

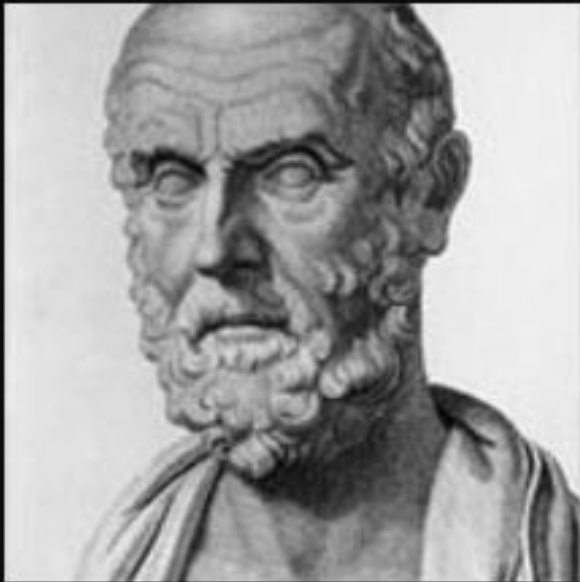
*The food challenge: the Mediterranean Diet and the health of  
Mediterranean people*

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# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*



# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*



Even when all is known, the care of a man is not yet complete, because eating alone will not keep a man well; he must also take exercise. For food and exercise, while possessing opposite qualities, yet work together to produce health.

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

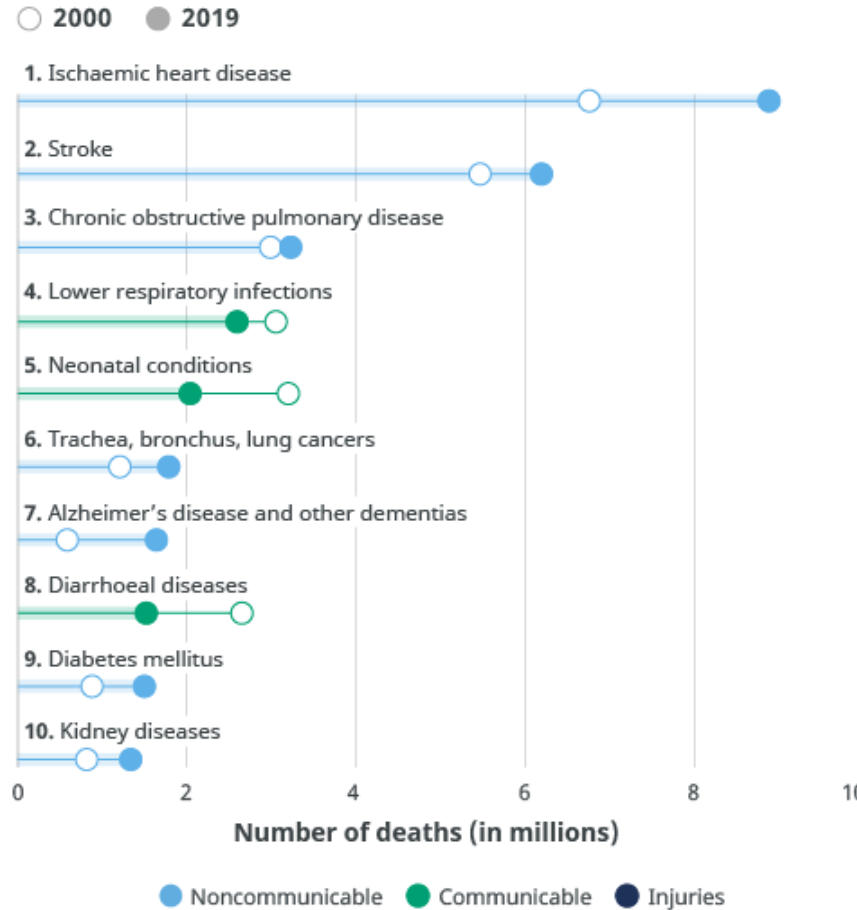


# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

The top 10 causes of death

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

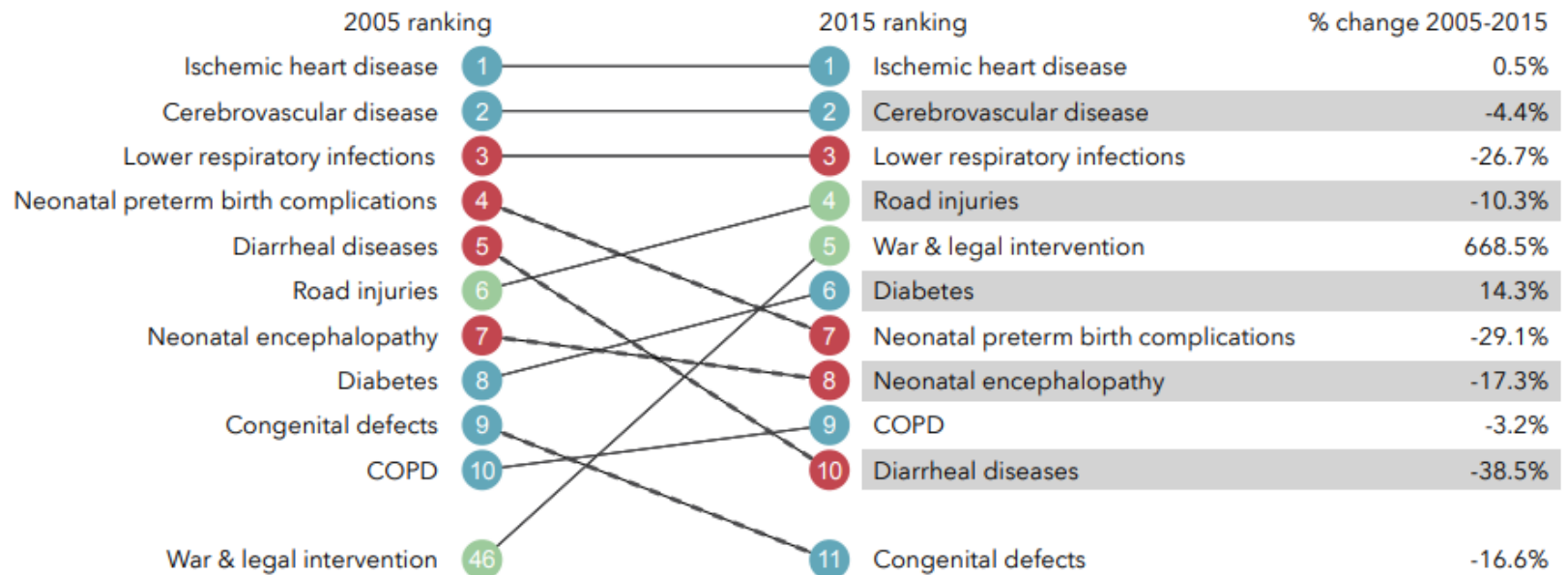

 World Health Organization
 Health Topics ▾
Countries ▾
Newsroom ▾



World

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

## What causes the most deaths?



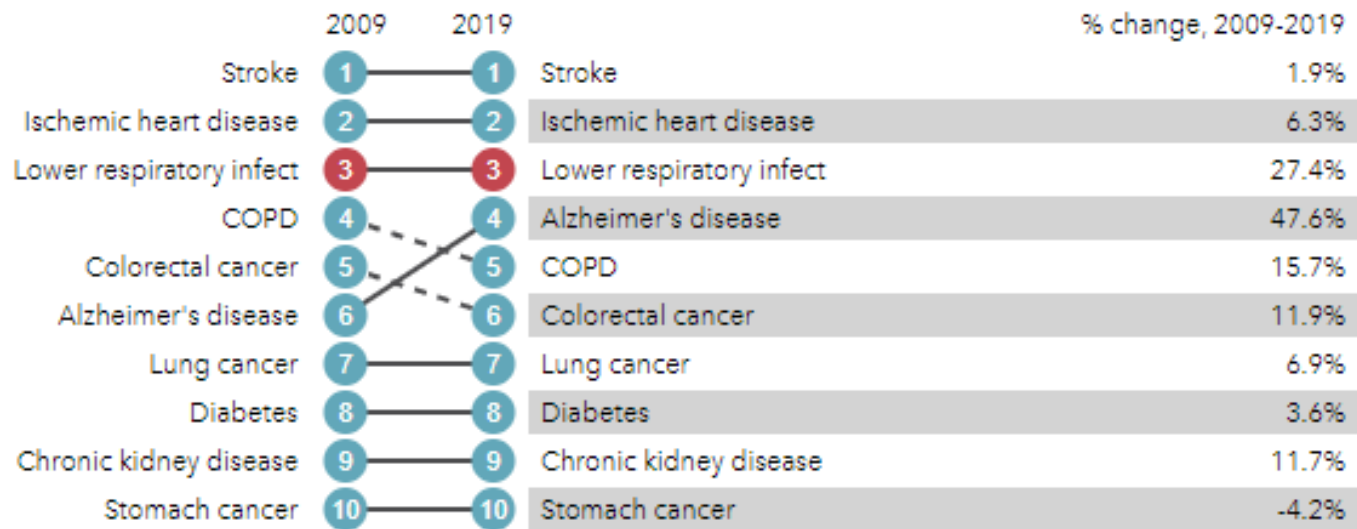
Top 10 causes of death by rate in 2015 and percent change, 2005-2015

Mediterranean Country

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

## What causes the most deaths?

- Communicable, maternal, neonatal, and nutritional diseases
- Non-communicable diseases
- Injuries



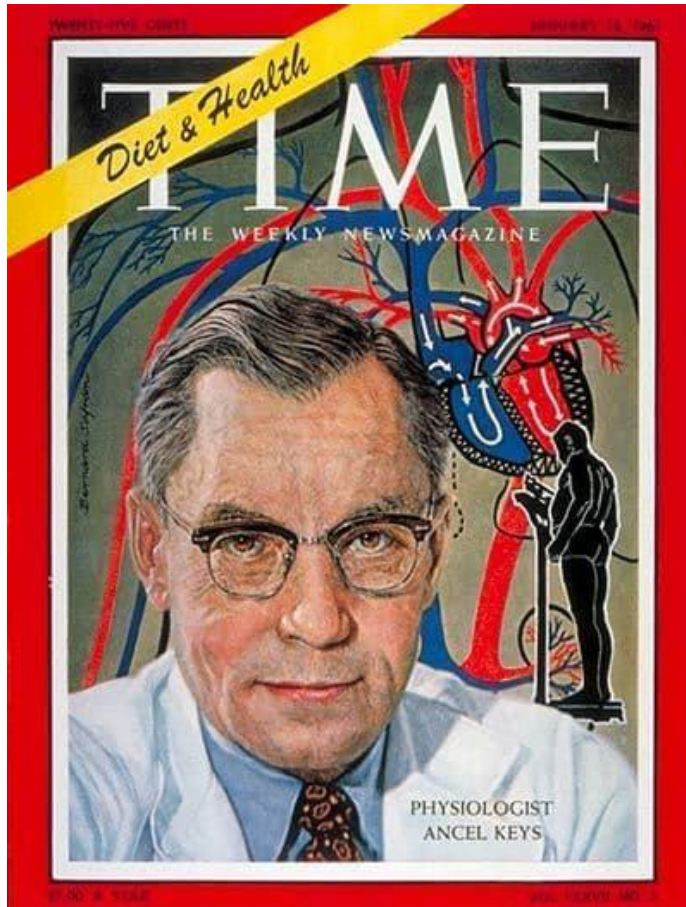
Portugal



# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

*Mediterranean Diet and the health of Mediterranean people*

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*



Ansel Keys (1904-2004)

*“First publicized in 1975 by the American biologist Ancel Keys and his wife, chemist Margaret Keys, the **Mediterranean Diet as a unique lifestyle**, determined by the climate and by the Mediterranean area, is also manifested through related festivals and celebrations.”*

<https://mediterraneandietunesco.org/about/history-of-the-mediterranean-diet/>

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

## Seven Countries

*A Multivariate Analysis of Death and  
Coronary Heart Disease*

Ancel Keys

COMMONWEALTH FUND PUBLICATIONS

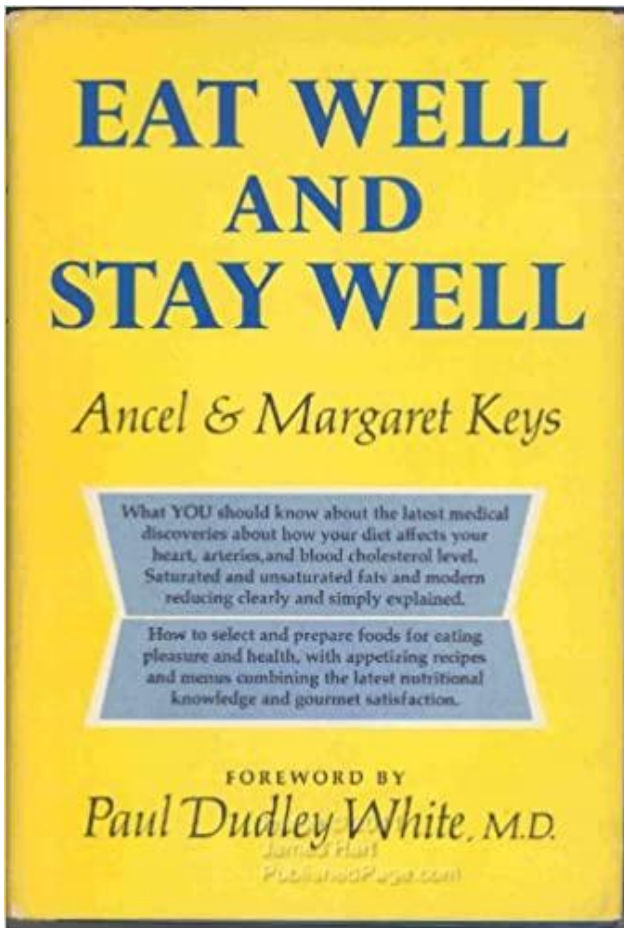


Harvard University Press

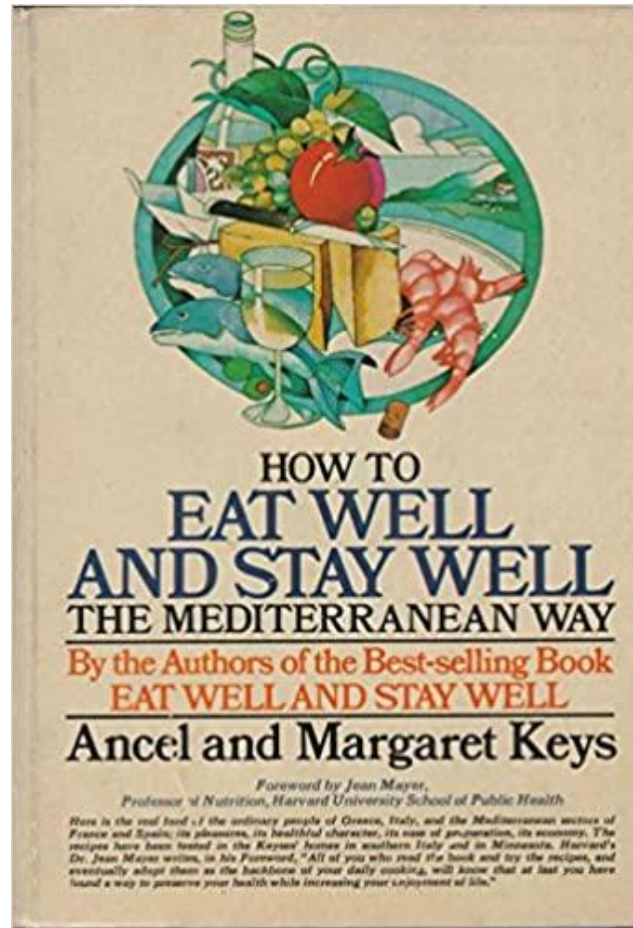
## 4. The MedDiet and health in clinical medicine

The interest in the MedDiet came as a result of a series of publications arising from the Seven Countries Study in the early 1960s [10]. In the words of Ancel Keys, the main promoter of the study, it all started in Naples, “*where we observed very low incidences of coronary heart disease associated with what we later came to call the ‘good Mediterranean diet’.* The heart of this diet is mainly vegetarian, and differs from American and northern European diets in that it is much lower in meat and dairy products and uses fruit for dessert” [11].

# The food challenge: the Mediterranean Diet and the health of Mediterranean people



1959



1975



1975

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

2004

## Mediterranean Diet, Lifestyle Factors, and 10-Year Mortality in Elderly European Men and Women The HALE Project

Kim T. B. Knoops, MSc

Lisette C. P. G. M. de Groot, PhD

Daan Kromhout, PhD

Anne-Elisabeth Perrin, MD, MSc

Olga Moreiras-Varela, PhD

Alessandro Menotti, MD, PhD

Wija A. van Staveren, PhD

**T**HE NUMBER OF OLDER PEOPLE IS growing rapidly worldwide. More than 580 million people are older than 60 years, and the number is projected to rise to 1000 million by 2020.<sup>1</sup> With the increase in life expectancy, the leading causes of death have shifted dramatically from infectious diseases to noncommunicable diseases and from younger to older individuals. In industrialized countries, about 75% of deaths in persons older than the age of 65 are now from cardiovascular diseases and cancer.<sup>2</sup>

Regardless of predisposing factors, diet and lifestyle influence morbidity and mortality during the course of life.<sup>2</sup> Because of the cumulative effect of adverse factors throughout life, it is particularly important for older persons to adopt diet and lifestyle practices that minimize their risk of death from major

**Context** Dietary patterns and lifestyle factors are associated with mortality from all causes, coronary heart disease, cardiovascular diseases, and cancer, but few studies have investigated these factors in combination.

**Objective** To investigate the single and combined effect of Mediterranean diet, being physically active, moderate alcohol use, and nonsmoking on all-cause and cause-specific mortality in European elderly individuals.

**Design, Setting, and Participants** The Healthy Ageing: a Longitudinal study in Europe (HALE) population, comprising individuals enrolled in the Survey in Europe on Nutrition and the Elderly: a Concerned Action (SENECA) and the Finland, Italy, the Netherlands, Elderly (FINE) studies, includes 1507 apparently healthy men and 832 women, aged 70 to 90 years in 11 European countries. This cohort study was conducted between 1988 and 2000.

**Main Outcome Measures** Ten-year mortality from all causes, coronary heart disease, cardiovascular diseases, and cancer.

**Results** During follow-up, 935 participants died: 371 from cardiovascular diseases, 233 from cancer, and 145 from other causes; for 186, the cause of death was unknown. Adhering to a Mediterranean diet (hazard ratio [HR], 0.77; 95% confidence interval [CI], 0.68-0.88), moderate alcohol use (HR, 0.78; 95% CI, 0.67-0.91), physical activity (HR, 0.63; 95% CI, 0.55-0.72), and nonsmoking (HR, 0.65; 95% CI, 0.57-0.75) were associated with a lower risk of all-cause mortality (HRs controlled for age, sex, years of education, body mass index, study, and other factors). Similar results were observed for mortality from coronary heart disease, cardiovascular diseases, and cancer. The combination of 4 low risk factors lowered the all-cause mortality rate to 0.35 (95% CI, 0.28-0.44). In total, lack of adherence to this low-risk pattern was associated with a population attributable risk of 60% of all deaths, 64% of deaths from coronary heart disease, 61% from cardiovascular diseases, and 60% from cancer.

**Conclusion** Among individuals aged 70 to 90 years, adherence to a Mediterranean diet and healthful lifestyle is associated with a more than 50% lower rate of all-causes and cause-specific mortality.

JAMA. 2004;292:1433-1439

www.jama.com

heart disease (CHD), cardiovascular

Author Affiliations: Division of Human Nutrition,

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

2004



American Heart Journal

Volume 147, Issue 1, January 2004, Pages 106-112



Clinical investigation

## Impact of lifestyle habits on the prevalence of the metabolic syndrome among Greek adults

### Conclusion

MS is common in Greece and is becoming even more common in the middle-aged population. The suggested therapeutic lifestyle approach may contribute to the reduction of the prevalence of the MS, beyond the levels of several lipid, inflammation, and coagulation markers.

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

2004

**DIABETIC**  
Medicine

**DIABETES UK**  
KNOW DIABETES. FIGHT DIABETES.

## The epidemiology of Type 2 diabetes mellitus in Greek adults: the ATTICA study

**Conclusions** Diabetes mellitus is common in our population, with approximately 1 in 5 individuals with Type 2 diabetes being unaware of their condition. The lifestyle approach described here may contribute significantly to the reduction in the prevalence of diabetes, at a population level.

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

2005

## Mediterranean Diet and Survival Among Patients With Coronary Heart Disease in Greece

Antonia Trichopoulou, MD; Christina Bamia, PhD; Dimitrios Trichopoulos, MD

**Background:** The Mediterranean diet has been hypothesized to reduce fatality among patients with coronary heart disease.

**Methods:** We examined the association between the degree of adherence to the traditional Mediterranean diet and survival of persons with diagnosed coronary heart disease at enrollment, in a population-based prospective investigation of 1302 Greek men and women, who were followed up for an average of 3.78 years (the European Prospective Investigation Into Cancer and Nutrition cohort). Information on usual dietary intakes during the year preceding enrollment was recorded through a validated food frequency questionnaire. Adherence to the Mediterranean diet was assessed by a 10-unit Mediterranean diet score that incorporates the salient characteristics of this diet. Proportional hazards regression was used to assess the relation of overall degree of adherence to the Mediterranean diet with mortality overall or by cause (cardiac vs noncardiac).

**Results:** Higher adherence to the Mediterranean diet by 2 units was associated with a 27% lower mortality rate among persons with prevalent coronary heart disease at enrollment (total deaths, 131; adjusted mortality ratio, 0.73; 95% confidence interval, 0.58-0.93). The reduced mortality was more evident and amounted to 31% (total deaths, 85; adjusted mortality ratio, 0.69; 95% confidence interval, 0.52-0.93) when only cardiac deaths were considered as the relevant outcome. Associations between individual food groups contributing to the Mediterranean diet score and mortality were generally not significant.

**Conclusion:** Greater adherence to the traditional Mediterranean diet is associated with a significant reduction in mortality among individuals diagnosed as having coronary heart disease.

*Arch Intern Med.* 2005;165:929-935



# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

**2006 - 2008**

Review > [BMJ. 2008 Sep 11;337:a1344. doi: 10.1136/bmj.a1344.](#)

## **Adherence to Mediterranean diet and health status: meta-analysis**

[Francesco Sofi](#)<sup>1</sup>, [Francesca Cesari](#), [Rosanna Abbate](#), [Gian Franco Gensini](#), [Alessandro Casini](#)

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

2007

Food, youth and the Mediterranean diet in Spain. Development of KIDMED, Mediterranean Diet Quality Index in children and adolescents

Lluís Serra-Majem<sup>1,2,\*</sup>, Lourdes Ribas<sup>2</sup>, Joy Ngo<sup>2</sup>, Rosa M Ortega<sup>3</sup>, Alicia García<sup>2</sup>, Carmen Pérez-Rodrigo<sup>4</sup> and Javier Aranceta<sup>4</sup>

<sup>1</sup>Department of Clinical Sciences, University of Las Palmas de Gran Canaria, PO Box 550, E-35080 Las Palmas de Gran Canaria, Spain: <sup>2</sup>Foundation for the Advancement of the Mediterranean Diet, Community Nutrition Research Centre, University of Barcelona Science Park, Barcelona, Spain: <sup>3</sup>Department of Nutrition, University Complutense of Madrid, Madrid, Spain: <sup>4</sup>Community Nutrition Unit, Bilbao City Council, Bilbao, Spain

## Abstract

*Objective:* To evaluate dietary habits in Spanish children and adolescents based on a Mediterranean Diet Quality Index tool, which considers certain principles sustaining and challenging traditional healthy Mediterranean dietary patterns.

*Design:* Observational population-based cross-sectional study. A 16-item Mediterranean Diet Quality Index was included in data gathered for the EnKid study (in which two 24-hour recalls, a quantitative 169-item food-frequency questionnaire and a general questionnaire about socio-economic, demographic and lifestyle items were administered).

*Setting:* Spain.

*Subjects:* In total, 3850 children and youths aged 2–24 years residing in Spain.

*Results:* Of the sample, 4.2% showed very low KIDMED index results, 49.4% had intermediate values and 46.4% had high index results. Important geographical differences were seen, with subjects from the Northeast showing the most favourable outcomes (52% with elevated scores vs. 37.5% of those from the North). Lower percentages of high diet quality were observed in low socio-economic groups, compared with middle and upper income cohorts (42.8%, 47.6% and 54.9%, respectively). Large cities had more positive results and only slight variations were seen for gender and age.

*Conclusions:* The KIDMED index, the first to evaluate the adequacy of Mediterranean dietary patterns in children and youth, confirms that this collective is undergoing important changes, which makes them a priority target for nutrition interventions. Results challenge certain commonly perceived notions tied to income level, population size and diet quality.

**Keywords**  
Dietary habits  
Mediterranean diet  
Children  
Spain  
Determinants

# The food challenge: the Mediterranean Diet and the health of Mediterranean people

## 2007 - Mediterranean diet and diabetes

# BMI

### WHAT IS ALREADY KNOWN ON THIS TOPIC

A Mediterranean diet protects against coronary mortality and is inversely associated with metabolic syndrome and inflammatory markers

The diet was found to be inversely associated with the incidence of diabetes among patients who survived myocardial infarction

### WHAT THIS STUDY ADDS

Higher adherence to a Mediterranean diet rich in olive oil, plant based foods (fruits, vegetables, and legumes), and fibre but low in meats was inversely associated with incidence of type 2 diabetes among initially healthy participants

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doi:10.1136/bmj.39561.501007.BE

**Objective** To assess the relation between adherence to a Mediterranean diet and the incidence of diabetes among initially healthy participants.

**Design** Prospective cohort study with estimates of relative risk adjusted for sex, age, years of university education, total energy intake, body mass index, physical activity, sedentary habits, smoking, family history of diabetes, and personal history of hypertension.

**Setting** Spanish university department.

**Participants** 13 380 Spanish university graduates without diabetes at baseline followed up for a median of 4.4 years.

**Main outcome measures** Dietary habits assessed at

### Conclusion

Our prospective cohort study suggests that substantial protection against diabetes can be obtained with the traditional Mediterranean diet, rich in olive oil, vegetables, fruits, nuts, cereals, legumes, and fish but relatively low in meat and dairy products. The limited number of cases of diabetes and the possibility of under-reporting, however, requires that further larger cohorts and trials are needed to confirm our findings.

... studies. Many studies have shown that the Mediter-  
ranean food pattern has a role in prevention of  
cardiovascular disease.<sup>5-9</sup> The similarity of some risk  
factors and some empirical and mechanistic evidence  
suggest that the Mediterranean diet can also protect  
against diabetes. The major protective characteristics  
include a high intake of fibre, a high intake of vegetable  
fat, a low intake of *trans* fatty acids, and a moderate  
intake of alcohol.<sup>4,10,11</sup> Moreover, a particular feature of  
the diet is the abundant use of virgin olive oil for  
cooking, frying, spreading on bread, or dressing  
salads.<sup>12</sup> This leads to a high ratio of monounsaturated  
fatty acids to saturated fatty acids. This ratio can be used

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

## **WHAT IS ALREADY KNOWN ON THIS TOPIC**

The Mediterranean diet is a well known model of diet for primary and secondary prevention of major chronic diseases

An adherence score can be used to assess the adherence of a specific population to the rules of a traditional Mediterranean diet

## **WHAT THIS STUDY ADDS**

Greater adherence to a Mediterranean diet confers a significant protection for overall mortality, as well as cardiovascular disease mortality and incidence of cancer and degenerative diseases

The adherence score based on a theoretically defined Mediterranean diet could be an effective preventive tool for reducing the risk of mortality and morbidity in the general population

## **Conclusions**

This meta-analysis shows that adherence to a Mediterranean diet can significantly decrease the risk of overall mortality, mortality from cardiovascular diseases, incidence of or mortality from cancer, and incidence of Parkinson's disease and Alzheimer's disease. These results seem to be clinically relevant in terms of public health, particularly for reducing the risk of premature death in the general population, and are strictly concordant with current guidelines and recommendations from all the major scientific associations that strongly encourage a Mediterranean-like dietary pattern for primary and secondary prevention of major chronic diseases.

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

**2018**

Article | [Published: 28 November 2018](#)

## **Worldwide adherence to Mediterranean Diet between 1960 and 2011**

### Discussion and Conclusions

Adherence to the MD significantly decreased between 1961–65 and 2000–03, whereas from 2004–2011 there was a stabilization of MAI values and even an increase among 16 countries. Efforts are needed to preserve the dietary traditions and lifestyle habits within the Mediterranean region in order to counteract increasing rates of chronic disease.

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

Scientific evidence shows that the Mediterranean Diet helps to:

- ✓ maintain a healthy weight or lose weight;
- ✓ reduce the risk of heart disease and high blood pressure;
- ✓ decrease the risk of certain types of cancer and chronic diseases;
- ✓ reduce the prevalence of the Metabolic Syndrome;
- ✓ prevent Diabetes Mellitus.

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*



United Nations  
Educational, Scientific and  
Cultural Organization



In **2010** it was recognized by UNESCO as **Cultural and Intangible Heritage of Humanity** - Koroni/Coroni (Greece), Cilento (Italy), Chefchaouen (Morocco), and Soria (Spain).

The Mediterranean Diet is more than a nutritional recommendation.

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*



United Nations  
Educational, Scientific and  
Cultural Organization



In **2013** it was recognized by UNESCO as **Cultural and Intangible Heritage of Humanity** - Agros (Cyprus), Brač and Hvar (Croatia) and Tavira (Portugal).



# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

*“The Mediterranean diet (MedDiet) is predominantly plant based, rich in vegetables, fruit, nuts, legumes, seeds, and fish with moderate dairy foods, low red meat consumption, and little or no packaged, highly processed foods filled with sugar, refined carbohydrates, and unhealthy fats [3]. A distinguishing feature is its abundant use of extra virgin olive oil, dating back to 5000 BC [4] and considered a “gift of the gods.” The MedDiet encourages moderate consumption of alcohol, mainly red wine, with meals, and acknowledges conviviality, frugality, and the importance of physical activity .”*

2018, Karen J. Murphy. Implementing a Mediterranean-Style Diet.

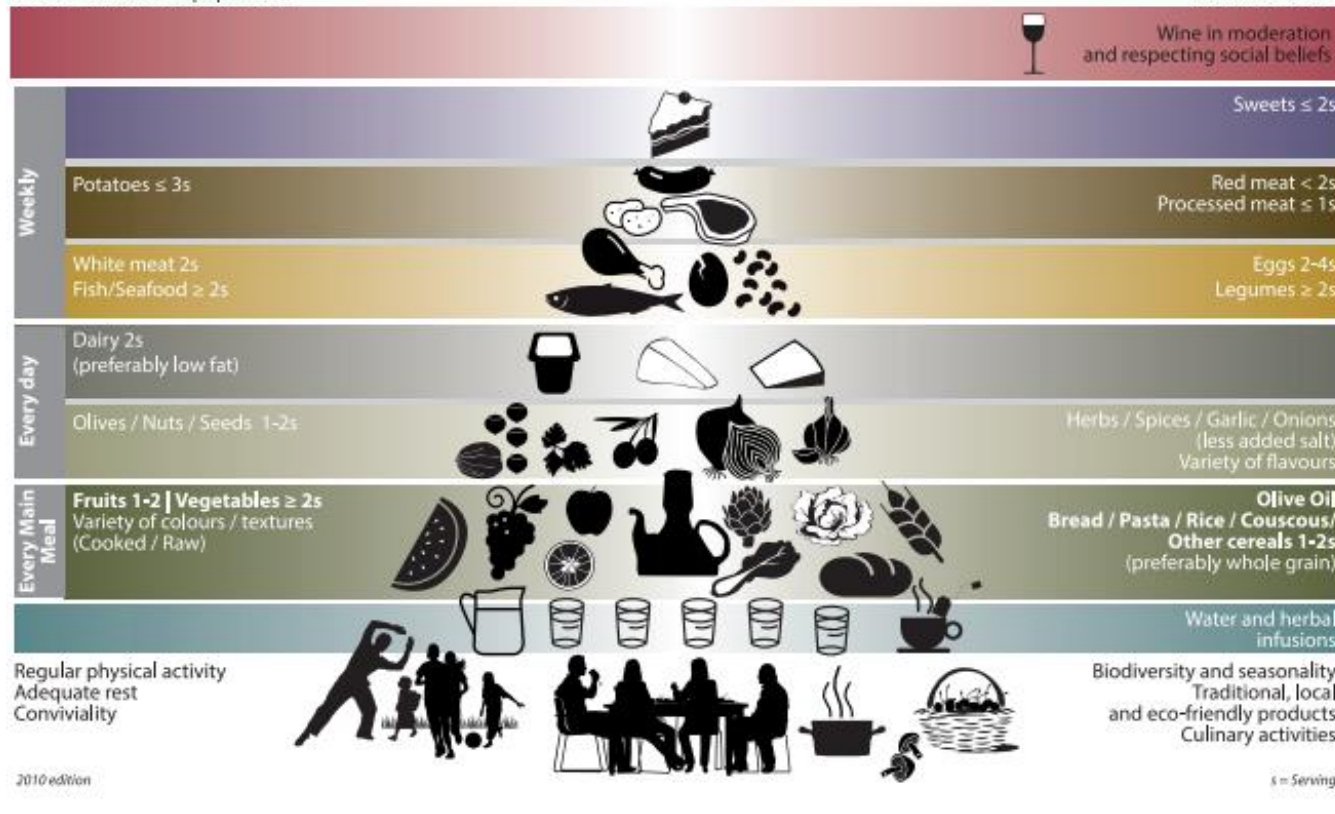
# The food challenge: the Mediterranean Diet and the health of Mediterranean people

2015

## Mediterranean Diet Pyramid: a lifestyle for today

Guidelines for Adult population

Serving size based on frugality and local habits



# The food challenge: the Mediterranean Diet and the health of Mediterranean people

2020

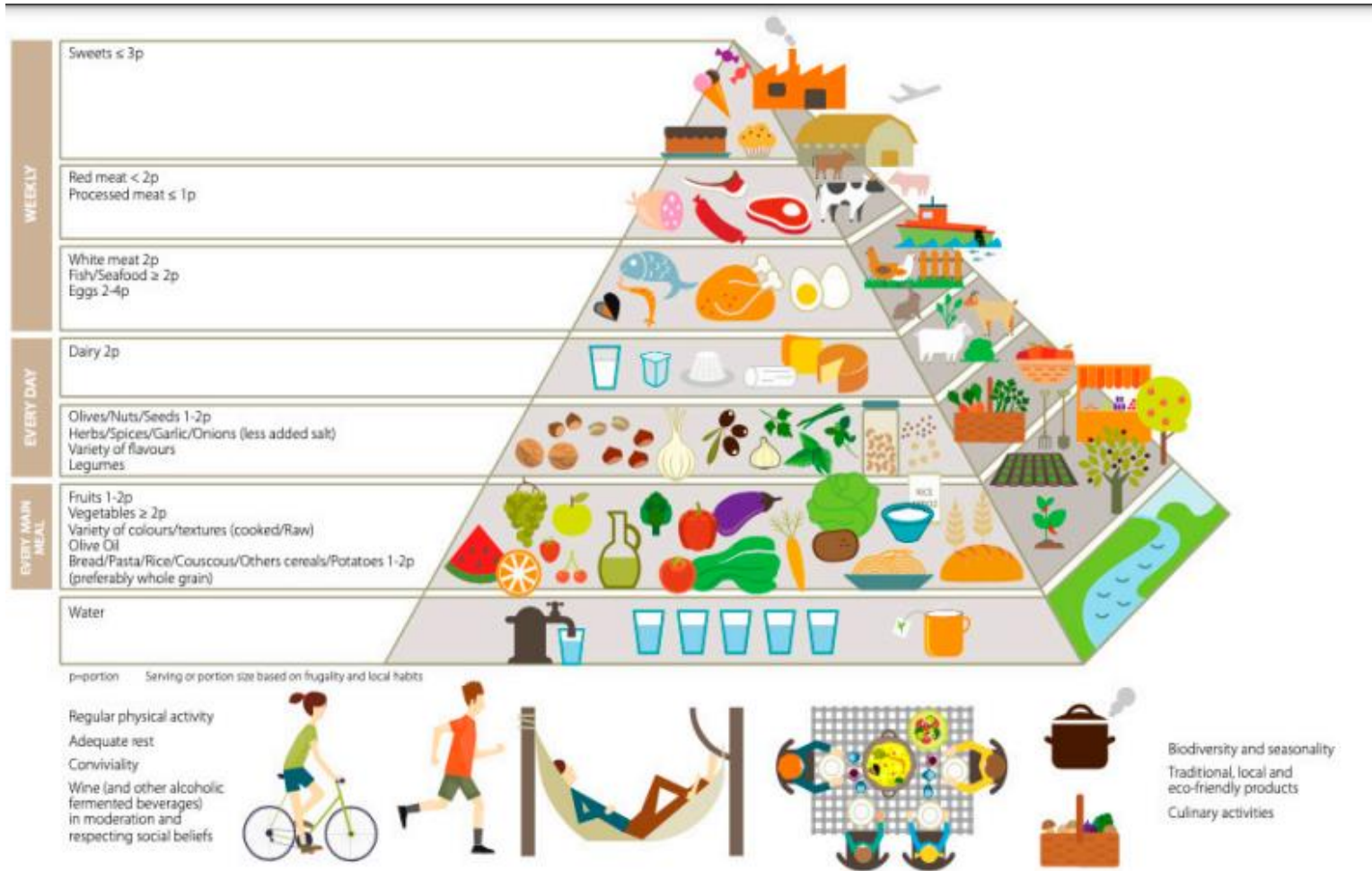


Figure 2. New Pyramid for a Sustainable Mediterranean Diet.

# *The food challenge: the Mediterranean Diet and the health of Mediterranean people*

## **Highlights**

- ✓ The Mediterranean Diet (MD) offers variety and palatability and is being considered as a key determinant of health;
- ✓ Currently, its dissemination requires graphic representations - Mediterranean Food Pyramid - that convey dietary specifications.
- ✓ The application of adherence questionnaires allowed studies on clinical outcomes.
- ✓ Research is identifying key nutrients and beneficial components of the Mediterranean diet.

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