

Nutritional Strategies in the Prevention and Management of Type 2 Diabetes in South Asian American Cultures

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Pre-diabetes

- Increasing prevalence in adults living in urban environments
 - Plentiful food supply
 - Less physical activity
- How do we prolong the timeline?
 - Improve quality of nutritional intake
 - Increase physical activity
 - Moderate weight loss

Prevention of Type 2 Diabetes (T2DM)

Diet + Exercise Intervention for Pre-diabetes

Reduction in progression
to T2DM (%)

Diabetes Prevention Program (DPP)

N=3234, 2.8 years

Low-fat diet + exercise

58

Finnish Study

N=522, 3.2 years

Low-fat diet + exercise

58

Prevention of T2DM

Lifestyle Intervention

- **Nutrition**
 - Seek 5% to 7% weight reduction (50% and 43% achieved this in Diabetes Prevention Program and Finnish trials, respectively)
 - <30% calories from fat
- **Physical activity**
 - Moderate exercise, 150 to 210 min/week (equivalent to 30-min sessions 5 to 7 days/week; 74% and 86% achieved this in Diabetes Prevention Program and Finnish trials, respectively)

Body Composition

- Steeper relationship between body fat and BMI in Asians
 - WHO 'action point' BMI for obesity-related interventions is 23 kg/m²
- Nutrition and exercise intervention goals
 - Maintain muscle mass
 - Reduce percent body fat

Nutritional Approaches for Weight Loss

- Estimate calorie needs to induce gradual weight loss of 5 to 7% body weight
- Percentage of calories from total fat and carbohydrate will vary based on lipid goals
 - Hypertriglyceridemia
 - High MUFA (canola oil, olive oil, almonds, peanuts)
 - High omega-3 fatty acids (fish, flax seed, walnuts)
 - PUFA (safflower oil, corn oil, cottonseed oil)

Nutritional Approaches for Weight Loss

- Reduced calorie intake
 - Weekdays may be bound by schedules and easier to control calorie intake
 - Avoid soft drinks, fruit juices
 - Avoid fried foods, chips
 - Limit dining out

Dining Out

- Eat a healthy snack before leaving home
- Limit bread intake
- Order a light soup or salad
- Entrée
 - Share meal with others
 - Take home leftovers
- Monitor rice portion
- Enjoy vegetable dishes freely

Satiety Considerations

- High fiber foods = feeling of fullness (satiety)
 - Goal is 20 to 35 grams/day of fiber
- Use “free foods” between meals
 - Fresh vegetables (cucumber, tomato, carrots)
 - Hummus dip (ground chick peas, sesame paste, green chiles, ginger and lemon)
- High protein foods = satiety

Food Characteristics

- A calorie is a calorie, but it's dietary influence is context and content specific
- Act of chewing a solid food
 - May provide an internal satiety signal
 - Liquids vs. solids
- Higher satiety ratings with solid foods^{1,2}
 - Apples > apple soup > apple juice¹
 - Jelly beans > soda²

¹Haber GG et al. *Lancet* 1977;2:679-682

²DiMeglio DP and Mattes R. *Int J Obes* 2000;24:794-800

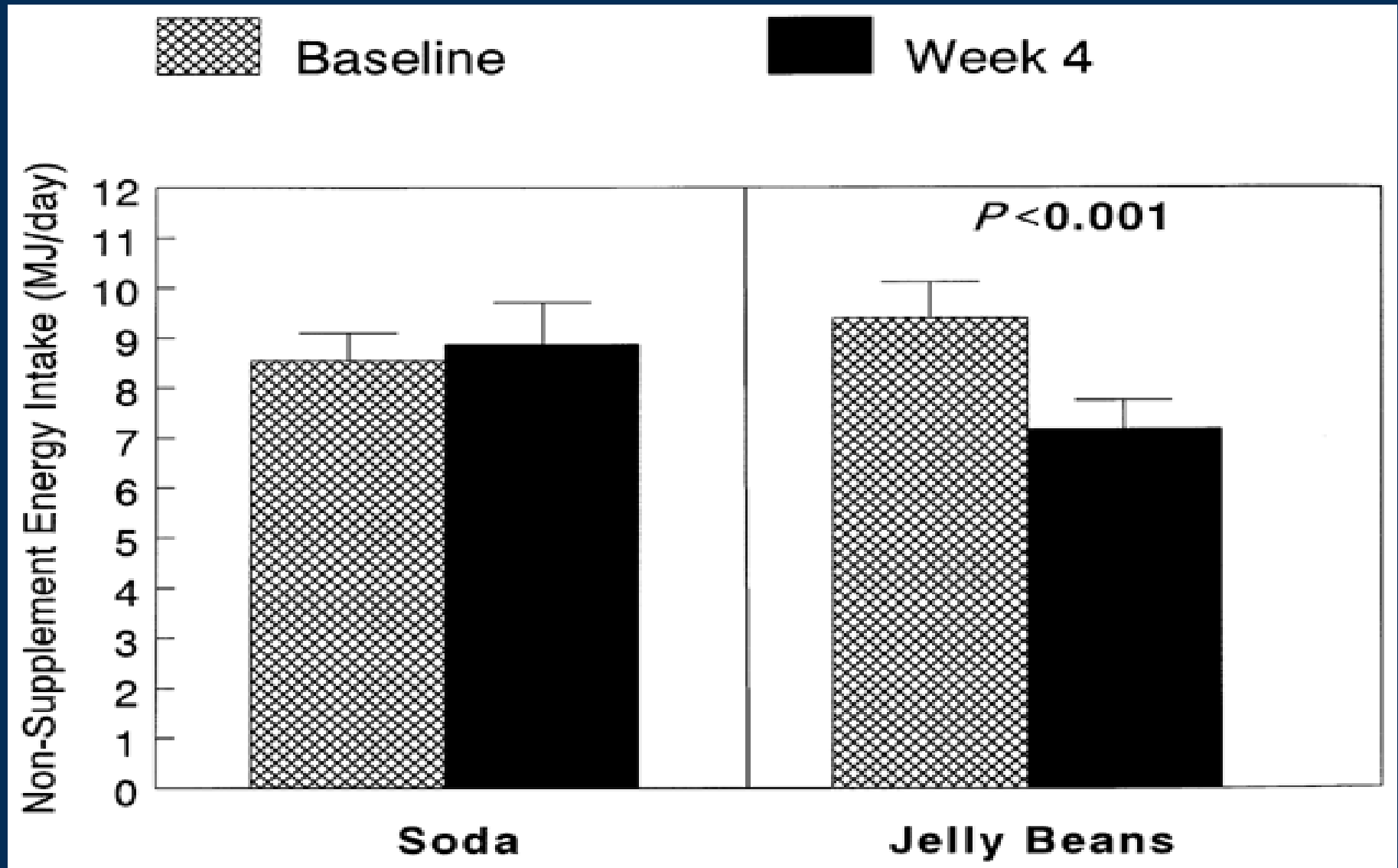


Figure 1. Mean reported energy intake (s.e.) prior to and at the end of both intervention periods.

Postponing the Natural Progression of T2DM

- Nutritional approaches
 - Emphasis on a return to nutrient dense food intake
 - Complex versus simple carbohydrates
 - Reduce saturated fat intake
 - Limit butter, ghee, dalda, coconut and palm oil
- INCREASE PHYSICAL ACTIVITY

Medical Nutrition Therapy for T2DM

- Use culturally sensitive American Diabetes Association exchange lists
 - Refer to pages 49 to 56 of AAPI's Guide to Health, Nutrition and Diabetes
- All foods can fit
 - Every day foods
 - Special occasions
 - Calorie-laden foods

Medical Nutrition Therapy for T2DM

- Educate on portion sizes
- Control total carbohydrate intake at meals/snacks
- Carbohydrate counting
 - Dairy
 - Vegetables
 - Fruits
 - Grains
 - Sweets

Medical Nutrition Therapy for T2DM

- Carbohydrate containing snacks
 - Oral hypoglycemic agents
 - Specific insulin regimens
 - New short acting insulin analogs with long-acting insulin
 - No snacks required
 - Less frequency of hypoglycemia

Snack Options

- “Borrow” fats from meals
 - Raw or dry roasted almonds or peanuts as snacks
 - Convenient snack, no refrigeration needed
 - Carry in a pocket, purse, briefcase, backpack, computer case
 - Ziplock bag
 - Altoids-type tin

Fat Composition of Nuts and Oils

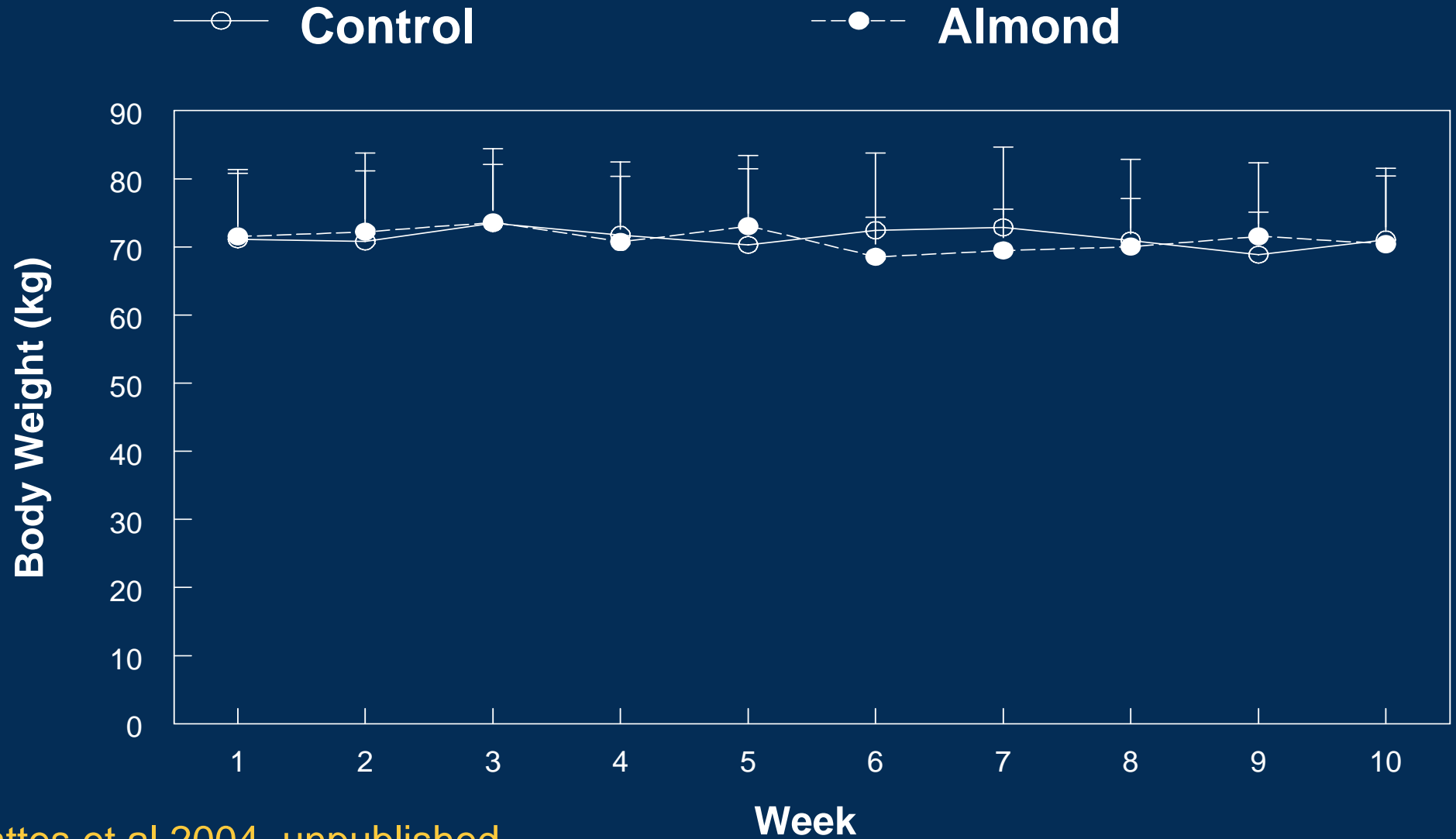
Nut/Oil	Saturated Fat	Mono-unsaturated Fat (MUFA)	MUFA/ Saturated Fat Ratio	Polyunsaturated Fat	Total Fat/ 100 g serving (g)
almond	8%	70%	8.8	28%	50
hazelnut	8%	78%	9.8	10%	60
pecan	8%	62%	7.8	25%	70
pistachio	12%	55%	4.6	32%	41
walnut	9%	23%	2.6	63%	60
peanut	17%	46%	2.7	32%	44
macadamia	15%	79%	5.3	2%	70
cashew	20%	59%	3.0	17%	44
Brazil nut	24%	35%	1.5	36%	63
canola	7%	59%	8.4	30%	100
safflower	10%	13%	1.3	73%	100
corn	13%	24%	1.9	59%	100
olive	14%	74%	5.3	8%	100
sesame	14%	40%	2.9	42%	100
soybean	14%	23%	1.8	58%	100
coconut	87%	6%	0.1	2%	100

Most healthy

Moderately healthy

Least healthy

Body Weight



“Glucose Control Matters”

- At higher risk for developing cardiovascular disease
 - Physical activity
 - Support from family and friends
 - Walking/exercise buddies
 - Pedometers
 - Nutrition
 - Calories count
 - Quality of nutrients for cardiovascular health

Summary

- Simple messaging
 - Physical activity
 - Weight control
- Return to nutrient dense food intake
 - Complex versus simple carbohydrates
 - Reduce saturated fat intake
 - Heart healthy approach to meal planning