



**Increased Vegetable Consumption,
Affordability, and Cultural Traditions: More
Positive Public Health Benefits for Pasta**

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The affordability of Pasta

Economics...



Socioeconomic variations in women's diets: what is the role of perceptions of the local food environment?

V Inglis, K Ball, D Crawford

J Epidemiol Community Health 2008;62:191-197


Results: Once perceived environmental variables were considered, the associations between SEP and diet were weak and non-significant, suggesting that socioeconomic differences in diet were almost wholly explained by perceptions of food availability, accessibility and affordability.



A program made by the Portuguese Association of Nutritionists, aiming to tackle the economic crisis by suggesting nutrient-rich and affordable meals.

Seven recipes, each of them focused in one nutrient, costing 1€ per person;
One was a pasta meal.

Three additional suggestions for the reuse of leftovers;
Two were pasta meals.



**Pasta, vegetable consumption
and health.**

Dietary patterns among older Europeans: the EPIC-Elderly study

Christina Bamia¹, Philippos Orfanos¹, Pietro Ferrari², Kim Overvad³, Heidi H. Hundborg⁴, Anne Tjønneland⁵, Anja Olsen⁵, Emmanuelle Kesse⁶, Marie-Christine Boutron-Ruault⁷, Françoise Clavel-Chapelon⁶, Gabriele Nagel⁸, Paolo Boffetta^{2,8}, Heiner Boeing⁹, Kurt Hoffmann⁹, Dimitrios Trichopoulos^{1,10}, Nikos Baibas¹, Theodora Psaltopoulou¹, Teresa Norat², Nadia Slimani², Domenico Palli¹¹, Vittorio Krogh¹², Salvatore Panico¹³, Rosario Tumino¹⁴, Carlotta Sacerdote¹⁵, H. B. Bueno-de-Mesquita¹⁶, Marga C. Ocké¹⁶, Petra H. Peeters¹⁷, Caroline T. van Rossum¹⁶, José-Ramón Quirós¹⁸, Maria-José Sánchez¹⁹, Carmen Navarro²⁰, Aurelio Barricarte²¹, Miren Dorronsoro²², Göran Berglund²³, Elisabet Wirfält²³, Göran Hallmans²⁴, Ingegerd Johansson²⁴, Sheila Bingham²⁵, Kay-Tee Khaw²⁶, Elizabeth A. Spencer²⁷, Andrew W. Roddam²⁷, Elio Riboli² and Antonia Trichopoulou^{1*}

Fruits	Fresh fruits, nuts, seeds, stewed fruit, mixed fruits and olives
Potatoes	Potatoes and potato products, except potato crisps
Legumes	Dried peas, lentils and beans, except soya
Cereals and cereal products	
Pasta, rice and other grain	Pasta, rice, other grain
Bread	Bread, crisp bread, rusks
Other cereals	Flour, flakes, starches, breakfast cereals, salty and aperitif biscuits, dough and pastry (puff, short-crust, pizza)
Cakes	Cakes, pies, pastries puddings (non-milk-based), dry cakes, biscuits
Sugar and confectionery	Sugar, jam, marmalade, honey, chocolate and products, candy bars, confetti/flakes, drops, boiled sweets, chewing gum, nougat, cereal bars, marzipan, syrup, water ice
Added fats	
Vegetable oils	Vegetable oils
Margarine	Margarines, mixed dairy margarines, baking fat
Butter	Butter, herbal butter, butter concentrate
Dairy products	Liquid milk (e.g. cow's, goat's), processed milk (condensed, dried), whey, milk beverages, yoghurt, cheeses, cream desserts, puddings (milk-based), dairy creams, ice cream
Meat and products	Beef, veal, pork, lamb/mutton, horse, goat, poultry, game and offal, processed meat from red meat or poultry (e.g. ham, bacon, sausages, pâtés, etc.)
Eggs	Eggs (e.g. chicken, turkey, duck, goose, quail) and egg products, except if used for bread and bakery products
Fish and shellfish	Fish and fish products, crustaceans and molluscs
Non-alcoholic beverages	Tea (with and without caffeine); iced tea: infusion, powder, instant beverage; coffee (with and without caffeine): infusion, powder, instant beverage. Carbonated/soft/isotonic drinks, diluted syrups. Fruit and/or vegetable juices and nectars, freshly squeezed juices: pure or diluted with water
Alcoholic beverages	Expressed as ethanol
Wine	

Table 3. Principal components and corresponding scoring coefficients for dietary variables in the EPIC-Elderly population (From The EPIC-Elderly study)

Principal components	Positive scoring coefficients	Negative scoring coefficients	Variance explained (%)
Principal component 1 (PC1) 'Vegetable-based' diet	Vegetable oils (0.46) Fruits (0.34) Pasta, rice and other grain (0.34) Vegetables (0.33) Legumes (0.25)	Non alcoholic beverages (-0.31) Potatoes (-0.27) Margarine (-0.24)	14.6
Principal component 2 (PC2) 'Sweet- and fat-dominated' diet	Other cereals (0.33) Cakes (0.32) Condiments & sauces (0.29) Margarine (0.28) Sugar and confectionery (0.22) Dairy products (0.20)	Meat (-0.36) Bread (-0.28) Other alcoholic beverages (-0.26) Wine (-0.25) Eggs (-0.20)	9.7

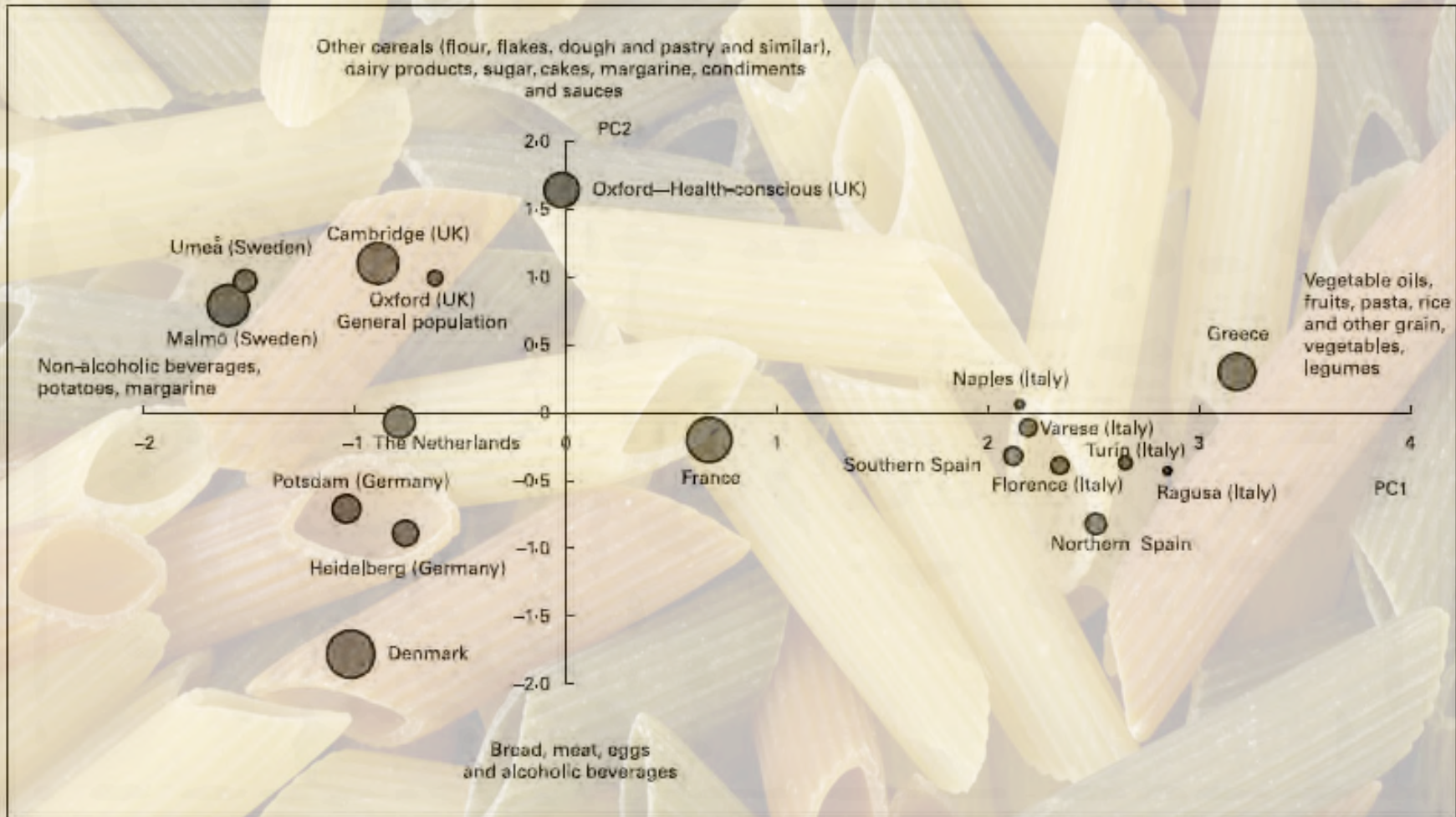


Fig. 1. Mean score of principal component 1 (PC1) and principal component 2 (PC2) by participating centre. (●) denote centre-specific mean scores, the size of the circles being proportional to the size of the respective cohort (From The EPIC-Elderly study).

Association between dietary patterns and plasma biomarkers of obesity and cardiovascular disease risk¹⁻³

Teresa T Fung, Eric B Rimm, Donna Spiegelman, Nader Rifai, Geoffrey H Tofler, Walter C Willett, and Frank B Hu

Am J Clin Nutr 2001;73:61-7.

TABLE 3

Age- and energy-adjusted mean biomarker values by quintile of prudent and Western diet scores in 1994¹

Biomarker	Prudent diet (factor 1)				Western diet (factor 2)			
	Q1: -1.17 ²	Q3: -0.15	Q5: 1.56	<i>P</i> for trend	Q1: -1.16	Q3: -1.14	Q5: 1.49	<i>P</i> for trend
Cholesterol (mmol/L)	6.3 ± 0.1	6.5 ± 0.1	6.4 ± 0.1	0.64	6.1 ± 0.1	6.5 ± 0.1	6.5 ± 0.1	0.12
HDL cholesterol (mmol/L)	1.5 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	0.81	1.5 ± 0.1	1.6 ± 0.1	1.6 ± 0.1	0.74
LDL cholesterol (mmol/L)	3.8 ± 0.1	3.9 ± 0.1	3.9 ± 0.1	0.63	3.7 ± 0.1	4.0 ± 0.1	3.8 ± 0.1	0.29
Total cholesterol:HDL cholesterol	4.3 ± 0.1	4.2 ± 0.1	4.3 ± 0.1	0.63	4.4 ± 0.1	4.3 ± 0.1	4.3 ± 0.1	0.94
Triacylglycerols (mmol/L) ³	1.7 ± 0.2	1.9 ± 0.2	2.0 ± 0.2	0.56	2.0 ± 0.2	2.3 ± 0.2	1.5 ± 0.2	0.14
Apolipoprotein A-I (g/L)	1.5 ± 0.03	1.5 ± 0.03	1.5 ± 0.03	0.65	1.5 ± 0.03	1.6 ± 0.03	1.6 ± 0.03	0.03
Lipoprotein(a) (μmol/L)	1.0 ± 0.2	1.1 ± 0.1	1.4 ± 0.2	0.31	1.4 ± 0.2	1.0 ± 0.1	1.0 ± 0.2	0.03
Fibrinogen (μmol/L)	5.5 ± 0.01	5.5 ± 0.01	5.4 ± 0.01	0.61	5.4 ± 0.01	5.5 ± 0.01	5.5 ± 0.02	0.06
von Willebrand factor	1.51 ± 0.07	1.48 ± 0.06	1.52 ± 0.07	0.48	1.45 ± 0.07	1.54 ± 0.06	1.54 ± 0.07	0.44
Factor VII antigen	1.01 ± 0.012	0.99 ± 0.011	0.98 ± 0.012	0.20	0.98 ± 0.01	1.02 ± 0.01	0.99 ± 0.01	0.07
tPA antigen (ng/L)	129 ± 5	120 ± 5	110 ± 5	0.13	99 ± 5	120 ± 5	140 ± 5	<0.0001
Insulin (pmol/L) ³	62.9 ± 7.3	70.7 ± 7.0	90.7 ± 7.9	0.54	82.8 ± 7.7	70.8 ± 7.0	63.5 ± 8.1	0.21
C-peptide (nmol/L) ³	0.52 ± 0.05	0.65 ± 0.05	0.82 ± 0.06	0.65	0.78 ± 0.05	0.65 ± 0.05	0.54 ± 0.06	0.29
Glycated hemoglobin	0.057 ± 0.001	0.057 ± 0.001	0.058 ± 0.001	0.57	0.057 ± 0.001	0.058 ± 0.001	0.058 ± 0.001	0.76
Leptin (ng/L)	6741 ± 504	6310 ± 482	6431 ± 509	0.75	5277 ± 487	6331 ± 472	8941 ± 525	<0.0001
C-reactive protein (mg/L)	2.4 ± 0.3	1.6 ± 0.3	1.8 ± 0.3	0.17	1.7 ± 0.3	1.9 ± 0.3	2.5 ± 0.3	0.04
Homocysteine (μmol/L)	16.5 ± 0.6	14.7 ± 0.5	14.0 ± 0.6	0.03	13.9 ± 0.6	15.4 ± 0.5	16.8 ± 0.6	0.004
Folate (nmol/L)	18.4 ± 0.8	19.3 ± 0.8	20.3 ± 0.8	0.34	21.4 ± 0.8	18.3 ± 0.7	17.2 ± 0.8	0.007

¹ $\bar{x} \pm SE$. tPA, tissue-type plasminogen activator.

²Quintile of diet score (1, 3, or 5) and median score.

³Values for those who had fasted <6 h were excluded.

J. Nutr. 137: 399–406, 2007.

The Journal of Nutrition
Nutritional Epidemiology

Dietary Patterns in Adolescence Are Related to Adiposity in Young Adulthood in Black and White Females^{1,2}

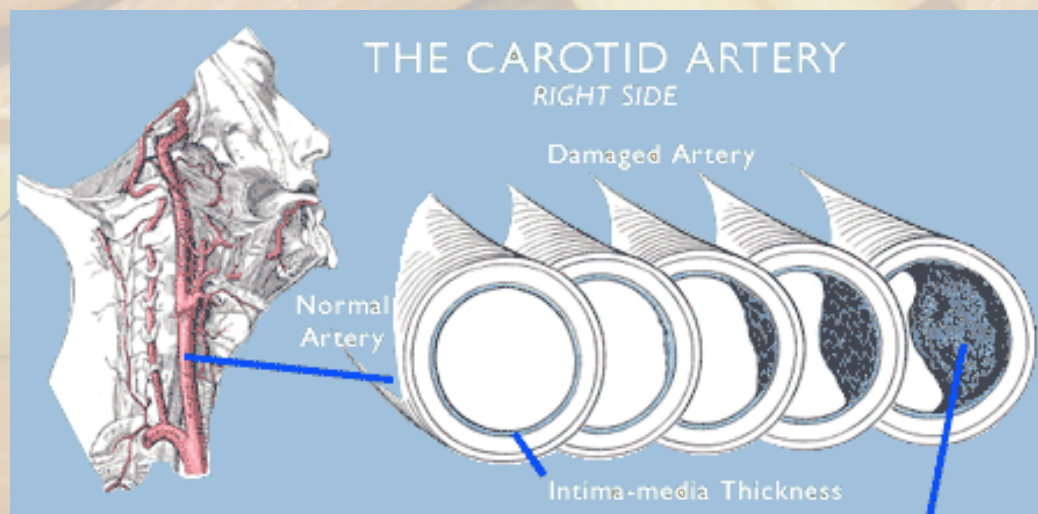
Lorrene D. Ritchie,^{3*} Phil Spector,³ Mary J. Stevens,⁴ Marcia M. Schmidt,⁵ George B. Schreiber,⁶ Ruth H. Striegel-Moore,⁷ May-Choo Wang,³ and Patricia B. Crawford³

“Healthy pattern, followed by 12% of white girls and characterized by a high intake of fruits, vegetables, dairy, grains without added fats, mixed dishes and soups, and a low intake of sweetened drinks, other sweets, fried foods, burgers, and pizza, was related to more favorable nutrient intakes and a smaller increase in waist circumference.”

Food intake patterns associated with carotid artery atherosclerosis in the Insulin Resistance Atherosclerosis Study

Angela D. Liese^{1*}, Michele Nichols¹, Denise Hodo¹, Philip B. Mellen², Mandy Schulz³, David C. Goff Jr⁴ and Ralph B. D'Agostino Jr⁴

variables and the RRR method. With increasing quartile of this food pattern, intake of low-fibre bread and cereal, red and processed meat, cottage cheese, tomato foods, regular soft drinks and sweetened beverages increased and intake of wine, rice and **pasta**, meal replacements and poultry decreased.



ORIGINAL ARTICLE

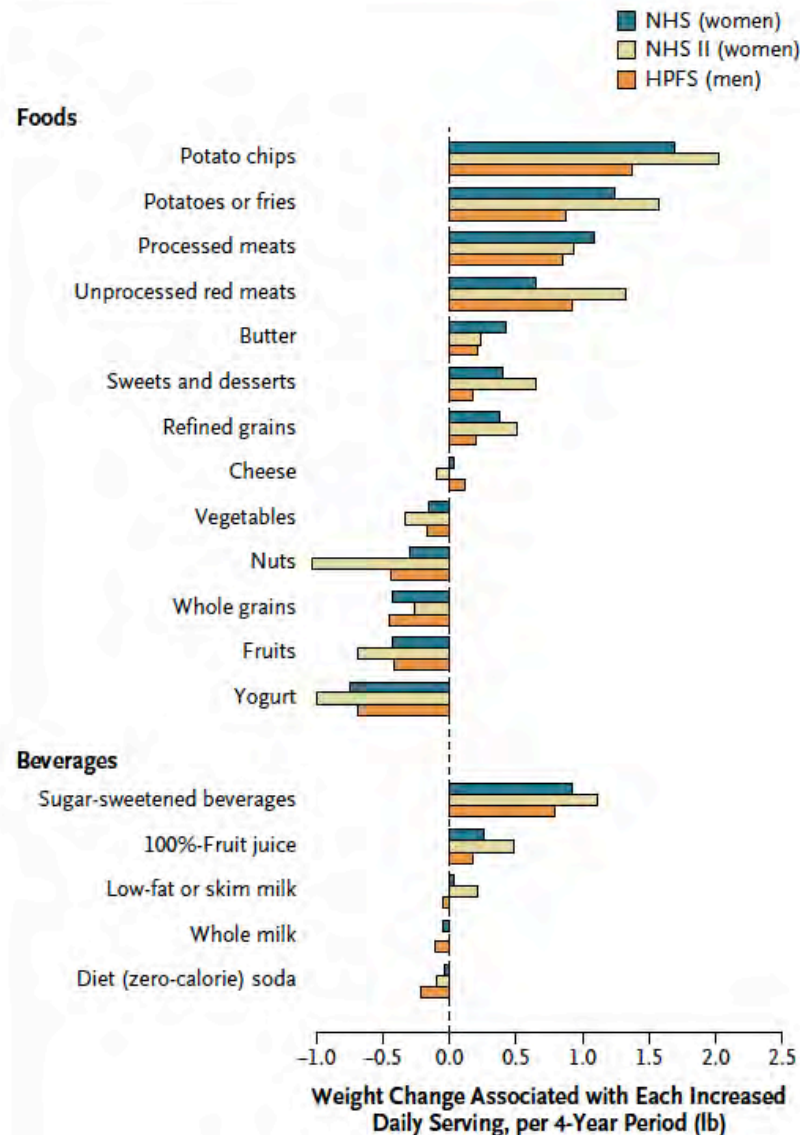
Changes in Diet and Lifestyle and Long-Term Weight Gain in Women and Men

Dariusz Mozaffarian, M.D., Dr.P.H., Tao Hao, M.P.H., Eric B. Rimm, Sc.D.,
Walter C. Willett, M.D., Dr.P.H., and Frank B. Hu, M.D., Ph.D.

N Engl J Med 2011;364:2392-404.

Figure 1. Relationships between Changes in Food and Beverage Consumption and Weight Changes Every 4 Years, According to Study Cohort.

Study participants included 50,422 women in the Nurses' Health Study (NHS), followed for 20 years (1986 to 2006); 47,898 women in the Nurses' Health Study II (NHS II), followed for 12 years (1991 to 2003); and 22,557 men in the Health Professionals Follow-up Study (HPFS), followed for 20 years (1986 to 2006). Weight changes are reported for each increase in the daily serving of the food or beverage; decreased intake would be associated with the inverse weight changes. There was little evidence of a significant interaction between diet and physical activity ($P > 0.10$ for the interaction in each cohort). All weight changes were adjusted simultaneously for age, baseline body-mass index, sleep duration, and changes in smoking status, physical activity, television watching, alcohol use, and all of the dietary factors shown. The P value is less than 0.001 for all dietary factors with the exception of butter in the NHS II, cheese in the NHS and NHS II, low-fat or skim milk in the NHS and HPFS, diet soda in the NHS, and whole-fat milk in all three cohorts.



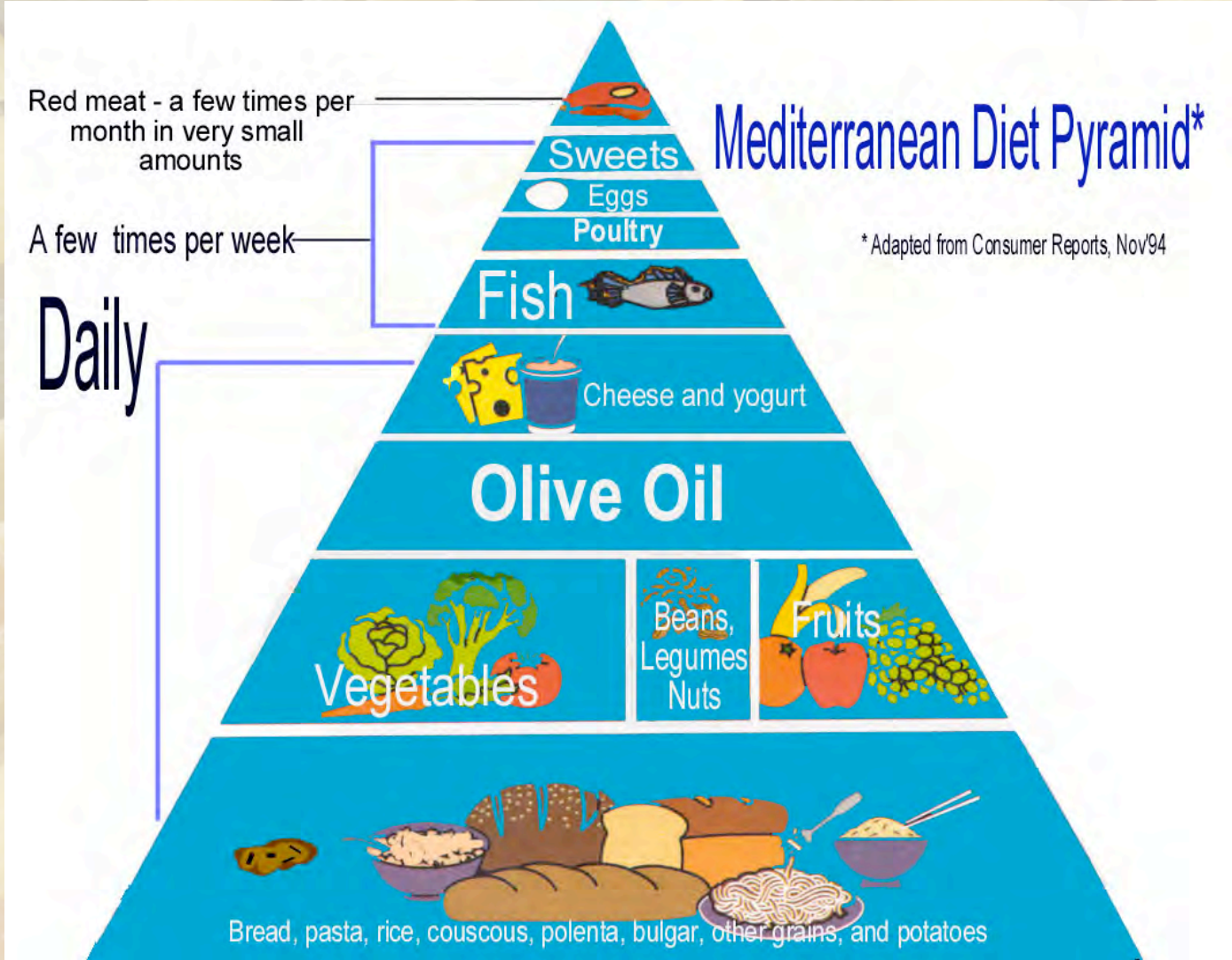
Association between major patterns of dietary intake and weight status in adolescents

Gretchen J. Cutler^{1*}, Andrew Flood², Peter J. Hannan², Joanne L. Slavin³
and Dianne Neumark-Sztainer²

Study results differed by sex, and overall showed little support for the study hypotheses that higher adherence to dietary patterns characterised by vegetables and fruits would be associated with a lower risk of being overweight or obese, and that the opposite would be true for patterns characterised by snack foods and fast food.



Pasta worldwide



Daily Beverage
Recommendations:

6 Glasses of Water or Tea



Sake, Wine,
or Beer in
moderation



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La Pirámide de La Dieta Latinoamericana

Una Propuesta Contemporánea a una Sana y Tradicional Dieta Latina

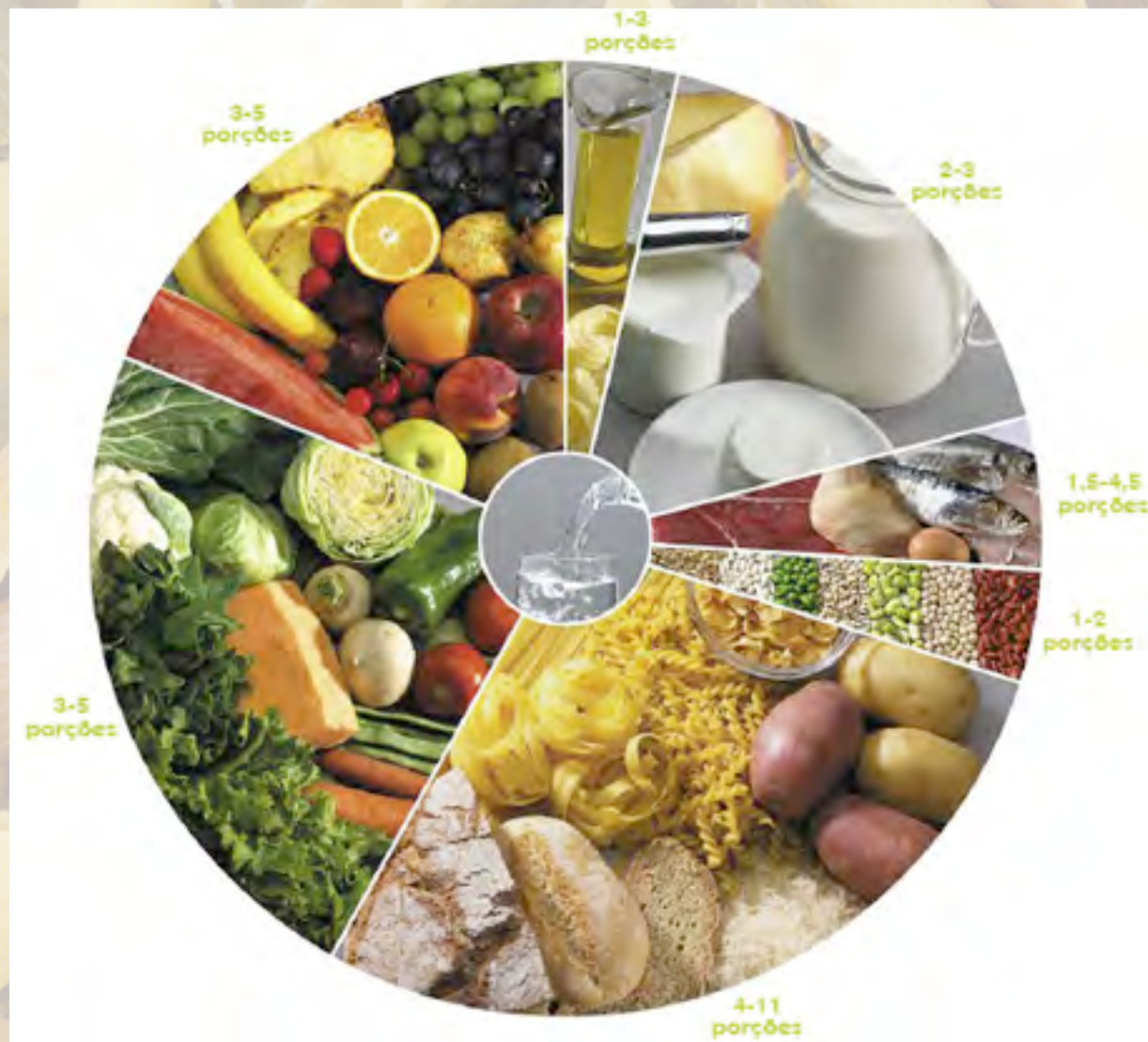
Latin American Diet Pyramid

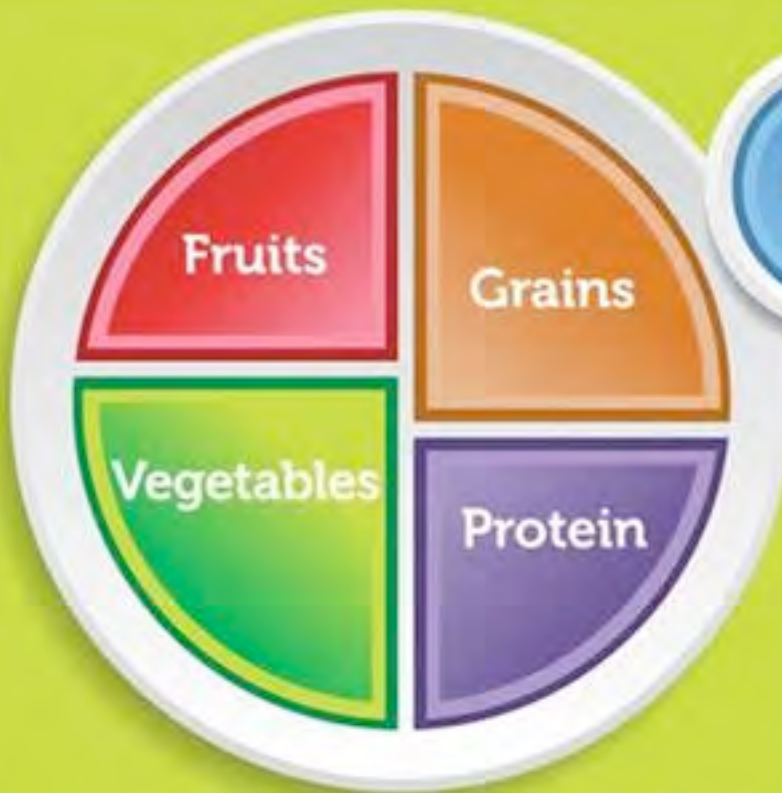
A Contemporary Approach to the Healthy and Traditional Latino Diet



Illustration by George Middleton

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In conclusion:

- Pasta is an affordable food for most of the world's population;
- Pasta meals are present in many regions of our planet as part of their traditional diets;
- Scientific data suggests that eating pasta is associated with healthier food patterns, that also include a higher amount of vegetables and legumes;
- Promoting pasta meals may yield long term health improvements in populations with more “Westernized” food patterns.
- Whole grain pasta may provide even better nutritional profiles to pasta meals