



Evoluzione del modello mediterraneo: cosa è cambiato

Alessandro Pinto

SESSIONE CONGIUNTA ANDID-SINU
"EVOLUZIONE E VALUTAZIONE DELL'ADERENZA ALLA DIETA MEDITERRANEA"



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Ai sensi dell'art. 3.3 del Regolamento applicativo dell'Accordo Stato-Regioni 05.11.2009, dichiaro che negli ultimi due anni non ho avuto rapporti anche di finanziamento con soggetti portatori di interessi commerciali in campo sanitario

In fede,
Alessandro Pinto

Evoluzione del modello mediterraneo: cosa è cambiato



Tradizione: trasmissione nel tempo di generazione in generazione, di consuetudini, usi e costumi, modelli e norme;
significato etimologico: consegna, trasmissione, dal latino tradere, consegnare

(La Piccola Treccani)

"Certo, noi mangiamo realisticamente, assumiamo proteine, c'è tutta una dimensione nutrizionistica che sarebbe sciocco negare, perché importantissima.

Ma noi mangiamo anche simboli; attraverso il cibo ci colleghiamo al passato, evochiamo atmosfere, manteniamo rapporti [...]"

"[...] il codice alimentare è assunto come mezzo per mantenere la propria identità culturale e sociale, cioè per rafforzare l'identità".



Luigi Maria Lombardi-Satriani
Antropologo
docente di Etnologia all'Università La Sapienza di Roma

Evoluzione del modello mediterraneo: cosa è cambiato



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Patrimonio immateriale dell'Umanità
Unesco 17.11.2010

Divieto di riproduzione, utilizzo e diffusione anche parziale

Divieto come modello di dieta sostenibile

Alimenti, nutrienti, pattern alimentare, pattern nutrizionale?

EBM e modello alimentare mediterraneo

Nuova piramide della dieta mediterranea

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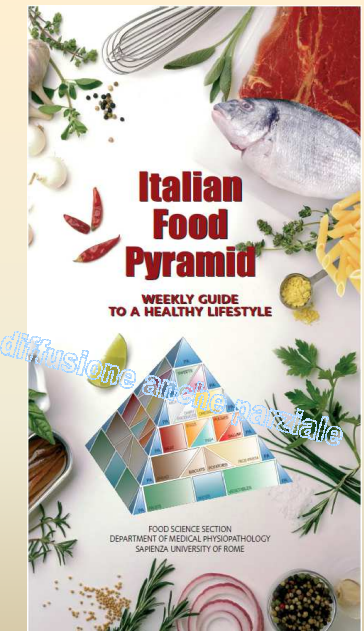
Alimenti, nutrienti, pattern alimentare, pattern nutrizionale?

EBM e modello alimentare mediterraneo

Nuova piramide della dieta mediterranea

- *La Dieta Mediterranea è un modello di stile di vita basato su convivialità e frugalità, caratterizzata non solo dalla freschezza e stagionalità dei suoi prodotti alimentari, ma soprattutto dal modo di prepararli, presentarli e condividerli a tavola. Abitudini alimentari variate nel rispetto delle tradizioni che, insieme ad una vita attiva, costituiscono le caratteristiche fondamentali della Dieta Mediterranea.*

- *Questo stile di vita salutare è anche la conseguenza della diversa disponibilità della produzione agricola locale, in relazione al mosaico geografico e climatico del Mediterraneo.*



Carlo Cannella

L'alimentazione nel Mediterraneo

Esistono, di fatto, diverse "Diete Mediterranee", dovute alle differenze geografiche, etniche, culturali, religiose, economiche, agricole dei Paesi che si affacciano nel bacino mediterraneo.

- ✓ Agricoltura
- ✓ Pastorizia
- ✓ Pesca
- ✓ Biodiversità

BIODIVERSITÀ

Il termine generico di Dieta Mediterranea fa riferimento al pattern alimentare osservato in quelle aree dove cresce l'ulivo.

L'olio di oliva, oltre che possedere specifiche caratteristiche nutrizionali, condiziona, infatti, l'intero pattern alimentare, favorendo il consumo di alimenti di origine vegetale, quali ortaggi e legumi.



The Mediterranean diet revisited: evidence of its effectiveness grows

Francesco Sofi^{a,b,c}

Current Opinion in Cardiology 2009, 24:442-446

Non esiste una sola dieta mediterranea: le tradizioni alimentari nei Paesi dell'area mediterranea variano in modo significativo; anche all'interno dello stesso Paese esistono considerevoli differenze.

Table 1 Food groups among the different Mediterranean countries

	Bread	Pasta	Other cereals	Fruit	Vegetables	Fish	Legumes	Cheese	Wine	Olive oil
Italy	✓	-	+	++	++	++	+	+	+	✓
Greece	✓	-	+	++	++	++	+	+	+	✓
France	-	-	+	++	++	++	+	+	+	✓
Spain	+	+	+	++	++	++	+	+	+	✓
North Africa	+	-	✓	++	++	++	++	+	+	✓
East basin	+	-	++	+	++	+	+	+	-	++

-, not common; +, moderately common; ++, highly common; ✓, peculiar.

La Dieta Mediterranea "frugalità"

pattern alimentare delle aree povere rurali

LIVELLO DI ASSONZIONE		ALIMENTI	
↑	ELEVATO	cereali, frutta fresca e secca, ortaggi, legumi, noci, semi, olive	olio d'oliva come grasso da condimento
	MODERATO	pesce, uova, pollame, latte, formaggi, yogurt, vino al pasto	
	BASSO	carne rossa	
aromi e spezie palatabilità			

La Dieta Mediterranea è espressione d'una antica storia fatta di acquisizioni, scambi e adattamenti, che si riconosce nella diversità delle culture alimentari, degli stili di vita e delle condizioni ambientali che caratterizzano la regione Mediterranea.

La Dieta Mediterranea è un complesso di tradizioni alimentari, conoscenze e tecniche artigianali, rappresentazioni e paesaggi, che i popoli del Mediterraneo riconoscono come parte integrante del loro patrimonio culturale.

Patrimonio immateriale dell'Umanità Unesco 17.11.2010

L'art.2 della Convenzione definisce così i patrimoni culturali immateriali:
 « le prassi, le rappresentazioni, le espressioni, le conoscenze, il know-how – come pure gli strumenti, gli oggetti, i manufatti e gli spazi culturali associati agli stessi – che le comunità, i gruppi e in alcuni casi gli individui riconoscono in quanto parte del loro patrimonio culturale.
 Questo patrimonio culturale immateriale, trasmesso di generazione in generazione, è costantemente ricreato dalle comunità e dai gruppi in risposta al loro ambiente, alla loro interazione con la natura e alla loro storia e dà loro un senso d'identità e di continuità, promuovendo in tal modo il rispetto per la diversità culturale e la creatività umana »
 Si precisa inoltre come tali prassi devono essere compatibili con i diritti umani, il rispetto reciproco tra le persone e lo sviluppo sostenibile.

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EBM e modello alimentare mediterraneo

Nuova piramide della dieta mediterranea

Sustainable diets

low environmental impacts

- protective and respectful of biodiversity
- protective and respectful of ecosystems
- optimizing natural and human resource

contribute to food and nutrition security

- accessible
- economically fair and affordable
- safe
- nutritionally adequate
- optimizing natural and human resource

contribute to healthy life for present and future generations

- healthy
- culturally acceptable
- optimizing natural and human resource

1

2

3

FAO/Biodiversity, 2010

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International Conference on the Diets of the Mediterranean (1993):



- prevalente consumo di alimenti vegetali, freschi, di stagione, di origine locale, solo minimamente trasformati;
- ortaggi e frutta fresca
- noci, nocciole, noccioline;
- pesce e pollame in quantità moderate;
- meno di 4 uova a settimana;
- carni rosse in piccole quantità e con bassa frequenza;
- prodotti lattiero-caseari in piccole quantità;
- olio di oliva come principale fonte di grassi alimentari;
- dolci, zucchero, miele solo occasionalmente;
- vino in piccola quantità, ai pasti.

DIETA MEDITERRANEA (DM) = "WHOLE DIET APPROACH"

ortaggi e frutta, compresa la frutta in guscio (mandorle, noci ecc.),
cereali e olio d'oliva

→ alimenti base della Dieta Mediterranea (DM)

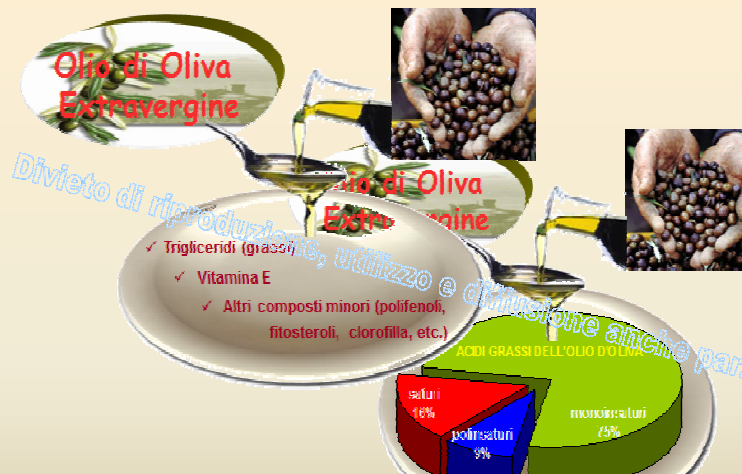
→ frutta, ortaggi, cereali ~ 70% dell'intake energetico

fonte elettiva di: fibra, potassio, magnesio, antiossidanti + phytochemicals



pathways molecolari intracellulari stress ossidativo, infiammazione,

trasmissione del segnale insulinico



Va considerato che l'acido oleico non è il solo responsabile degli effetti benefici dell'olio di oliva, ma a questi concorre anche l'1-2% della frazione insaponificabile rappresentata dai componenti minori (tocoferoli, composti fenolici, squalene, steroli, pigmenti).

Importance of functional foods in the Mediterranean diet

RM Ortega. - Public Health Nutrition: 2006, 9(8A), 1136-1140

BIODIVERSITÀ «DIETETICO – NUTRIZIONALE»

ALIMENTI	COMPOSTI	ATTIVITÀ
Noci, Nocciola, Noccioline	Composti fenolici, polifenoli, flavonoidi, isoflavonoidi, resveratrolo,	
Ortaggi	terpeni, squalene, fitosteroli, acido	profilo lipidico plasmatico,
Frutta	fitico, vitamine (carotenoidi, ac.	emostasi e coagulazione,
Olio D'oliva	Folico, α-tocoferolo ...) fibra,	funzione endoteliale,
Aglio, Cipolla, Erbe Aromatiche, Spezie, Capperi	fitoestrogeni (flavoni, isoflavoni), allicina, ac. Idrocinnamico, ac. Grassi monoinsaturi, vitamine, minerali,	immunità, infiammazione, stress ossidativo, malattie cardiovascolari e tumori
Vino
Pesce	EPA, DHA	
Prodotti Lattiero - Caseari, probiotici	

Fattori che influenzano il contenuto di composti fitochimici negli alimenti

- ✓ Stagionalità
- ✓ Differenze orogenetiche
- ✓ Modalità di coltivazione e conservazione (luce, umidità, temperatura, tempo)
- ✓ Metodiche analitiche: strumentazione, estrazione, specificità e sensibilità; procedure di campionamento
- ✓ Trattamento domestico, artigianale, industriale (presenza e disponibilità):
 - Frammentazione (ossidazione, macerazione, rimozione crusca, buccia della frutta e pomodori, produzione di marmellate e conserve di frutta, succhi di frutta)
 - Fermentazione (derivati della soia → idrolisi delle forme gliconate degli soflavoni; vinificazione: → fermentazione determina rilascio nel mosto di PF)
 - Temperatura: effetto variabile
 - Alta pressione: non altera il contenuto, ma potrebbe modificare la biodisponibilità
- ✓ Eq. di ac. gallico: 0,5 mg in carote, piselli → 50 mg nei mirtilli

Fattori che influenzano il contenuto di composti fitochimici negli alimenti

TEMPERATURA

- **SCOTTATURA:** denaturazione enzimi → preserva composti termostabili
- **BRASSICACEAE:** inattivazione mirosinasi → ↓ attivazione glucosinolati, degradazione termica, degradazione di cofattori enzimatici, acido ascorbico, ferro, dissoluzione nell'acqua di cottura.
- ↓ quercetina nelle **cipolle e pomodori:**
 - Bollitura x 15 m' ↓ 75-80%
 - Cottura a microonde ↓ 65%
 - Frittura ↓ 30%
- ↓ acidi fenolici nelle **patate** dopo frittura industriale
- **tomodori:** cottura → ↓ vitamina C ma ↑ licopene e capacità antiossidante totale e lascia inalterati i livelli di PF e flavonoidi totali
- **Soia:** isoflavoni → cambiamento del profilo (alterazioni solo ad elevate T e per tempi prolungati)



BIODIVERSITÀ «GASTRONOMICA»

• Importanza dei metodi di preparazione:

- per es. l'aggiunta dell'olio di oliva al pomodoro durante la cottura aumenta significativamente l'assorbimento del licopene;
- l'olio di oliva, l'aceto di vino aggiunti all'insalata aumentano significativamente la capacità antiossidante.

• Importanza di analizzare la dieta nella sua globalità:

- i singoli alimenti possono avere un'azione sinergica o antagonista;
- molti degli effetti positivi sono associati alla contemporanea assunzione di differenti alimenti funzionali tipici del modello alimentare mediterraneo, parte integrante di una "healthy diet";
- necessità di utilizzare uno score per valutare l'adesione del pattern alimentare esaminato al modello alimentare mediterraneo;

RM Ortega. - Public Health Nutrition: 2006, 9(8A), 1136-1140



Dieta Mediterranea

"il salva vita"

Il Modello Alimentare Mediterraneo costituisce un "whole-diet approach" (Antonia Trichopoulou), caratterizzato da:

✓ un elevato apporto di composti antiossidanti, vitamine, beta-carotene, vitamina C ed E, minerali, polifenoli, fibra e phytochemical (licopene, antocianine, clorofilla, quercetina, carotenoidi);

✓ un basso apporto di acidi grassi saturi (SFA), ed un'elevata assunzione di acidi grassi monoinsaturi (MUFA), principalmente attraverso l'olio di oliva.

MUFA:SFA ~ 2



CHAPTER 6. THE "MEDITERRANEANISATION" OF FOOD FASHIONS IN THE WORLD

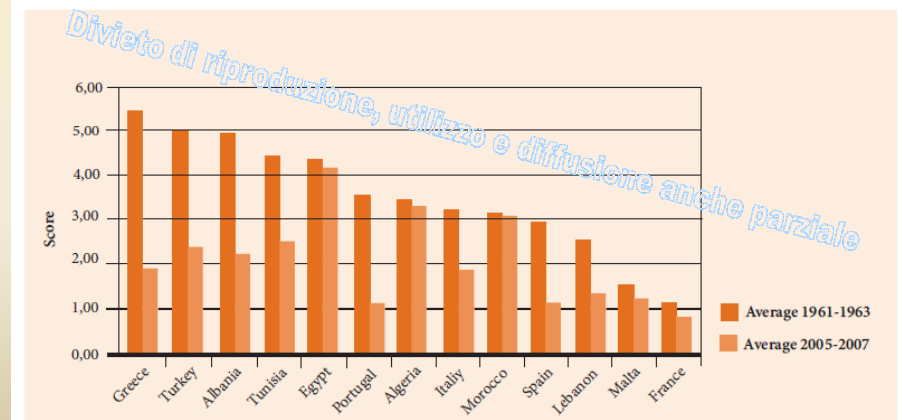
Giulia Palma et Martine Padilla

in CIHEAM, MediTERRA 2012 (english)

<http://www.cairn.info/mediterranea-2012-english---page-133.htm>

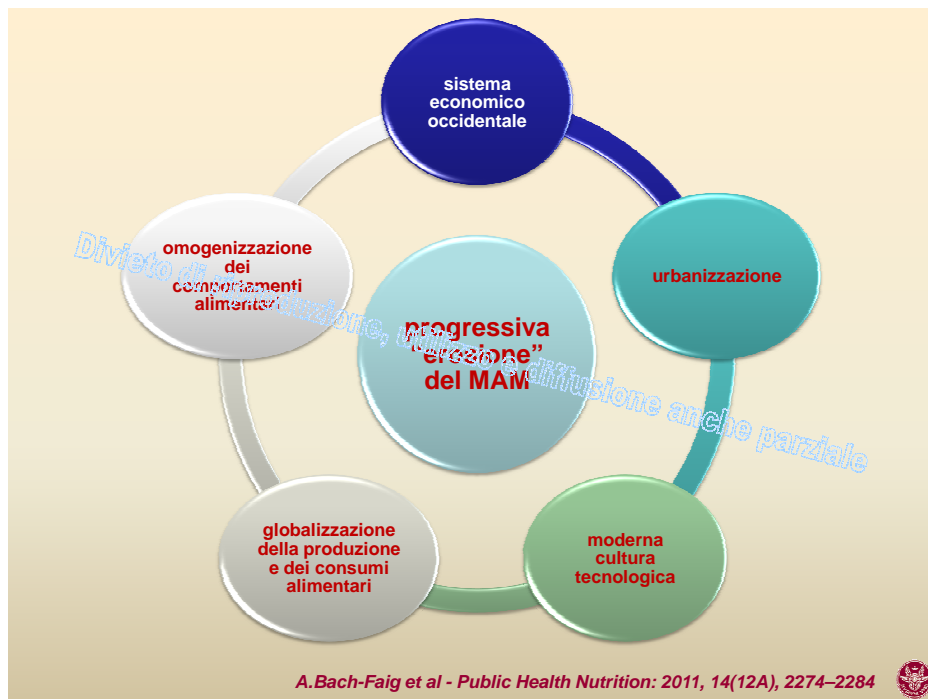
$$MAI = \frac{\% \text{ E da cereali, legumi, patate, ortaggi, frutta fresca/secca, pesce, vino, olio d'oliva}}{\% \text{ E da latte, formaggio, carne, uova, grassi animali, margarina, bevande dolci, torte/biscotti}}$$

Chart 1 - Trends in the MAI in the Mediterranean over 50 years



Source: our calculations based on FAOSTAT.





The Italian National Food Consumption Survey INRAN-SCAI 2005-06: main results in terms of food consumption

Catherine Lederman, Davide Arcella, Raffaella Piccinelli, Stefania Sette and Cinzia Le Donne
Public Health Nutrition 11 Volume 12 | Issue 12 | December 2009, pp 2504 - 2532
DOI: 10.1017/S1888900909005035, Published online: 12 March 2009

- Ancora troppa carne.**
Se ne mangiano in media 700g a settimana (peso a crudo considerando anche i salumi) contro i circa 400-450g raccomandati per la prevenzione di alcuni tumori.
- Legumi quasi sconosciuti.**
Sono quasi scomparsi sulle nostre tavole, mentre rappresentano una valida alternativa alla carne. Il consumo medio giornaliero (secchi e freschi) è di circa 10 g.
- Frutta e verdura: promosse dagli anziani e bocciate dai giovani**
Grazie agli anziani, che fedeli alla nostra tradizione mediterranea, ne mangiano di più (circa 500g al giorno), i consumi medi della popolazione risultano ancora in linea con le raccomandazioni internazionali.
La tendenza, però, sembra negativa, soprattutto se guardiamo alle nuove generazioni: i ragazzi consumano meno di una porzione di frutta e di verdura al giorno (circa 300g), nettamente inferiori al minimo consigliato.
- Ancora mediterranei nonostante tutto.**
Si conferma in larga parte l'aderenza al modello alimentare mediterraneo con i cereali come alimenti base, l'olio di oliva come condimento e il vino come bevanda alcolica.

Divieto di riproduzione, utilizzo e diffusione anche parziale

Assunzione di MACRO nutrienti in Italia

Contributo percentuale di macronutrienti rispetto l'assunzione totale di energia in tutto il campione in studio (0-99 anni), maschi e femmine Survey INRAN-SCAI 2005-06

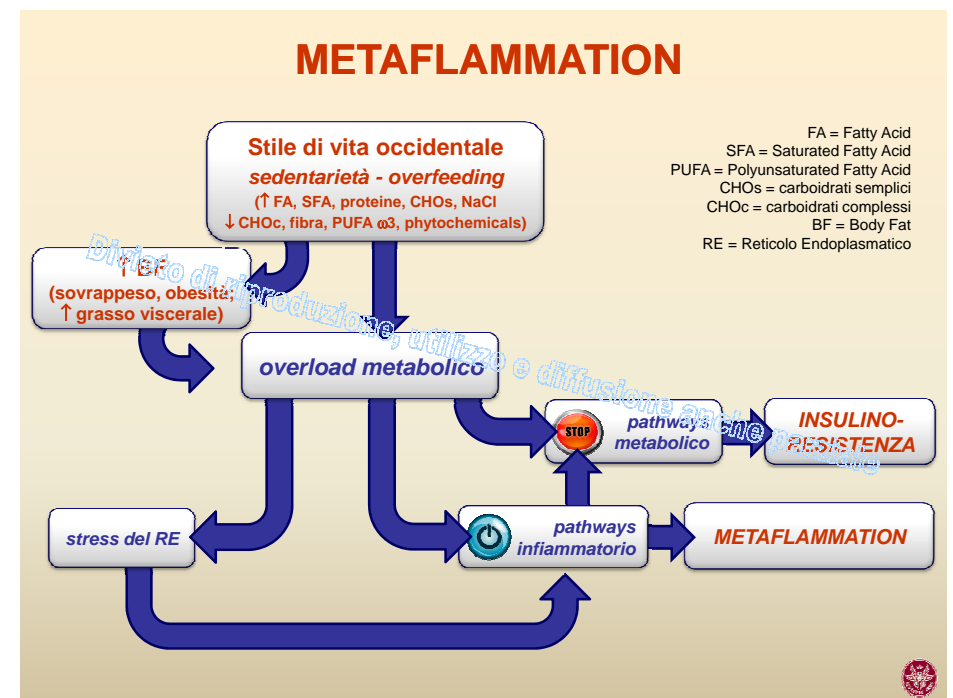
Il contributo in energia da macronutrienti conferma che in Italia, come in altri Paesi industrializzati, l'apporto di grassi è troppo elevato mentre quello di carboidrati è troppo ridotto.

% di energia da macronutrienti

- Carboidrati; 45,5%
- Lipidi; 36,2%
 - Acidi grassi saturi 11,2%
 - Acidi grassi monoinsaturi 17,5%
 - Acidi grassi polinsaturi 4,5%
 - di cui zuccheri semplici 15,0%
- Alcol; 2,5%
- Proteine; 15,7%

Divieto di riproduzione, utilizzo e diffusione anche parziale

Nutrition, Metabolism & Cardiovascular Diseases (2011) 21, 922e932



APPORTO INADEGUATO PER SESSO E FASCE D'ETÀ
 Dati INRAN-SCAI 2005-06 vs LARN (PRI/AI)

VITAMINE	MASCHI	FEMMINE
VITAMINA C	-	-
VITAMINA B1	18 - ≥ 75 aa	15 ≥ 75 aa
VITAMINA B2	18 - ≥ 75 aa	-
VITAMINA E6	-	-
VITAMINA B12	-	-
VITAMINA A	18 - 59 aa	18 - 59 aa
VITAMINA D	1 - ≥ 75 aa	1 - ≥ 75 aa
VITAMINA E	-	15 ≥ 75 aa
MINERALI	MASCHI	FEMMINE
CALCIO	1 - ≥ 75 aa	1 - ≥ 75 aa
MAGNESIO	-	-
POTASSIO	1 - ≥ 75 aa	1 - ≥ 75 aa
FOSFORO	-	-
FERRO	1 - 10 aa	11 - 59 aa
ZINCO	-	-

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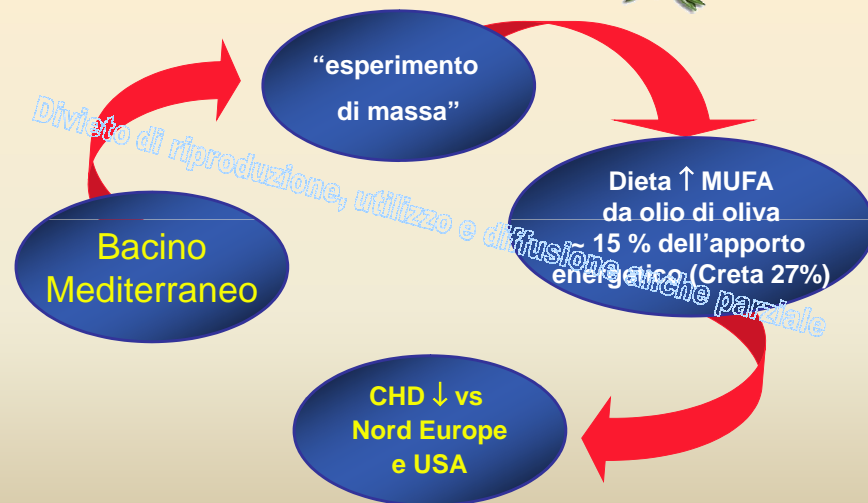
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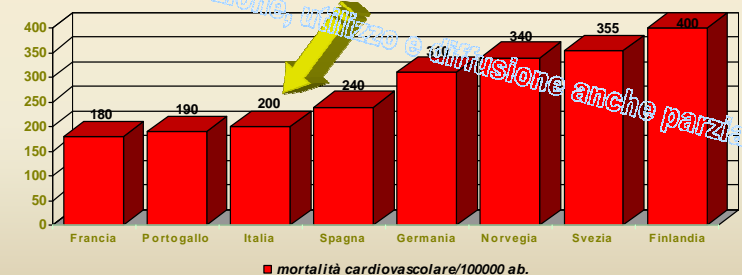
DIETA MEDITERRANEA



DIETA MEDITERRANEA



Da quando Ancel Keys (1952) fece le sue prime osservazioni sullo stile di vita e il tipo di alimentazione dei Paesi che si affacciano sul bacino del Mediterraneo, la scienza moderna ha confermato che la dieta è uno degli strumenti più importanti per combattere i fattori di rischio delle malattie cardiovascolari, principali cause di decesso nei Paesi altamente industrializzati.



Keys A, Menotti A, Karoven MI. The diet and the 15-year death rate in the Seven Countries Study. Am J Epidemiol. 1986;124:903-915.

Comparison of Low-Fat Versus Mediterranean-Style Dietary Intervention After First Myocardial Infarction (from The Heart Institute of Spokane Diet Intervention and Evaluation Trial)[†]

Kath...
The NEW ENGLAND JOURNAL of MEDICINE
 D^a,

Weight Loss with a Low-Carbohydrate, Mediterranean, or Low-Fat Diet

Conformity to traditional Mediterranean diet and cancer incidence: the Greek EPIC cohort

Effect of a Traditional Mediterranean Diet on Lipoprotein Oxidation

A Randomized Controlled Trial

Montserrat Fitó, MD, PhD; Monica Güxens, MD; Dolores Corella, DPharm, PhD; Guillermo Sáez, MD, PhD;

Effect of olive oils on biomarkers of oxidative DNA stress in Northern and Southern Europeans

Anja Machowatz,^{1,2} Henrik E. Poulsen,^{1,2} Sindy Gruendel,³ Allan Weimann,⁴ Montserrat Fitó,² Jaume Marrugat,² Rafael de la Torre,⁵ Julka T. Salonen,⁶ Kristiina Nyyssönen,⁷ Jaakko Mursu,⁸ Simona Nascetti,⁹ Antonio Gaddi,¹⁰ Holger Kiesewetter,¹¹ Hans Baumler,¹² Hany Selmi,¹³ Jari Kaikkonen,¹⁴ Hans-Joachim F. Zunft,¹⁵ Maria-Isabel Covas,² and Corinna Koebnick¹⁶

Effects of a Mediterranean-Style Diet on Cardiovascular Risk Factors

A Randomized Trial

Ramon Estruch, MD, PhD; Miguel Angel Martínez-González, MD, PhD; Dolores Corella, MD; Jordi Salas-Salvado, MD, PhD; Maria Isabel Covas, PhD; Miguel Fitó, MD, PhD; Begoña Gómez-García, MD, PhD; Carmen López-Sabater, PhD; Ernest Vinyoles, MD, PhD; Fernando Arós, MD, PhD; Manuel Conde; José Lapetra, MD, PhD; Guillermo Sáez, MD, PhD; and Emilio Ros, MD, PhD, for the PREDIMED Study Investigators

The Mediterranean diet with olive oil reduced C-reactive protein levels by 0.54 mg/L (CI, 1.04 to 0.03 mg/L) compared with the low-fat diet.

Effect of a Mediterranean-Style Diet on Endothelial Dysfunction and Markers of Vascular Inflammation in the Metabolic Syndrome

A Randomized Trial JAMA. 2004;292:1440-1446

Katherine Esposito, MD
 Raffaele Marfella, MD, PhD
 Miriam Ciaccio, MD
 Carmen Di Palo, MD

patients consuming the control diet, patients consuming the intervention diet had significantly reduced serum concentrations of hs-CRP ($P = .01$), IL-6 ($P = .04$), IL-7 ($P = 0.04$), and IL-18 ($P = 0.3$), as well as decreased insulin resistance ($P < .001$). Endothelial function score improved in the intervention group (mean [SD] change, +1.9 [0.6]; $P < .001$) but remained stable in the control group (+0.2 [0.2]; $P = .33$). At 2 years of follow-up, 40 patients in the intervention group still had features of the metabolic syndrome, compared with 78 patients in the control group ($P < .001$).

Inhibition of circulating immune cell activation: a molecular antiinflammatory effect of the Mediterranean diet¹⁻³

Am J Clin Nutr 2009;89:248-56.

Mari-Pau Mena, Emilio Sacanella, Mónica Vázquez-Agell, Mercedes Morales, Montserrat Fitó,

Results: One hundred six participants (43% women; average age: 68 y) completed the study. At 3 mo, monocyte expression of CD49d, an adhesion molecule crucial for leukocyte homing, and of CD40, a proinflammatory ligand, decreased ($P < 0.05$) after both Med-Diets but not after the low-fat diet. Serum interleukin-6 and soluble intercellular adhesion molecule-1, inflammatory mediators crucial in firm adhesion of leukocytes to endothelial surfaces, decreased ($P < 0.05$) in both Med-Diet groups. Soluble vascular cellular adhesion molecule-1 and C-reactive protein decreased only after the Med-Diet with VOO ($P < 0.05$), whereas interleukin-6, soluble vascular cellular adhesion molecule-1, and soluble intercellular adhesion molecule-1 increased ($P < 0.05$) after the low-fat diet.

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 APRIL 4, 2013 VOL. 368 NO. 14

Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

Ramon Estruch, M.D., Ph.D., Emilio Ros, M.D., Ph.D., Jordi Salas-Salvado, M.D., Ph.D., Maria-Isabel Covas, D.Pharm., Ph.D., Dolores Corella, D.Pharm., Ph.D., Fernando Arós, M.D., Ph.D., Enrique Gómez-García, M.D., Ph.D., Valentina Ruiz-Gutierrez, Ph.D., Miguel Fitó, M.D., Ph.D., José Lapetra, M.D., Ph.D., Rosa María Lamuela-Raventós, D.Pharm., Ph.D., Lluís Serra-Majem, M.D., Ph.D., Xavier Pintó, M.D., Ph.D., José López-Sabater, M.D., Ph.D., Miguel Ángel Muñoz, M.D., Ph.D., José V. Sorlí, M.D., Ph.D., José Alfredo Martínez-González, D.Pharm., Ph.D., and Miguel Ángel Martínez-González, M.D., Ph.D., for the PREDIMED Study Investigators[†]

Methods

In a multicenter trial in Spain, we randomly assigned participants who were at high cardiovascular risk, but with no cardiovascular disease at enrollment, to one of three diets: a Mediterranean diet supplemented with extra-virgin olive oil, a Mediterranean diet supplemented with mixed nuts, or a control diet (advice to reduce dietary fat). Participants received quarterly individual and group educational sessions and, depending on group assignment, free provision of extra-virgin olive oil, mixed nuts, or small nonfood gifts. The primary end point was the rate of major cardiovascular events (myocardial infarction, stroke, or death from cardiovascular causes).

On the basis of the results of an interim analysis, the trial was stopped after a median follow-up of 4.8 years.

Background

Observational cohort studies and a secondary prevention trial have shown an inverse association between adherence to the Mediterranean diet and cardiovascular risk. We conducted a randomized trial of this diet pattern for the primary prevention of cardiovascular events.

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Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

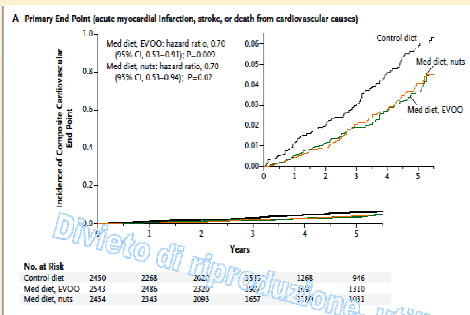
Ramon Estruch, M.D., Ph.D., Emilio Ros, M.D., Ph.D., Jordi Salas-Salvado, M.D., Ph.D., Maria-Isabel Covas, D.Pharm., Ph.D., Dolores Corella, D.Pharm., Ph.D., Fernando Arós, M.D., Ph.D., Enrique Gómez-García, M.D., Ph.D., Valentina Ruiz-Gutierrez, Ph.D., Miguel Fitó, M.D., Ph.D., José Lapetra, M.D., Ph.D., Rosa María Lamuela-Raventós, D.Pharm., Ph.D., Lluís Serra-Majem, M.D., Ph.D., Xavier Pintó, M.D., Ph.D., José López-Sabater, M.D., Ph.D., Miguel Ángel Muñoz, M.D., Ph.D., José V. Sorlí, M.D., Ph.D., José Alfredo Martínez-González, D.Pharm., Ph.D., and Miguel Ángel Martínez-González, M.D., Ph.D., for the PREDIMED Study Investigators[†]

Food	Goal
Mediterranean diet	
Recommended	
Olive oil*	≥4 tsp/day
Tree nuts and peanuts†	≥3 servings/wk
Fresh fruits	≥3 servings/day
Vegetables	≥2 servings/day
Fish (especially fatty fish), seafood	≥3 servings/wk
Legumes	≥3 servings/wk
Sofrito‡	≥2 servings/wk
White meat	Instead of red meat
Wine with meals (optionally, only for habitual drinkers)	≥7 glasses/wk
Discouraged	
Soda drinks	<1 drink/day
Commercial bakery goods, sweets, and pastries§	<3 servings/wk
Spread fats	<1 serving/day
Red and processed meats	<1 serving/day

Low-fat diet (control)

Recommended	
Low-fat dairy products	≥3 servings/day
Bread, potatoes, pasta, rice	≥3 servings/day
Fresh fruits	≥3 servings/day
Vegetables	≥2 servings/wk
Lean fish and seafood	≥3 servings/wk
Discouraged	
Vegetable oils (including olive oil)	≤2 tsp/day
Commercial bakery goods, sweets, and pastries§	≤1 serving/wk
Nuts and seeds	≤1 serving/wk
Red and processed fatty meats	≤1 serving/wk
Visible fat in meats and soups¶	Always remove
Fatty fish, seafood canned in oil	≤1 serving/wk
Spread fats	≤1 serving/wk
Sofrito‡	≤2 servings/wk

Table 1. Summary of Dietary Recommendations to Participants in the Mediterranean-Diet Groups and the Control-Diet Group.



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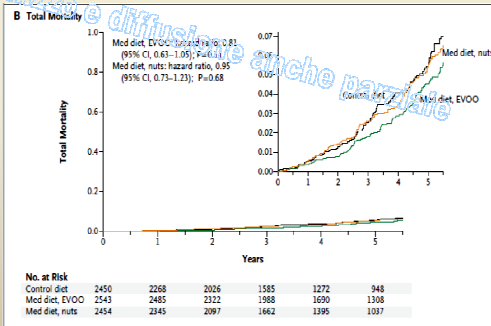


Figure 1. Kaplan-Meier Estimates of the Incidence of Outcome Events in the Total Study Population.

Panel A shows the incidence of the primary end point (a composite of acute myocardial infarction, stroke, and death from cardiovascular causes), and Panel B shows total mortality. Hazard ratios were stratified according to center (Cox model with robust variance estimator). CI denotes confidence interval, EVOO extra-virgin olive oil, and Mediterranean.

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Conclusions

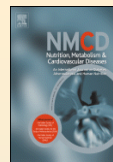
Among persons at high cardiovascular risk, a Mediterranean diet supplemented with extra-virgin olive oil or nuts reduced the incidence of major cardiovascular events.

(Funded by the Spanish government's Instituto de Salud Carlos III and others; Controlled-Trials.com number, ISRCTN35739639.)

Results

A total of 7447 persons were enrolled (age range, 55 to 80 years); 57% were women. The two Mediterranean-diet groups had good adherence to the intervention, according to self-reported intake and biomarker analyses.

A primary end-point event occurred in 288 participants. The multivariable-adjusted hazard ratios were 0.70 (95% confidence interval [CI], 0.54 to 0.92) and 0.72 (95% CI, 0.54 to 0.96) for the group assigned to a Mediterranean diet with extra-virgin olive oil (96 events) and the group assigned to a Mediterranean diet with nuts (83 events), respectively, versus the control group (109 events). No diet-related adverse effects were reported.



Nutrition, Metabolism & Cardiovascular Diseases (2012) xx, 1–7

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Adherence to Mediterranean diet reduces the risk of metabolic syndrome: A 6-year prospective study

E. Kesse-Guyot ^{a,*}, N. Ahluwalia ^a, C. Lassale ^a, S. Hercberg ^{a,b}, L. Fezeu ^a, D. Lairon ^c

Benefits of Mediterranean diet on MetS risk have been suggested, but overall prospective evidence in the general population is limited. For the first time, the prospective association of adherence to Mediterranean diet with the 6-y risk of MetS and its components was evaluated in a large cohort in Europe.

Methods and results

Subjects included were participants from the Supplémentation en Vitamines et Minéraux Antioxydants (SU.VI.MAX) study. Adherence to Mediterranean diet was assessed using traditional Mediterranean diet score (MDS), an updated Mediterranean score (MED) and Mediterranean style-dietary pattern score (MSDPS) calculated from at least three 24-h records. In 3232 subjects, the association between Mediterranean diet scores and 6-y risk of MetS was evaluated. The association between Mediterranean scores and MetS components was also estimated. A lower risk of MetS was observed with increasing MED score (*P*-trend = 0.001) and MDS (*P*-trend = 0.03) in multivariate models. The adjusted odds ratios (95% Confidence Interval) for MetS risk were 0.47 (0.32–0.69) and 0.50 (0.32–0.77) in subjects in the highest versus lowest tertile of MED score and MDS, respectively. The MED score was inversely associated with waist circumference, systolic blood pressure and triglycerides, and directly associated with HDL-cholesterol. The MDS was negatively associated with waist circumference and triglycerides, and MSDPS was positively associated with HDL-cholesterol.

Trial Registration: clinicaltrials.gov Identifier: NCT00272428.

Nutrition, Metabolism & Cardiovascular Diseases (2012) xx, 1–7

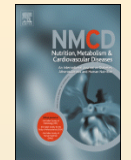
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Adherence to Mediterranean diet reduces the risk of metabolic syndrome: A 6-year prospective study

E. Kesse-Guyot ^{a,*}, N. Ahluwalia ^a, C. Lassale ^a, S. Hercberg ^{a,b}, L. Fezeu ^a, D. Lairon ^c



The SU.VI.MAX study (1994–2002) was designed as RCT (13,017 sbj; FU 8 yrs) to test the potential efficacy of daily supplementation with antioxidant vitamins and minerals at nutritional doses (Vit C, E, β-carotene, Se, Zn) on the incidence of cancers, CHD and overall mortality.

The current analyses were performed among the 3232 sbj free of MetS who had a 6-y FU.

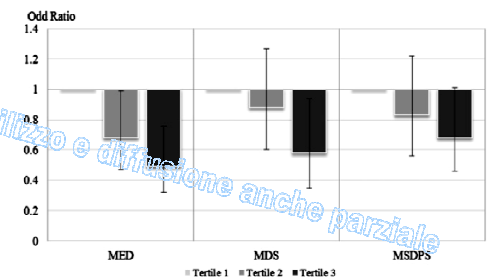


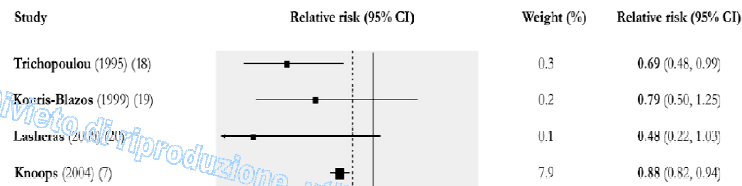
Figure 1 Mediterranean diet scores (in tertiles) related to 6-year incidence of MetS. SU.VI.MAX study Abbreviations: Medi-

Conclusions

All Mediterranean diet scores were associated in a potentially beneficial direction with components of MetS or MetS incidence. Our findings support that individuals should be encouraged to follow a Mediterranean dietary pattern for reduction of MetS risk.

Accruing evidence on benefits of adherence to the Mediterranean diet on health: an updated systematic review and meta-analysis^{1,2}

Francesco Sofi, Rosanna Abbate, Gian Franco Gensini, and Alessandro Casini *Am J Clin Nutr* 2010;92:1189-96.



The meta-analysis for all studies with a random-effects model that was conducted after the inclusion of these recent studies showed that a **2-point increase in adherence to the Mediterranean diet was associated with a significant reduction of overall mortality** [relative risk (RR) = 0.92; 95% CI: 0.90, 0.94], **cardiovascular incidence or mortality** (RR = 0.90; 95% CI: 0.87, 0.93), **cancer incidence or mortality** (RR = 0.94; 95% CI: 0.92, 0.96), and **neurodegenerative diseases** (RR = 0.87; 95% CI: 0.81, 0.94).

Conclusion: This updated meta-analysis confirms, in a larger number of subjects and studies, the significant and consistent protection provided by adherence to the Mediterranean diet in relation to the occurrence of major chronic degenerative diseases.

BMJ

RESEARCH

Anatomy of health effects of Mediterranean diet: Greek EPIC prospective cohort study
 Antonia Trichopoulos, professor; Christina Bani, lecturer; Dimitrios Trichopoulos, professor

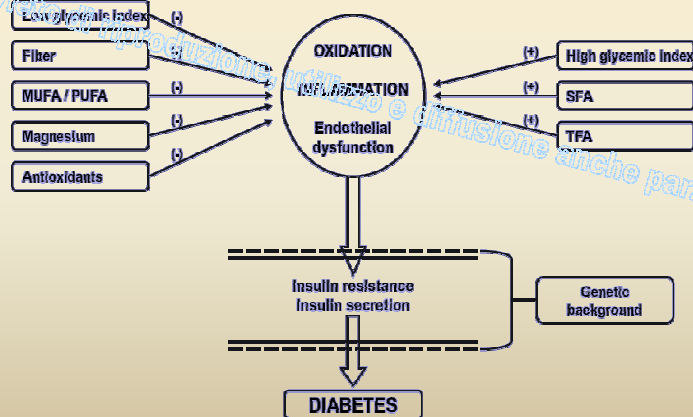
Objective To investigate the relative importance of the individual components of the Mediterranean diet in generating the inverse association of increased adherence to this diet and overall mortality. **Design** Prospective cohort study. Setting Greek segment of the European Prospective Investigation into Cancer and nutrition (EPIC). **Participants** 23 349 men and women, not previously diagnosed with cancer, coronary heart disease, or diabetes, with documented survival status until June 2008 and complete information on nutritional variables and important covariates at enrolment.

CONCLUSION The dominant components of the Mediterranean diet score as predictor of lower mortality	high consumption	vegetables, fruits and nuts, olive oil, and legumes
	low consumption	meat and meat products
	moderate consumption	ethanol
Minimal contributions	cereals and dairy products	possibly because they are heterogeneous categories of foods with differential health effects
	fish and seafood	intake of which is low in this population



The role of diet in the prevention of type 2 diabetes

J. Salas-Salvadó^{a,b,*}, M.Á. Martínez-González^c, M. Bulló^{a,b}, E. Ros^{b,d}



Evoluzione del modello mediterraneo: cosa è cambiato

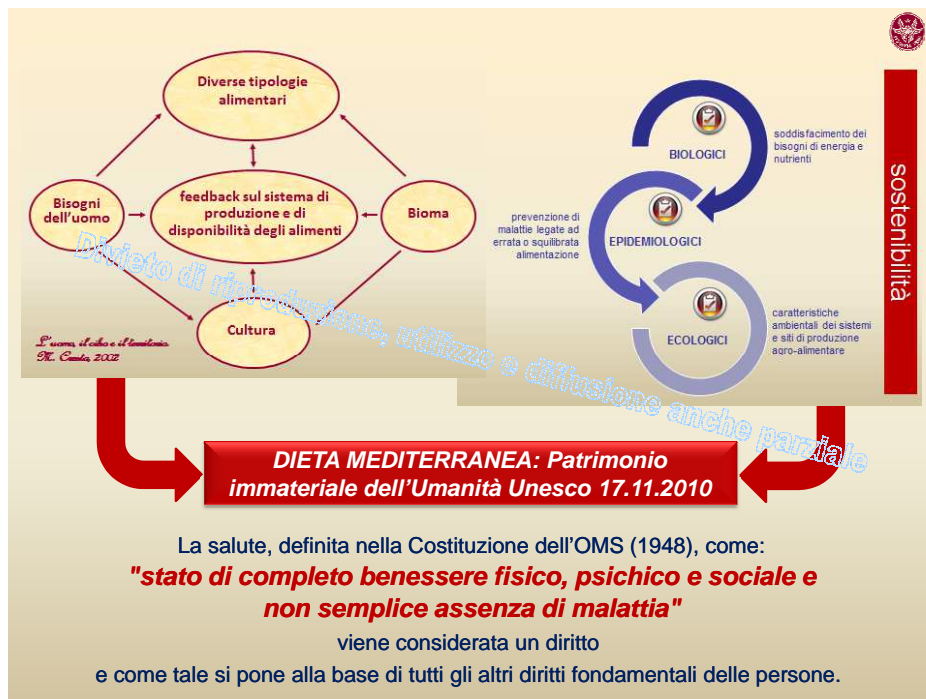
Patrimonio immateriale dell'Umanità
 Unesco 17.11.2010

~~Diete come modello di dieta sostenibile~~

Alimenti, nutrienti, pattern alimentare, pattern nutrizionale?

EBM e modello alimentare mediterraneo

Nuova piramide della dieta mediterranea



Piramide Alimentare

- La **piramide alimentare** è un grafico con cui si propone di elaborare un regime alimentare onnivoro equilibrato;
- tale aiuto grafico è stato concepito per invitare la popolazione a seguire i consigli dietetici proposti da un organismo o una società qualificata in materia di salute;
- per interpretarla, si parte dal presupposto che gli alimenti situati al vertice della piramide sono quelli che dovrebbero essere consumati in piccole quantità e, di conseguenza, gli alimenti posti nella parte bassa sono quelli che bisogna consumare con più frequenza e in quantità maggiori.

Oldways, 1994

FIGURE 1. The 1992 US Department of Agriculture food guide pyramid: a guide to daily food choices. ○, fat (naturally occurring and added); ∇, sugars (added); these symbols show fats, oils, and added sugars in foods. From reference 1.

FIGURE 2. The Mediterranean diet pyramid: a cultural model for healthy eating. © Copyright 1994 Oldways Preservation & Exchange Trust.

Considerazioni relative all'evoluzione della dieta mediterranea

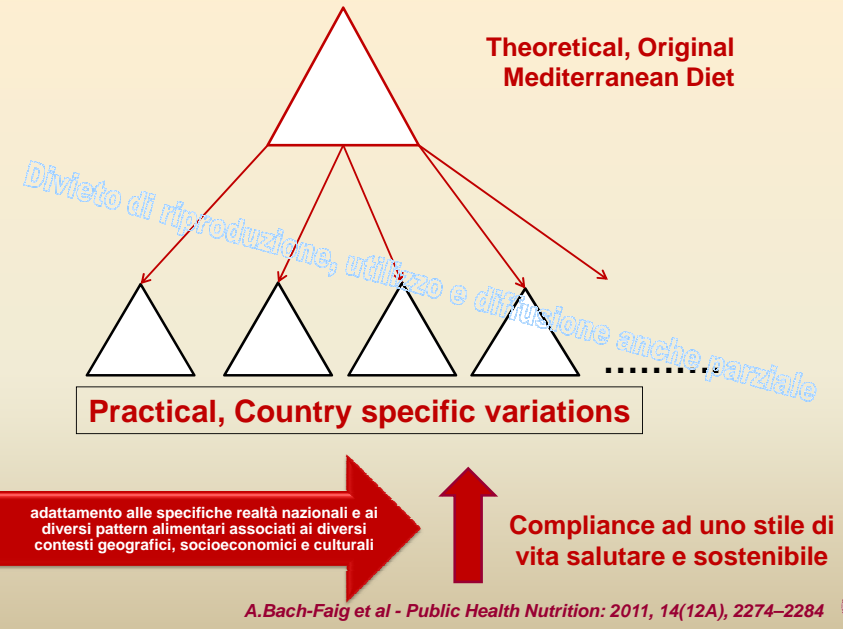
- Evidenze scientifiche & impatto sullo stato di salute
- Nutrienti vs Alimenti
- "Piramidi" Paese specifiche
- Biodiversità
- Fattori socio-economici (food security)
- Politiche agricole: produzione & industria alimentare
- Politiche agricole: produzione & sostenibilità
- Applicabilità "alla maggioranza dei popoli del bacino Mediterraneo"

esigenza di una revisione della tradizionale piramide della dieta mediterranea

OBIETTIVI

- 1 • Assunzione di alimenti freschi, solo minimamente trasformati, di origine locale, rispetto della stagionalità
- 2 • Equilibrio nel consumo di alimenti a $\uparrow\downarrow$ densità energetica, in relazione alla riduzione del dispendio energetico e all'elevata prevalenza di sovrappeso/obesità
- 3 • Disponibilità, sostenibilità, accessibilità, costo degli alimenti di cui è raccomandato un più alto consumo
- 4 • Adattamento ai diversi contesti geografici, socio-economici e culturali
- 5 • Spazio per il dialogo e la creatività interculturale come comune eredità culturale per le popolazioni del bacino mediterraneo

Evolution of the Mediterranean Diet Pyramids



Mediterranean guidelines for adults today

Serving size based on frugality and local habits

Wine in moderation and respecting social beliefs

Every Week

Every Main Meal

Every Day

Cultural Elements

Moderation

18-65 anni

A.Bach-Faig et al - Public Health Nutrition: 2011, 14(12A), 2274-2284

27° CONGRESSO NAZIONALE ANDID

Alimentazione: Best practice e innovazione

Roma, 7/9 Maggio 2015

“Concerto all'alba” Ravello, 2014

Grazie per l'attenzione

Alessandro Pinto

The Mediterranean diet pyramid has adapted to the new way of life

The new model takes into account qualitative and quantitative elements for the selection of foods

The traditional Mediterranean diet (MD) pyramid has evolved to adopt the new way of life. As an initiative of the Mediterranean Diet Foundation and with the collaboration of numerous international entities, a wide range of experts in nutrition, anthropology, sociology and agriculture have reached a consensus in a new richer design with the incorporation of qualitative elements. The new pyramid follows the previous pattern: at the base, foods that should sustain the diet, and at the upper levels, foods to be eaten in moderate amounts. Moreover, social and cultural elements characteristic of the Mediterranean way of life are incorporated in the graphic design. So, it is not just about prioritising some food groups from others, but also paying attention to the way of selecting, cooking and eating. It also reflects the composition and number of servings per meals.

The Mediterranean diet health benefits and protective effect against chronic diseases have been well established by the scientific community. This new pyramid includes all the food groups; it is in the proportions and the frequencies that relies a healthy or unhealthy diet. This food consumption pattern is addressed to a healthy adult population and should be adapted to the specific needs of children, pregnant women and other health conditions.

Plant-based foods are situated at the base of the pyramid. They provide key nutrients and protective substances that contribute to the general well-being and contribute to maintain a balanced diet, therefore, should be consumed in high proportions and frequency. Foods situated in the upper levels such as from animal origin, rich in sugars and in fats should be eaten in moderation and left for special occasions.

The pyramid establishes dietary daily, weekly and occasional guidelines in order to follow a healthy and balanced diet.

A. Bach-Faig et al - Public Health Nutrition: 2011, 14(12A), 2274–2284



Every day:

The three main meals should contain three basic elements, which can also be found throughout the day:

- **Cereals.** One or two servings per meal in the form of bread, pasta, rice, couscous and others. Preferably whole grain, since some valuable nutrients (magnesium, phosphorus, etc.) and fibre can be lost during processing.
 - **Vegetables.** Present at lunch and dinner; or more than two servings per meal, at least one of the serving should be raw. A variety of colours and textures provide a diversity of antioxidants and protective compounds.
 - **Fruit.** One or two servings per meal. Should be chosen as the most frequent dessert.
- A daily intake of 1.5–2.0 liter of water should be guaranteed. A good hydration is essential to maintain the corporal water equilibrium, although needs may vary among people because of age, physical activity, personal circumstances and weather conditions. As well as water, non-sugar rich herbal infusions and broths (with low fat and salt content) may complete the requirements.
 - **Dairy products.** Prefer it in the form of low fat yoghurt, cheese and other fermented dairy products. They contribute to bone health, but can also be an important source of saturated fat.
 - **Olive oil** is located at the centre of the pyramid; should be the **principal source of dietary lipids** because of its high nutritional quality (especially extra virgin). Its unique composition gives it a high resistance to cooking temperatures and should be used for cooking as well as dressings (one tablespoon per person).
 - **Spices, herbs, garlic and onions** are a good way to introduce a variety of flavours and palatability to dishes and contribute to the reduction of salt addition. **Olives, nuts and seeds** are good sources of healthy lipids, proteins, vitamins, minerals and fibre. A reasonable consumption of olives, nuts and seeds (such as a handful) make for a healthy snack choice.
 - Respecting religious and social beliefs, a moderate consumption of wine and other fermented beverages (one glass per day for women and two glasses per day for men, as a generic reference) during meals is recommended.

A. Bach-Faig et al - Public Health Nutrition: 2011, 14(12A), 2274–2284



Weekly:

A variety of plant and animal origin proteins should be consumed. Mediterranean traditional dishes do not usually have animal origin protein foods as the main ingredient but as a tasty source.

- **Fish** (two or more servings), **white meat** (two servings) and **eggs** (two to four servings) are good sources of animal protein. Fish and shellfish are also a good source of healthy proteins and lipids.
- Consumption of **red meat** (less than two servings, preferably lean cuts) and processed meats (less than one serving) should be in smaller quantity and frequency.
- The combination of **legumes** (more than two servings) and cereals are a healthy protein and lipid source. **Potatoes** are also included in this group, as they are a part of many traditional recipes with meat and fish (three or less servings per week, preferably fresh potatoes).

Occasionally:

In the vertex of the pyramid are represented the sugary and unhealthy fats rich foods (**sweets**). Sugar, candies, pastries and beverages such as sweetened fruit juices and soft drinks, should be consumed in small amounts and left for special occasions.

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Together with the proportion and frequency recommendations of consumption, the incorporation of **lifestyle and cultural elements** is one of the innovations of the pyramid. Adopting a healthy lifestyle and preserving the cultural elements should also be considered in order to acquire all the benefits from the Mediterranean diet. These elements are:

Moderation: Portion sizes should be based on frugality, adapting energy needs to urban and modern sedentary lifestyles.

Socialisation: The aspect of conviviality is important for the social and cultural value of the meal, beyond nutritional aspects. Cooking, sitting around the table and sharing food in company of family and friends is a social support and gives a sense of community.

Cooking: Make cooking an important activity taking the proper time and space. Cooking can be relaxing, fun and can be done with family, friends and the loved ones.

Seasonality, biodiversity, eco-friendliness, traditional and local food products are presented at the bottom of the pyramid to highlight how the new modern Mediterranean diet is compatible with the development of a sustainable diet model for the present and future Mediterranean generations. The preference for seasonal, fresh and minimally processed foods maximises the content of protective nutrients and substances in the diet.

Activity: Regular practice of moderate **physical activity** (at least 30 min throughout the day) as a basic complement to the diet for balancing energy intake, for healthy body weight maintenance and for many other health benefits. Walking, taking the stairs v. the lift, housework, etc., are simple and easy ways of doing exercise. Practising leisure activities outdoors and preferably with others makes it more enjoyable and strengthens the sense of community.

Rest: Resting is also part of a healthy and balanced lifestyle.

This pyramid is the result of an international consensus and is based on the latest scientific evidence on nutrition and health published in hundreds of scientific articles in the last decades. It contributes to the harmonisation of educational tools used in the promotion of the Mediterranean diet and responds to the need for a common framework among the Mediterranean area; to be adapted to the specific realities of each country and region. The use and promotion of this pyramid is recommended without any restrictions and has been translated and is available in English, Spanish, Catalan, Galician, Basque, French, Arabic, Italian, Portuguese and Greek.

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