

**Comparison of the Atkins, Zone, Ornish, and LEARN Diets for Change in Weight and Related Risk Factors Among Overweight Premenopausal Women. The A TO Z Weight Loss Study: A Randomized Trial. JAMA, March 7, 2007; Vol 297, No 9, 969-978.**

**Background**

- Current National Dietary guidelines recommend low fat, energy restricted, high carbohydrate diets for weight loss,
- Many popular diets promote low carbohydrate, non-energy restricted for weight loss(ie, Atkins, Zone)
- A prior meta-analysis of early trials suggests that low-carb, non-energy restricted diets were at least as effective as low-fat, high carbohydrate diets in inducing weight loss for up to one year.

**Objective**

- Examine the effects of diets with grades of carbohydrate intake on weight loss and metabolic variables in overweight and obese premenopausal women

**Study Design**

Study type: Single-blinded, RCT (blinded to group designation, not blinded to treatment)

Setting: Stanford CA, participants recruited from local community

Time period: Patients recruited from February 2003 to September 2004, enrolled in 4 cohorts

Inclusion Criteria: premenopausal women 25-50 yo, BMI 27-40, with stable weight x 2mths, no changes to meds x 3mths

Exclusion Criteria: HTN- unless stable on anti-hypertensive meds, Type I/II DM, heart/renal/liver disease, cancer, hyperthyroidism- unless under control with treatment, medication use known to affect weight/energy expenditure, >3 alcoholic drinks/day, pregnant/lactating women, women who haven't had a period in 12 mths or who plan to become pregnant w/in 12 mths

Randomization: N = 311, were randomized into 4 groups (Figure 1), and analyzed in their respective groups(N=249 completed trial)

- Atkins Diet- very low carbohydrate,
- Zone Diet-low carbohydrate
- LEARN diet(lifestyle, exercise, attitudes, relationships, nutrition)-low fat, high carbohydrate
- Ornish Diet-very high carbohydrate

Patient characteristics: Table 1-patients were similar in demographics, including age, education, weight, BMI, and CAD risk factors,

Outcomes: Assessed at 0, 2, 6, 12 months

- Primary: Weight loss at 12 months
- Secondary: lipid profile(LDL, HDL, non-HDL, TRG), percentage of body fat, waist-hip ratio, fasting insulin and glucose levels, and blood pressure

**Results:**

- All groups lost weight (Figure 2)
  - -4.7 kg (95% CI -6.3 to -3.1kg) for Atkins,
  - -1.6 kg (95% CI -2.8 to -0.4kg) for Zone
  - -2.2 kg (CI -3.6 to -0.8kg) for LEARN
  - -3.6 kg (CI -3.8 to-1.3 kg) for Ornish
- All diets lost most weight at 6m and then either reached plateau or gained weight by 12m (Atkins)
- Dietary intake (Table 2)
  - Energy intake (calories consumed) all decreased from baseline to 12 m, however no statistically significant difference in total decrease in caloric intake between diets.
  - All groups had greatest compliance with diet guidelines after the first 2m and then waxing adherence from 6 to 12m
  - No group had a statistically significant difference in energy expenditure
- Weight change (Table 3)
  - All groups saw beneficial changes from baseline in BMI, percent body fat, HDL, triglycerides, and blood pressure
  - Atkins diet had greatest drop in BMI, percent body fat, and blood pressure. Also largest elevation in HDL
  - Atkins and LEARN diets had elevation in LDL (not significant in comparison to other diets)

**Conclusions**

- All diet groups saw statistically significant decreases in BMI, %body fat, HDL, triglycerides, and blood pressure
- Those participating in Atkins diet saw a statistically significant greater decrease in all above outcomes
- Low carbohydrate diets appear to have an increased potential for greater weight loss, however, this may also be associated with an increase in LDL concentrations.

**Limitations:**

- Participants and researchers not blinded
- Study population only pre-menopausal women - Exclusion criteria prohibits most realistic patients.
- Short follow up duration; no assessment of weight maintenance after completion of diet