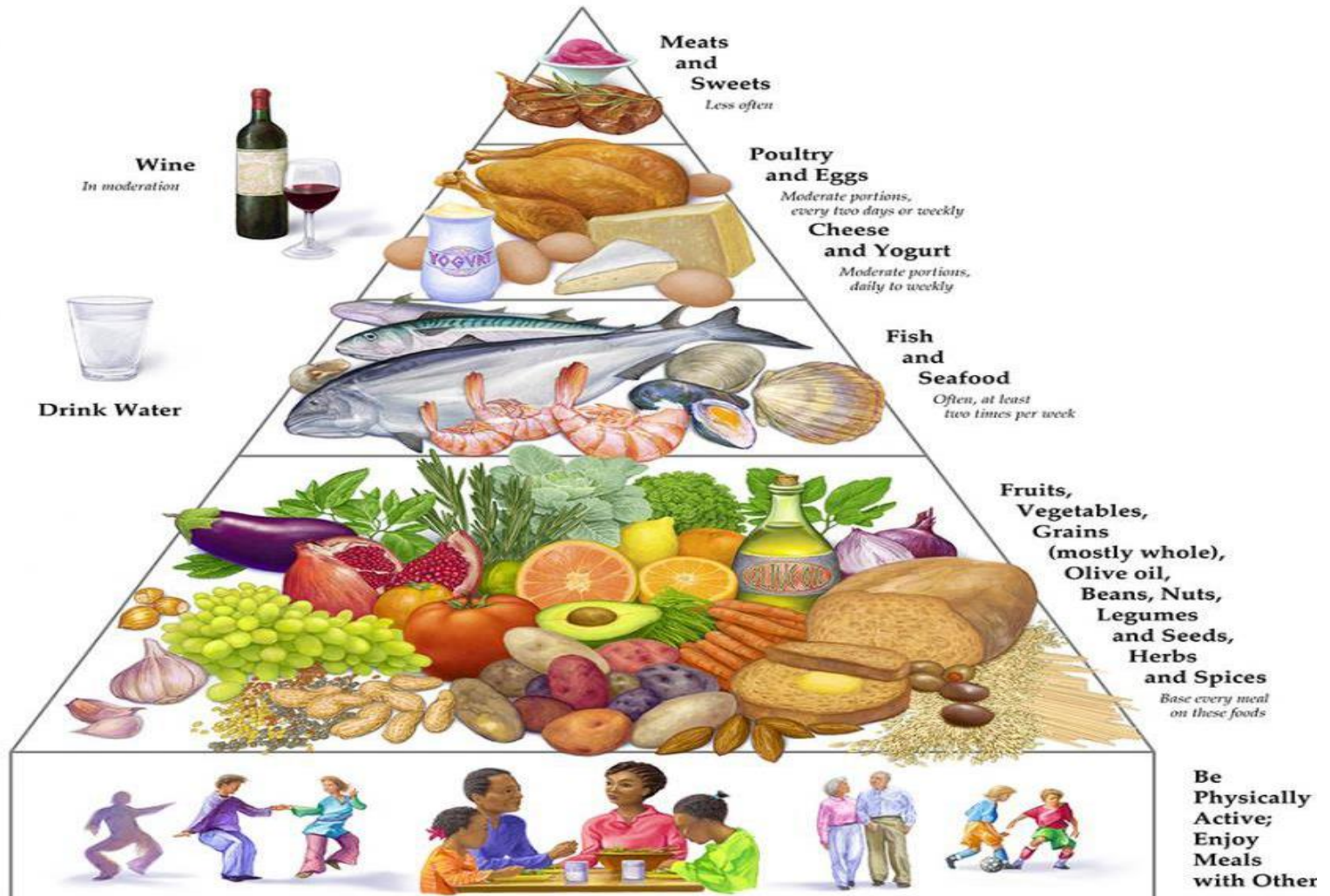


Illustration by George Middleton

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Health Benefits of the Mediterranean Diet

- Reduces your risk of developing heart disease
- Lowers blood cholesterol
- Lowers blood pressure
- Improves blood sugar control for individuals with type 2 diabetes
- Focuses on quality and quantity,
Nutritionally Balanced Lifestyle



Considerations for Diabetes Management

- High risk for hypoglycemia.
- Risk of vitamin deficiencies.
- Fast weight loss, difficult to maintain (weight re-gain is common).
- Important to work collaboratively with the interdisciplinary team.



Take Away Messages

- The best diet is one that is maintainable for the long term.
- Diet quantity and quality are paramount to promote health.
- There are associated risks with FAD diets, use clinical judgement and collaborate with Registered Dietitians.
- All Foods Fit, FAD diets are not necessary to lose weight.

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