Navigating a program of research through the ever-changing labyrinth of nutritional recommendations

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Overview of Program of Research

- Nutrition Self-Care
  - Clarify recommendations for sodium restriction
  - Develop evidence for body weight recommendations
  - Develop evidence for other nutrient recommendations
    - dietary supplements
  - Develop interventions to improve QOL, decrease morbidity, and prolong life
Sodium Watcher Program for adults with heart failure

American Heart Association

Effects of Family Sodium Watcher Program on outcomes in heart failure patient-family caregiver dyads

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Just for the Heart of it
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Within subjects: $p < .001$
Between subjects: $p < .001$
Nutrition in Prevention and Treatment of Cardiovascular Disease
Modifiable Risk Factors for Cardiovascular Disease

* Hypercholesterolemia
* Hypertriglyceridemia
* Hypertension
* Overweight/Obesity
* Diabetes Mellitus
* Tobacco Smoke
* Sedentary Life Style
Challenges of Conducting Nutrition-Related Research

- **Challenges**
  - Eating habits
  - Changes in nutritional recommendations
  - Food industry
  - Media coverage of nutrition-related research
"There's nothing to eat!"
Eating Habits in U.S.

* Eating habits have changed
  * fewer meals are cooked from scratch
  * greater reliance on processed and restaurant food

* This has not been for the better
Do You Know How Food Portions Have Changed in 20 Years?

National Heart, Lung, and Blood Institute Obesity Education Initiative
BAGEL

20 Years Ago
140 calories
3-inch diameter

Today
350 calories
6-inch diameter

Calorie Difference: 210 calories
If you rake the leaves for 50 minutes you will burn the extra 210 calories.*

*Based on 130-pound person
CHEESEBURGER

20 Years Ago
333 calories

Today
590 calories

Calorie Difference: 257 calories
If you lift weights for 1 hour and 30 minutes, you will burn approximately **257 calories**.*

*Based on 130-pound person
COFFEE

20 Years Ago

Coffee
(with whole milk and sugar)

45 calories
8 ounces

Today

Mocha Coffee
(with steamed whole milk and mocha syrup)

350 calories
16 ounces

Calorie Difference: 305 calories
If you walk 1 hour and 20 minutes, you will burn approximately 305 calories.*

*Based on 130-pound person
Average Dinner Plate

- 1950: 9 inches
- 1980: 11 inches
- 2010: 13 inches
Dietary intakes in comparison to recommended intake levels or limits

Eat more of these:
- Whole grains: 15%
- Vegetables: 59%
- Fruits: 42%
- Milk: 52%
- Oils: 61%
- Fiber: 40%
- Potassium: 56%
- Vitamin D: 42%
- Calcium: 75%

Eat less of these:
- Calories from SoFAS: 280%
- Added sugars: 242%
- Solid fats: 281%
- Refined grains: 200%
- Sodium: 229%
- Saturated fat: 158%

Dietary Recommendations

* Restriction of all fats
  * First recommended in 1957
  * Became fashionable in the 1980s

* Restriction of saturated fats; substitute with PUFA
  * First suggested in early 1960s
  * Became fashionable in the early 2000s

* Restriction of cholesterol
  * First recommended in 1980 AHA
  * Newest USDA guidelines no longer recommend restriction

Break Some Eggs
Let’s hope the food industry does not go wild
Food Industry
Food Industry Response

What’s happening now that *trans* fats are being removed?
Check out this 100% zero trans fat bakery

We had the privilege of visiting “The Churrolandia Bakery and The Funnel Cake Factory” in Whittier, California. Everything is zero trans fat. The owner, Norma Chavez-Nielsen, invited us to inspect the bakery and sample the goodies. Fantastic! And the biggest surprise? Wonderful delicious donuts fried in trans fat-free canola oil, not palm oil. They tasted just right and the texture and dryness were perfect. In fact, everything we tried was excellent.

No one should say trans fat-free baking can’t be done unless they have first visited the Churrolandia Bakery and The Funnel Cake Factory and sampled the goods.

The address is 7303 Greenleaf Avenue, Whittier, California. Phone: (562) 789-5100.

Here are some tasty pictures.

Look at the variety!
All trans fat-free and delicious
Fried in trans fat-free low saturated fat canola oil and just perfect
Omega-3 fatty acids
Stability and Consumer Acceptance of Long-Chain Omega-3 Fatty Acids (Eicosapentaenoic Acid, 20:5, n-3 and Docosahexaenoic Acid, 22:6, n-3) in Cream-Filled Sandwich Cookies

R. Borneo, D. Kocer, G. Ghai, B. J. Tepper, and M. V. Karwe

ABSTRACT: We formulated a filling for sandwich cookies containing 400 mg of eicosapentaenoic acid, 20:5, n-3 (EPA) + docosahexaenoic acid, 22:6, n-3 (DHA) encapsulated in a matrix of starch and gelatin. Cookies were stored at 2 different temperatures (18 °C and 35 °C) and under 2 different packaging conditions (atmospheric and vacuum packed) for 28 d. At regular intervals, cookies were analyzed for moisture, water activity, and concentrations of EPA, DHA, and dienes. Results showed that there were no significant losses of EPA and DHA during storage under the conditions of study. A maximum loss of 5% was observed after 28 d of storage. The concentration of dienes obtained under different conditions were low (< 25 mmol/kg) as compared to a salmon oil sample with appreciable signs of oxidation (600 mmol/kg). Sensory evaluation of cookies by an untrained panel of healthy consumers and ulcerative colitis patients revealed no aftertaste and high acceptability of the cookies. Our results demonstrated that it is possible to make shelf-stable fortified foods with high levels of long-chain ω3FA.

Keywords: cookies, DHA, EPA, omega-3, sensory, stability
Research and Interventions for Cardiovascular Health

Omega Cookie

Introducing the Omega Cookie

Skipping meals – especially breakfast – is one of our customers’ biggest nutritional hurdles. For them, we’ve created a superfood champion - the Omega Cookie. Each cookie is chock-full of essential nutrients like vitamin D3, calcium, gluten-free oat fiber, and, of course, omega-3 fatty acids (7 regular fish oil capsules worth of omega-3, in fact).

What is not in the cookie is equally important. We’ve eliminated all processed ingredients such as trans fats, high-fructose corn syrup, and preservatives from the baking process. And each cookie contains less sugar than an apple, easily meeting the sugar limit recommended by the American Diabetes Association.

These hearty, homestyle cookies come in chocolate chip, cranberry, ginger raisin, or tropical flavors. For nutrition information, product reviews, and FAQs, click on the images of the products below.

RESEARCH | INNOVATION | CARDIOVASCULAR HEALTH
Omega Cookie

- 2000mg omega-3 EPA/DHA
- 5 grams fiber
- rich in calcium & vitamin D
- gluten-free
Challenge of Media Reporting on Studies
Women’s Health Initiative: One of the largest studies... one of the biggest disappointments
Low-Fat Dietary Pattern and Risk of Cardiovascular Disease
The Women’s Health Initiative Randomized Controlled Dietary Modification Trial

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Context  Multiple epidemiologic studies and some trials have linked diet with cardiovascular disease (CVD) prevention, but long-term intervention data are needed.

Objective  To test the hypothesis that a dietary intervention, intended to be low in fat and high in vegetables, fruits, and grains to reduce cancer, would reduce CVD risk.

Design, Setting, and Participants  Randomized controlled trial of 48,835 postmenopausal women aged 50 to 79 years, of diverse backgrounds and ethnicities, who participated in the Women’s Health Initiative Dietary Modification Trial. Women were randomly assigned to an intervention (19,541 [40%]) or comparison group (29,294 [60%]) in a free-living setting. Study enrollment occurred between 1993 and 1998 in 40 US clinical centers; mean follow-up in this analysis was 8.1 years.

Intervention  Intensive behavior modification in group and individual sessions designed to reduce total fat intake to 20% of calories and increase intakes of vegetables/fruits to 5 servings/d and grains to at least 6 servings/d. The comparison group received diet-related education materials.

Main Outcome Measures  Fatal and nonfatal coronary heart disease (CHD), fatal and nonfatal stroke, and CVD (composite of CHD and stroke).
Conclusions  Over a mean of 8.1 years, a dietary intervention that reduced total fat intake and increased intakes of vegetables, fruits, and grains did not significantly reduce the risk of CHD, stroke, or CVD in postmenopausal women and achieved only modest effects on CVD risk factors, suggesting that more focused diet and lifestyle interventions may be needed to improve risk factors and reduce CVD risk.

Clinical Trials Registration  ClinicalTrials.gov Identifier NCT000000611

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Low-fat diet news leads to confusion
Jonathan Bor, Frank D. Roylance and Dan Thanh Dang
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Baltimore - Confused by this week's news that a low-fat diet may not help prevent cancer and heart disease after all?
The study in last week's issue of the *Journal of the American Medical Association* surprised and puzzled many consumers who are growing weary of shifting advice about food.

"Whenever I try to pursue some nutritional strategy, it seems that there's always some new study that comes out years later reversing it," said Betty Boyd, a 32-year-old freelance writer from Baltimore.
Design

• Enrolled 48,835 post-menopausal women aged 50-79 years
• Randomized into two groups
  • Comparison (29,294)
    • Received diet-related educational materials
  • Intervention (19,541)
    • Behavior modification program to reduce total fat intake and increase fruit and vegetable intake to 5 servings/day and grains to 6 servings/day
Interpreting the study

• The incidence of heart disease was 30% lower in the comparison group than was originally expected.

• Total fat and saturated fat was not excessively high in either group at baseline.
  • total fat: 38%
  • saturated fat: 13%
Interpreting the study

- Intervention group achieved only 70% of the recommend reduction in fat intake
- At year six, there was only a 2.9% difference in saturated fat intake between the groups
Interpreting the study

- Intervention focused only on diet changes, did not consider effects of other life-style factors
- Focused on total fat reduction rather than targeted fat reduction
Recommendations

- Focus study on delivery methods of intervention rather than specific content
- Develop *apriori* secondary aims
- Have rapid response plan in place when changes occur
- Examine new recommendation for whether there is any specific change in harm or to protocol
  * cholesterol
  * omega-3
Be Your Food
Your Medicine
-Hippocrates