

*“Tell me what you eat,
and I will tell you what
you are.”*

Anthelme Brillat-Savarin
Judge, Epicure
1755 - 1826




The Problem

8.3%

Diabetes

American Diabetes Association



The Problem

1 in 3 adults
Hypertension


Centers for Disease Control and Prevention



The Problem

616,000
Heart Disease Mortality

Centers for Disease Control and Prevention



The Problem

140,000
Stroke Deaths

Centers for Disease Control and Prevention



Economic Impact – The Average Household Spend

\$4290.00
8% of total expenses

<http://www.fda.gov/oc/ohrt/ohrt081416.pdf>




Economic Impact – Heart Disease

\$818 Billion

Between 2010 - 30, the cost of medical care for heart disease (in 2008 dollar values) will rise from \$273 billion to \$818 billion

Hochstadt, et al. Forecasting the Future of Cardiovascular Disease in the United States: A Policy Statement From the American Heart Association. Circulation. January 24, 2011




Economic Impact – Diabetes

\$240+ billion

Diabetes Related Illness

Economic Cost of Diabetes in the U.S. in 2012. 2013-14. doi:10.2375/13.2012-001



The Problem

35.7%

Obesity

Centers for Disease Control and Prevention



Case Study - 2007

Mr. H is a 48 year old African-American.


There is a five year history of hypertension, diabetes and hyperlipidemia. He also has chronic active hepatitis C and is part of a randomized trial that included pioglitazone, peginterferon alpha-2* (Pegasys) and ribavirin.

During the trial he was on metoprolol tartrate, lisinopril, hydrochlorothiazide, glipizide and pravastatin. He is faithful about taking his medications and says that he really doesn't "like the idea of all this medication."

He works as a contractor, is married and does not smoke. He does not exercise but his job is "physical." He eats "on the run." He explains that he will usually stop at McDonalds for an Egg McMuffin and a coffee for breakfast. Sometimes he will eat in the cafeteria for lunch but most of the time he has a Subway turkey sub.

He will snack in between lunch and when he goes home for dinner usually on something from the vending machine like peanut butter crackers. For dinner his wife does all the cooking and they rarely eat out. She will use boxed meals like Hamburger Helper about half the time and make meals from scratch the other half.

His wife came with him to the visit.




Case Study - 2007

Initial BP = 142/88
 Height 72 inches Weight 229 lbs.
 BMI = 31.2
 Waist = 44 inches Hips 43 inches
 Waist to hip ratio = 1.023

Initial examination is otherwise normal.

Initial labs:
 Creatinine = 1.0
 Hemoglobin A1c = 6.3%
 Total Cholesterol= 141
 Triglycerides = 92
 HDL = 44
 LDL = 79



Weight Loss - State of the Art


Comparison of Weight-Loss Diets with Different Compositions of Fat, Protein, and Carbohydrates

811 overweight adults to one of four diets the targeted percentages of energy derived from:

Fat	Protein	Carbohydrates
20	15	65
20	25	55
40	15	45
40	25	35

%

(N Engl J Med 2009;360:859-73)



Weight Loss - State of the Art


Comparison of Weight-Loss Diets with Different Compositions of Fat, Protein, and Carbohydrates

811 overweight adults to one of four diets the targeted percentages of energy derived from:

Fat	Protein	Carbohydrates
20	15	65
20	25	55
40	15	45
40	25	35

%

At 6 months, participants assigned to each diet had lost an average of **6 kg**
 7% of their initial weight



Weight Loss - State of the Art

Original Investigation
 February 20, 2018

Effect of Low-Fat vs Low-Carbohydrate Diet on 12-Month Weight Loss in Overweight Adults and the Association With Genotype Pattern or Insulin Secretion
 The DIETFITS Randomized Clinical Trial

Christopher D. Gardner, PhD¹; John F. Trepanowski, PhD²; Liana C. Del Gobbo, PhD²; et al

> Author Affiliations
 JAMA. 2018;319(7):667-679. doi:10.1001/jama.2018.0245




Mediterranean Diet



Ancel Keys, PhD




Mediterranean Diet




Lyon Heart Study

Prospective study of 605 first heart attack patients
 2 groups:
 study given instruction Med Diet
 control told to follow a "prudent" diet.




Mediterranean Diet



Lyon Heart Study

Prospective study of 605 first heart attack patients
 2 groups:
 study given instruction Med Diet
 control told to follow a "prudent" diet.

Study group with a *50 - 70 %* reduction in second event




Mediterranean Diet



Adherence to a Mediterranean Diet and Survival in a Greek Population - Antonia Trichopoulos

22,000 study population
Prospective Design
Significant reduction coronary disease AND cancer



Mediterranean Diet




9 dietary components

Mediterranean Diet Score
from 0 - 9
depending on the amounts consumed daily




The Goldring Center for Culinary Medicine

Mediterranean Diet



2 point improvement
 from 5 - 7 confers a 25% reduction in death from
 all causes including heart disease **and** cancer.

25% reduction in all-cause mortality



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Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med.* 2003;348:261-269. doi:10.1056/NEJMoa025039.

Mediterranean Diet



1. Vegetables

Each additional serving of fruit and vegetables per day reduces your risk of CHD by 4% (*J Nutr* 2006;136: 2588-2593)

Male: **303 grams = 10.8 ounces**
 Female: **248 grams = 8.9 ounces**

This equates to 2-3 cups of vegetables per day.

- leafy greens
- carrots
- celery
- beets



The Goldring Center for Culinary Medicine

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med.* 2003;348:261-269. doi:10.1056/NEJMoa025039.

Mediterranean Diet



2. Legumes

Lentils, peas, peanuts, snap beans, bean pods

10K men, Eating legumes 4 times or more per week reduces the risk of heart disease by as much as 22%. (*Archives* 2001;161: 2573 - 2578)

Male: **60 grams = 2.1 ounces**
 Female: **49 grams = 1.75 ounces**

2 to 3 servings per week.

One serving is equivalent to approximately:

- 1/3 of a cup of raw beans
- 1/2 of cooked beans
- 1/4 of a cup of peanuts



The Goldring Center for Culinary Medicine

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med.* 2003;348:261-269. doi:10.1056/NEJMoa025039.

Mediterranean Diet



3. Fruits and Nuts

Male: **249 grams** = 8.9 ounces
 Female: **216 grams** = 7.7 ounces

1 to 2 servings per day.
 One serving of fruit is equivalent to:
 An orange or apple the size of a baseball
 7, 2-½ inch strawberries
 1 cup of dried fruit
 12 grapes

One serving of nuts is equivalent to
 24 almonds
 15 pecan halves
 14 walnut halves
 18 cashews

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med.* 2003;348:261-269. doi:10.1056/NEJMoa025039.



Mediterranean Diet



4. Cereals & Whole Grains


Male: **291 grams** = 10.4 ounces
 Female: **248 grams** = 8.9 ounces

One serving is equivalent to:
 1 slice of sandwich bread
 1/4 of a cup of uncooked grains and cereals (rice, bulgur, millet, oatmeal, quinoa, polenta)
 1/2 of cooked grains and cereals

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med.* 2003;348:261-269. doi:10.1056/NEJMoa025039.



Mediterranean Diet




5. Fish

Male: **26 grams** = 1 ounce
 Female: **21 grams** = 0.75 ounces

*This is greater than or equal to about 2 servings per week.

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med.* 2003;348:261-269. doi:10.1056/NEJMoa025039.



Mediterranean Diet



6. Oils / Fats


1:1.6 grams = 10 sat : 16 unsaturated

One serving of fish is equivalent to
 1 teaspoon of any vegetable oil
 3 Tablespoons of sunflower seeds
 47 pumpkin seeds
 1 teaspoon of butter

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. *N Engl J Med.* 2003;348:261-269. doi:10.1056/NEJMoa025039.



Mediterranean Diet



7. Dairy


Men with the largest increase in total dairy intake actually gained slightly more weight over the course of the 12-year study than those who decreased their dairy intake the most. (AJCN 2006 83: 559 - 66)

Male: **201 grams = 7.2 ounces**
 Female: **194 grams = 6.9 ounces**


1 serving is equivalent to:

- <1 cup of milk
- 1/4 cup of grated cheese
- 1 cup yogurt

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. N Engl J Med. 2003;348:261-2599-2608. doi:10.1056/NEJMa025039.



Mediterranean Diet




8. Meats

Male: **109 grams = 3.9 ounces**
 Female: **91 grams = 3.25 ounces**

The median consumption was about 4 ounces of meat per day.

Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. N Engl J Med. 2003;348:261-2599-2608. doi:10.1056/NEJMa025039.



Mediterranean Diet



9. Alcohol

Male: 10 - 50 grams =
 ~ 2 drinks

Female: 5 - 25 grams =
 ~ 1 drink

One drink is equivalent to:

- 12 ounces of regular beer (about 5% alcohol)
- 5 ounces of wine (about 12% alcohol)
- 1.5 ounces of distilled spirits (about 40% alcohol)


Trichopoulos A, Bamia C, Trichopoulos D. Adherence to a Mediterranean diet and survival in a Greek population. N Engl J Med. 2003;348:261-2599-2608. doi:10.1056/NEJMa025039.



Mediterranean Diet and Diabetes

Effects of a Mediterranean-Style Diet on the Need for Antihyperglycemic Drug Therapy in Patients With Newly Diagnosed Type 2 Diabetes
 (Ann Intern Med. 2009;151:306-314)

4 years, 215 participants – *Prospective*
 New onset diabetics
 Endpoint: Medication




Mediterranean Diet and Diabetes

Effects of a Mediterranean-Style Diet on the Need for Antihyperglycemic Drug Therapy in Patients With Newly Diagnosed Type 2 Diabetes
(Ann Intern Med. 2009;151:306-314)

4 years, 215 participants – **Prospective**
 New onset diabetics
 Endpoint: Medication

After 4 years only **44%** in the study group needed medication
70% of the standard low-fat diet needed medication

26% difference with diet alone



Mediterranean Diet and Western Style Diet


Mediterranean Dietary Pattern and Prediction of All-Cause Mortality in a US Population *Results From the NIH-AARP Diet and Health Study (Arch Intern Med. 2007;167(22):2461-2468)*

In 1995 - 380,000 members of the AARP – **Prospective**
 No history of cancer, heart disease, diabetes, chronic disease.
 Five years of follow-up
 Causes of death in the over 12,000 subjects who had died during
 Correlated with each subject's dietary score.

For men Those with higher levels of the Mediterranean Diet score (7-9) were 23% less likely to die from any cause, including cancer and heart disease, than those whose diets received the lowest scores (0-3).

An increase of just one point in the dietary score meant an additional 5% reduction in risk of death from all causes

Women saw a 14% lower risk of death from cancer.



It's really rather simple...

Two Points!

Short, simple messages, repeated over and over.



Case Study – 2013

BP = 142/88
 Height 72 inches Weight 226 lbs.
 BMI = 30.65

Medications: Metformin

Labs:
 Creatinine = 1.1
 Hemoglobin A1c = 5.4%
 Total Cholesterol= 131
 Triglycerides = 182
 HDL = 42
 LDL = 57



Physicians as Salespeople



Talk the Talk

Kremer MW, Chioda SG and FC Bull. Arch Fam Med. 2000;9:426-433.

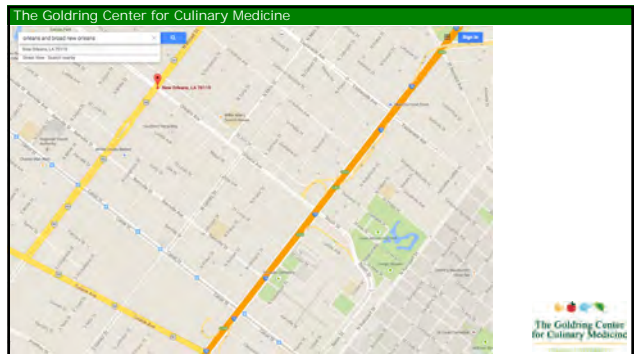
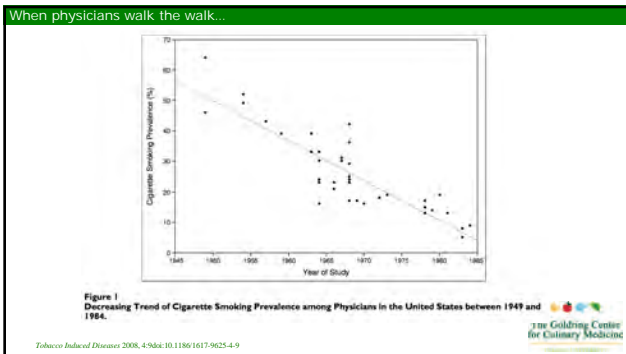


Physicians Habits



Walk the Walk

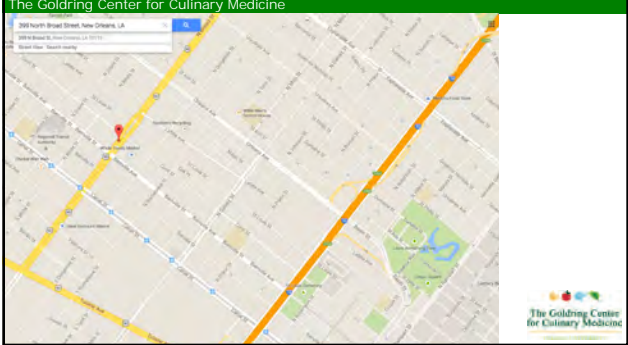
Frank E, Bryon J and L. Elin. Arch Fam Med. 2000;9:287-290.

Ruth U. Fertel / Tulane Community Health Center



The Goldring Center for Culinary Medicine



The Goldring Center for Culinary Medicine



The Goldring Center for Culinary Medicine



1. Community Programming



Free Cooking Classes

- 6 module Adult Beginner Series
- 6 module Adult Beginner Series (Spanish)
- 6 module Adult Intermediate Series
- 6 module Kids Series
- 6 module Family class
- 6 module Senior Series
- 3 module Expectant Mother Series
- One week Kids Summer Camp (ages 4 to 8)



2. Medical Student Programming

Culinary medicine elective (M1 and M2 students)

- 8 class culinary medicine elective

Required sessions for M1 and M2 students

- 3 modules incorporated into FIM
- Introduce students to nutrition, cooking technique and how to communicate with patients
- Simulation-Based Medical Education with Deliberate Practice (SBME-DP)

Culinary medicine rotation (M3 and M4 students)

- 4 week rotation, offered to Tulane and visiting students
- Leadership of community classes.
- Curriculum building
- Help guide the cooking classes for 1st year students and community members

Service Learning Programming

Johnson and Wales rotation

Research Rotation (M4 and MD/MPH Candidates)



3. Culinary School Collaborations

Johnson & Wales University College of Culinary Arts
 Northwest Arkansas Community College
 Mississippi Gulf Coast Community College
 New Orleans Center for Creative Arts
 Delgado Community College
 Grand Rapids Community College



4. Professional Programming

Continuing Medical Education

- Modules offered throughout the year at GCCM and partner-schools
- 25 Modules – 4 -5 hours CME (MD, DO, NP, PA, RD, CDE, Pharmacist, Nursing)
- In conjunction with conferences (OBGYN, ASN, Cardiometabolic Risk Summit)


Certified Culinary Medicine Specialist

- Integrate nutritional counseling to supplement pharmacological treatment
- Educate patients about weight loss and weight management
- Develop practical examination-room dialogues that inspire behavioral change
- 60 Credit Hours – combination of hands-on, online, readings, quizzes
- 100 question certification examination
- 190 enrolled – 20 certified




5. Research: CHOP - Medical Students

	Year 1
Osteoporosis prevention and treatment.	
Assessing calories and fat per food label.	
Modest weight loss for diabetes.	
Calories per gram of protein, carbohydrate and fat, and basic metabolic roles.	
Antioxidant-rich produce while shopping.	
Overall benefits of aerobic exercise.	
Role of water and hydration in health, and fluid needs based on activity & age.	
Calculation of body mass index (BMI) and waist-to-hip ratio based on gender.	
Omega-3 and -6 fatty acids in heart health & examples of dietary oils/fats.	
Reported health risks of high protein/high fat diets (e.g. Atkins).	
Serving size from MyPlate.	
Moderate alcohol consumption.	
Eating disorders.	
Role of dietary cholesterol and saturated fat in elevating blood lipids.	
Recommended diabetic dietary patterns.	
Weight loss in overweight or obese patients.	
Health impact of a very low fat diet.	
Understanding of Mediterranean diet principles and its health effects.	
Understanding of DASH diet and its health effects.	
Potential advantages and disadvantages of a vegetarian diet.	
Role of saturated, polyunsaturated and monounsaturated fats in diet.	
The impact of Celiac disease and strategies for a patient's diet.	
The prevalence of food allergies strategies for a patient's diet.	
The role glycemic index and load in dietary management.	
Role of fiber in disease prevention and examples of ingredients.	




5. Research: CHOP - Medical Students

	Year 1	Year 2
Osteoporosis prevention and treatment.		
Assessing calories and fat per food label.		
Modest weight loss for diabetes.		
Calories per gram of protein, carbohydrate and fat, and basic metabolic roles.		
Antioxidant-rich produce while shopping.		
Overall benefits of aerobic exercise.		
Role of water and hydration in health, and fluid needs based on activity & age.		
Calculation of body mass index (BMI) and waist-to-hip ratio based on gender.		
Omega-3 and -6 fatty acids in heart health & examples of dietary oils/fats.		
Reported health risks of high protein/high fat diets (e.g. Atkins).		
Serving size from MyPlate.		
Moderate alcohol consumption.		
Eating disorders.		
Role of dietary cholesterol and saturated fat in elevating blood lipids.		
Recommended diabetic dietary patterns.		
Weight loss in overweight or obese patients.		
Health impact of a very low fat diet.		
Understanding of Mediterranean diet principles and its health effects.		
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Role of saturated, polyunsaturated and monounsaturated fats in diet.		
The impact of Celiac disease and strategies for a patient's diet.		
The prevalence of food allergies strategies for a patient's diet.		
The role glycemic index and load in dietary management.		
Role of fiber in disease prevention and examples of ingredients.		




5. Research: CHOP - Medical Students

	Year 1	Year 2	Year 3
Osteoporosis prevention and treatment.			
Assessing calories and fat per food label.			
Modest weight loss for diabetes.			
Calories per gram of protein, carbohydrate and fat, and basic metabolic roles.			
Antioxidant-rich produce while shopping.			
Overall benefits of aerobic exercise.			
Role of water and hydration in health, and fluid needs based on activity & age.			
Calculation of body mass index (BMI) and waist-to-hip ratio based on gender.			
Omega-3 and -6 fatty acids in heart health & examples of dietary oils/fats.			
Reported health risks of high protein/high fat diets (e.g. Atkins).			
Serving size from MyPlate.			
Moderate alcohol consumption.			
Eating disorders.			
Role of dietary cholesterol and saturated fat in elevating blood lipids.			
Recommended diabetic dietary patterns.			
Weight loss in overweight or obese patients.			
Health impact of a very low fat diet.			
Understanding of Mediterranean diet principles and its health effects.			
Understanding of DASH diet and its health effects.			
Potential advantages and disadvantages of a vegetarian diet.			
Role of saturated, polyunsaturated and monounsaturated fats in diet.			
The impact of Celiac disease and strategies for a patient's diet.			
The prevalence of food allergies strategies for a patient's diet.			
The role glycemic index and load in dietary management.			
Role of fiber in disease prevention and examples of ingredients.			



5. Research: CHOP - Medical Students

	Year 1	Year 2	Year 3	Year 4
Osteoporosis prevention and treatment.				
Assessing calories and fat per food label.				
Modest weight loss for diabetes.				
Calories per gram of protein, carbohydrate and fat, and basic metabolic roles.				
Antioxidant-rich produce while shopping.				
Overall benefits of aerobic exercise.				
Role of water and hydration in health, and fluid needs based on activity & age.				
Calculation of body mass index (BMI) and waist-to-hip ratio based on gender.				
Omega-3 and -6 fatty acids in heart health & examples of dietary oils/fats.				
Reported health risks of high protein/high fat diets (e.g. Atkins).				
Serving size from MyPlate.				
Moderate alcohol consumption.				
Eating disorders.				
Role of dietary cholesterol and saturated fat in elevating blood lipids.				
Recommended diabetic dietary patterns.				
Weight loss in overweight or obese patients.				
Health impact of a very low fat diet.				
Understanding of Mediterranean diet principles and its health effects.				
Understanding of DASH diet and its health effects.				
Potential advantages and disadvantages of a vegetarian diet.				
Role of saturated, polyunsaturated and monounsaturated fats in diet.				
The impact of Celiac disease and strategies for a patient's diet.				
The prevalence of food allergies strategies for a patient's diet.				
The role glycemic index and load in dietary management.				
Role of fiber in disease prevention and examples of ingredients.				



5. Research: CHOP - Medical Students

	Year 1	Year 2	Year 3	Year 4	Year 5
Osteoporosis prevention and treatment.					3.248
Assessing calories and fat per food label.					1.91
Modest weight loss for diabetes.					2.38
Calories per gram of protein, carbohydrate and fat, and basic metabolic roles.					2.51
Antioxidant-rich produce while shopping.					4.59
Overall benefits of aerobic exercise.					3.69
Role of water and hydration in health, and fluid needs based on activity & age.					2.42
Calculation of body mass index (BMI) and waist-to-hip ratio based on gender.					1.51
Omega-3 and 4 fatty acids in heart health & examples of dietary oils/fats.					2.40
Reported health risks of high protein/high fat diets (e.g. Atkins).					3.10
Serving size from MyPlate.					1.99
Moderate alcohol consumption.					1.98
Eating disorders.					2.10
Role of dietary cholesterol and saturated fat in elevating blood lipids.					1.60
Recommended diabetic dietary patterns.					2.07
Weight loss in overweight or obese patients.					4.55
Health impact of a very low fat diet.					2.51
Understanding of Mediterranean diet principles and its health effects.					2.47
Understanding of DASH diet and its health effects.					21.40
Potential advantages and disadvantages of a vegetarian diet.					14.32
Role of saturated, polyunsaturated and monounsaturated fats in diet.					2.10
The impact of Celiac disease and strategies for a patient's diet.					3.10
The prevalence of food allergies strategies for a patient's diet.					5.64
The role glycemic index and load in dietary management.					4.38
Role of fiber in disease prevention and examples of ingredients.					17.83
					5.05

The Goldring Center for Culinary Medicine

CHOP – Community

	O.R.	p Value
High/Medium vs. Low	1.07	0.772
Olive Oil	1.50	0.074
Fruit	0.65	0.110
Vegetables	1.35	0.141
Vegetables/Fruits	0.48	0.044
Legumes	2.89	<0.001
Seafood	0.78	0.259
Alcohol	1.17	0.627
Meat	3.65	0.027
Whole Grains	0.76	0.321
Cooking Takes Excessive Time	0.60	0.010
Eating Healthier Can Prevent Disease	1.46	0.324
Cooking Class Can Improve Health	1.20	0.648
Can Find Healthy Foods	1.44	0.297
More likely to cook > 4 days per week	1.48	0.037
More likely to use leftovers	1.46	0.100
Plan Meals	1.43	0.132
Use Nutrition Labels	1.25	0.253
Use MyPlate	1.47	0.288
Exercise	3.09	<0.001

The Goldring Center for Culinary Medicine

CHOP – Community

	O.R.	p Value	O.R.	p Value
High/Medium vs. Low	1.07	0.772	2.28	0.018
Olive Oil	1.50	0.074	0.47	0.030
Fruit	0.65	0.110	2.31	0.009
Vegetables	1.35	0.141	1.34	0.430
Vegetables/Fruits	0.49	0.044	2.64	0.008
Legumes	2.89	<0.001	1.20	0.564
Seafood	0.78	0.259	0.66	0.003
Alcohol	1.17	0.627	-0.38	0.037
Meat	3.65	0.027	0.05	0.788
Whole Grains	0.76	0.321	0.61	0.021
Cooking Takes Excessive Time	0.60	0.010	0.41	0.012
Eating Healthier Can Prevent Disease	1.46	0.324	1.68	0.254
Cooking Class Can Improve Health	1.20	0.648	1.00	0.446
Can Find Healthy Foods	1.44	0.297	1.95	0.091
More likely to cook > 4 days per week	1.48	0.037	1.47	0.064
More likely to use leftovers	1.46	0.100	3.67	0.094
Plan Meals	1.43	0.132	1.83	0.020
Use Nutrition Labels	1.25	0.253	2.27	0.012
Use MyPlate	1.47	0.288	2.38	0.031
Exercise	3.09	<0.001	3.98	<0.001

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5. Research: CHOP – Family Series

	O.R.	p Value	O.R.
High/Medium vs. Low	2.93	4.95	<0.001
Olive Oil Pt.	1.49	2.86	0.237
Fruit Pt.	4.54	8.20	<0.001
Vegetables Pt.	2.33	3.80	0.001
Vegetables/Fruits Pt.	5.48	12.81	<0.001
Legumes Pt.	1.35	2.05	0.161
Seafood Pt.	1.33	2.04	0.194
Alcohol Pt.	1.10	2.57	0.831
Red Meat Pt.	1.13	2.44	0.754
Whole Grains Pt.	1.65	2.38	0.007

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*“Food is our
common ground,
a universal
experience.”*

James Beard

