Prevenzione primaria individuale.
Farmaci e non solo…
stili di vita… e non solo

Andrea Poli
Nutrition Foundation of Italy
& Università di Parma

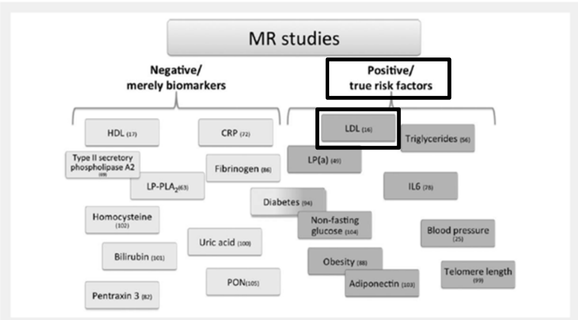
Fattori vs markers di rischio

Fattore di rischio vero: può essere oggetto di intervento, se lo controllo riduco il rischio

Indicatore di rischio: segnala la presenza di un rischio aumentato; trattarlo è in genere inutile

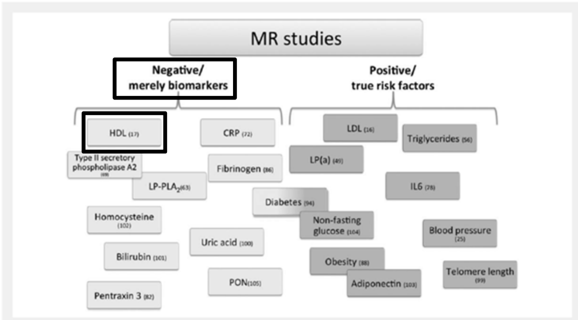
Come differenzio fattori da indicatori? Mediante RCT o randomizzazioni Mendeliane

Mendelian Randomization studies on the risk of Coronary Heart Disease (CHD)



Henning J, et al. Eur Heart J 2014

Mendelian Randomization studies on the risk of Coronary Heart Disease (CHD)



Henning J, et al. Eur Heart J 2014

HDL: implicazioni pratiche

- Il ruolo di HDL-c nella stadiazione del rischio rimane del tutto invariato…
- … ma il ruolo delle modificazioni dei livelli di HDL-c è da riconsiderare
- E’ probabile che la stima dei flussi del colesterolo (in parte HDL mediati) possa correlare causalmente con le variazioni del rischio (Rothagi, NEJM 2014)…
- … ma i livelli di HDL-c non correlano con i flussi!(Rothagi, NEJM 2014)

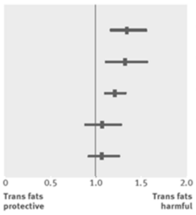
Acidi grassi e rischio cardiovascolare: come sono evolute le evidenze tra il 2000 ed oggi

	Associazione con il rischio CV la visione del 2000	Associazione con il rischio CV la visione del 2014
Grassi totali	++	=
Grassi saturi	++	+
Grassi insaturi *trans*	++	+++
Monoinsaturi	–	=
Polinsaturi omega 6	–	– –
Polinsaturi omega 3	– –	– –
-: riduzione del rischio CV; +: aumento del rischio CV; =: nessun effetto significativo.		

Poli A, personal opinion, 2014

Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality, cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies

Outcome	No of studies /comparisons	No of events /participants	Relative risk (95% CI)	P	P_{het}	I^2 (%)
Total trans fats						
All cause mortality	2/2	2141/20 346	1.34 (1.16 to 1.56)	<0.001	0.07	70
CHD mortality	5/6	1234/70 864	1.28 (1.09 to 1.50)	0.003	0.66	0
CHD total	6/7	4579/145 922	1.21 (1.10 to 1.33)	<0.001	0.43	0
Ischemic stroke	3/4	1905/190 284	1.07 (0.88 to 1.28)	0.50	0.03	67
Type 2 diabetes	6/6	8690/230 135	1.10 (0.95 to 1.27)	0.21	0.01	66

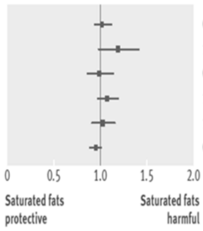


***trans* fats**

de Souza RJ et al, Brit Med J 2015

Intake of saturated and trans unsaturated fatty acids and risk of all cause mortality, cardiovascular disease, and type 2 diabetes: systematic review and meta-analysis of observational studies

Outcome	No of studies /comparisons	No of events /participants	Relative risk (95% CI)	P	P_{het}	I^2 (%)
All cause mortality	5/7	14 090/99 906	0.99 (0.91 to 1.09)	0.91	0.17	33
CHD mortality	11/15	2970/101 712	1.15 (0.97 to 1.36)	0.10	<0.001	70
CVD mortality	3/5	3792/90 501	0.97 (0.84 to 1.12)	0.69	0.29	19
CHD total	12/17	6383/267 416	1.06 (0.95 to 1.17)	0.29	0.02	47
Ischemic stroke	12/15	6226/339 090	1.02 (0.90 to 1.15)	0.79	0.002	59
Type 2 diabetes	8/8	8739/237 454	0.95 (0.88 to 1.03)	0.20	0.61	0



Saturated fats

de Souza RJ et al, Brit Med J 2015

Lipidi Alimentari e Lipidi Plasmatici

Δ colesterolo serico =

+ 0,0711 Δ saturi

- 0,0365 Δ polinsaturi

+ 0,0043 Δ colesterolo alimentare

Hegsted, 1993

Total fat and different types of fat intake in spanish high risk patients of the PREDIMED cohort: effects on all-cause mortality

Total fat						
Cases, *n* (%)	1408 (6.3)	1408 (6.9)	1407 (5.3)	1408 (6.0)	1407 (6.0)	
Median, % of energy	31.3	36.7	40.2	43.5	48.2	
Multivariable model 1	1 (Ref)	1.04 (0.77, 1.40)	0.73 (0.53, 1.01)	0.80 (0.58, 0.82)	0.57 (0.40, 0.82)	<0.01
Multivariable model 2	1 (Ref)	1.02 (0.75, 1.37)	0.71 (0.51, 0.98)	0.75 (0.54, 1.05)	0.53 (0.37, 0.76)	<0.01
MUFAs						
Cases, *n* (%)	1408 (6.3)	1408 (6.1)	1407 (5.9)	1408 (5.4)	1407 (5.4)	
Median, % of energy	14.7	17.9	20.5	22.8	26.0	
Multivariable model 1	1 (Ref)	0.85 (0.62, 1.16)	0.78 (0.56, 1.08)	0.70 (0.49, 1.00)	0.64 (0.43, 0.95)	0.02
Multivariable model 2	1 (Ref)	0.86 (0.63, 1.17)	0.78 (0.56, 1.09)	0.69 (0.48, 0.99)	0.64 (0.43, 0.94)	0.01
PUFAs						
Cases, *n* (%)	1408 (8.1)	1408 (5.9)	1407 (5.9)	1408 (4.9)	1407 (4.4)	
Median, % of energy	4.2	5.3	6.2	7.2	9.0	
Multivariable model 1	1 (Ref)	0.72 (0.53, 0.97)	0.71 (0.52, 0.97)	0.56 (0.40, 0.78)	0.50 (0.35, 0.71)	<0.01
Multivariable model 2	1 (Ref)	0.73 (0.54, 0.99)	0.72 (0.53, 0.99)	0.56 (0.39, 0.80)	0.50 (0.35, 0.73)	<0.01
SFAs						
Cases, *n* (%)	1408 (5.0)	1408 (5.8)	1407 (5.7)	1408 (6.2)	1407 (6.6)	
Median, % of energy	6.9	8.3	9.4	10.5	12.1	
Multivariable model 1	1 (Ref)	1.20 (0.86, 1.68)	1.17 (0.82, 1.67)	1.22 (0.84, 1.77)	1.21 (0.81, 1.80)	0.47
Multivariable model 2	1 (Ref)	1.16 (0.83, 1.62)	1.12 (0.78, 1.61)	1.12 (0.78, 1.60)	1.08 (0.74, 1.58)	0.90
trans Fat						
Cases, *n* (%)	1408 (4.8)	1408 (5.9)	1407 (4.7)	1408 (6.4)	1407 (7.5)	
Median, % of energy	0.05	0.10	0.16	0.23	0.36	
Multivariable model 1	1 (Ref)	1.15 (0.83, 1.60)	0.90 (0.64, 1.29)	1.22 (0.87, 1.72)	1.38 (1.00, 1.94)	0.03
Multivariable model 2	1 (Ref)	1.11 (0.80, 1.54)	0.86 (0.59, 1.24)	1.13 (0.78, 1.64)	1.29 (0.87, 1.90)	0.12

Guasch-Ferré M et al, Am J Clin Nutr 2015

Total fat and different types of fat intake in spanish high risk patients of the PREDIMED cohort: effects on all-cause mortality

Total fat						
Cases, *n* (%)	1408 (6.3)	1408 (6.9)	1407 (5.3)	1408 (6.0)	1407 (6.0)	
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Multivariable model 1	1 (Ref)	1.20 (0.86, 1.68)	1.17 (0.82, 1.67)	1.22 (0.84, 1.77)	1.21 (0.81, 1.80)	0.47
Multivariable model 2	1 (Ref)	1.16 (0.83, 1.62)	1.12 (0.78, 1.61)	1.12 (0.78, 1.60)	1.08 (0.74, 1.58)	0.90
trans Fat						
Cases, *n* (%)	1408 (4.8)	1408 (5.9)	1407 (4.7)	1408 (6.4)	1407 (7.5)	
Median, % of energy	0.05	0.10	0.16	0.23	0.36	
Multivariable model 1	1 (Ref)	1.15 (0.83, 1.60)	0.90 (0.64, 1.29)	1.22 (0.87, 1.72)	1.38 (1.00, 1.94)	0.03
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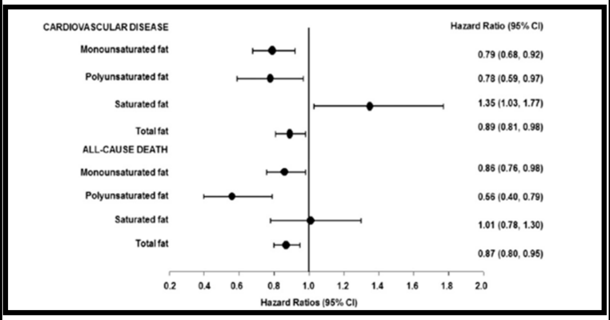
Guasch-Ferré M et al, Am J Clin Nutr 2015

Total fat and different types of fat intake in spanish high risk patients of the PREDIMED cohort: effects on all-cause mortality



Guasch-Ferré M et al, Am J Clin Nutr 2015

Dairy, total CVD and CHD: a metanalysis

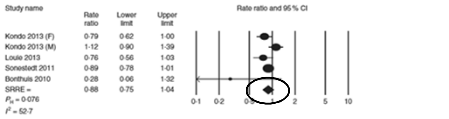


Fig. 2. Meta-analysis of total dairy intake and total CVD (high v. low intake analysis). SRRE, summary relative risk estimate. Individual studies required to report a composite total dairy variable and a compositive total CVD variable. F, female; M, male.

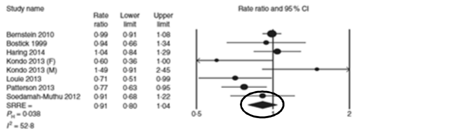
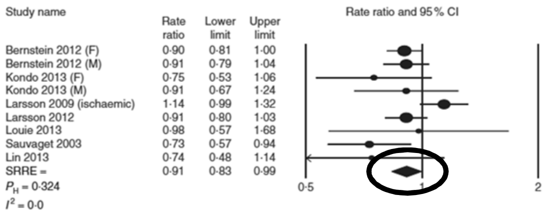


Fig. 3. Meta-analysis of total dairy intake and total CHD (high v. low intake analysis). SRRE, summary relative risk estimate. Individual studies required to report a composite total dairy variable and a compositive total CHD variable. F, female; M, male.

Alexander DD et al, Brit J Nutr 2016

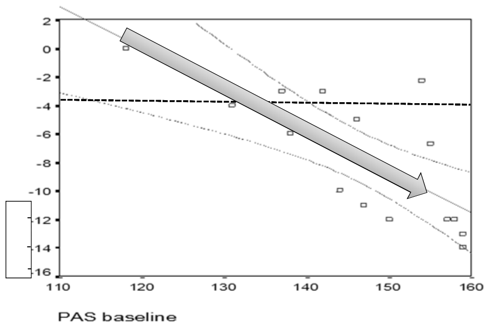
Dairy and stroke: a metanalysis



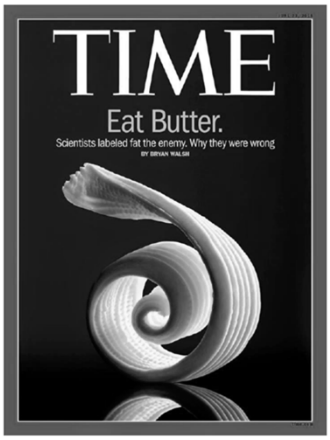
Removal of Larsson 2009 in a sensitivity analyses resulted in and SRRE of 0·88 (95 % CI 0·83, –0·94) with no heterogeneity (P_H = 0·73, I^2 = 0·00)

Alexander DD et al, Brit J Nutr 2016

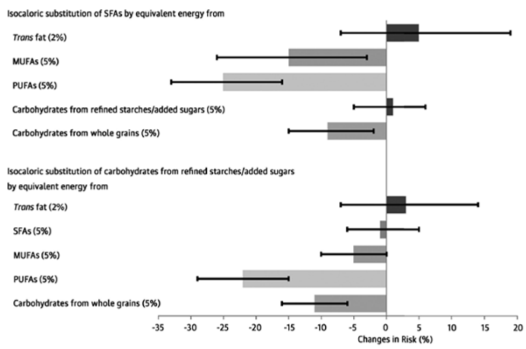
Tripeptidi del latte: riduzione PAS e PAS basale negli studi controllati disponibili



Cicero A et al, personal comunication, 2009



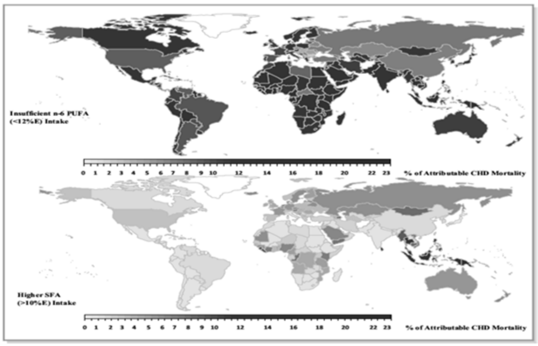
Saturated fats compared with unsaturated fats and sources of carbohydrates in relation to risk of CHD

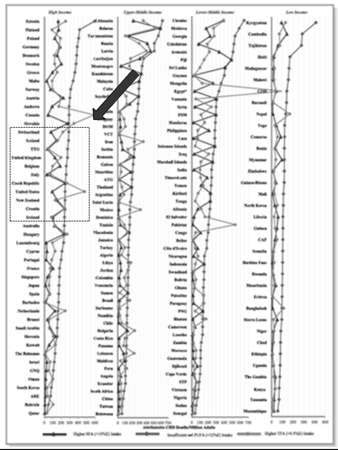


Li J et al, JACC 2015

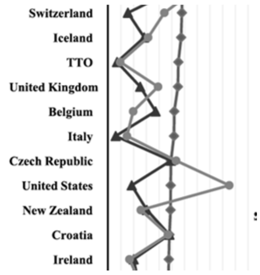
Impact of Nonoptimal Intakes of Saturated, Polyunsaturated, and Trans Fat on Global Burdens of Coronary Heart Disease

Qianyi Wang, ScD; Ashkan Afshin, ScD, MD; Mohammad Yawar Yakoob, ScD, MD; Gitanjali M. Singh, PhD; Colin D. Rehm, PhD, MPH; Shahab Khatibzadeh, MD; Renata Micha, PhD; Peilin Shi, PhD; Dariush Mozaffarian, MD, DrPH; on behalf of the Global Burden of Diseases Nutrition and Chronic Diseases Expert Group (NutriCoDE)*





CHD Deaths attributable to
low PUFA n-6 high SFA
or high TFA in various countries



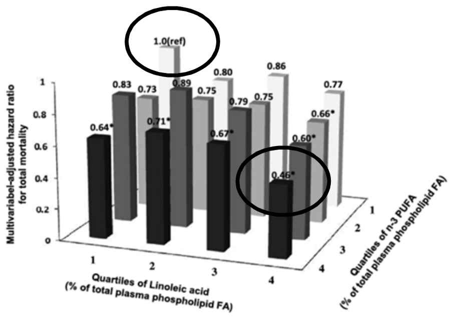
Wang Q et al, J Am Heart Assoc 2016

Impact of Nonoptimal Intakes of Saturated, Polyunsaturated, and Trans Fat on Global Burdens of Coronary Heart Disease

Qianyi Wang, ScD; Ashkan Afshin, ScD, MD; Mohammad Yawar Yakoob, ScD, MD; Gitanjali M. Singh, PhD; Colin D. Rehm, PhD, MPH; Shahab Khatibzadeh, MD; Renata Micha, PhD; Peilin Shi, PhD; Dariush Mozaffarian, MD, DrPH; on behalf of the Global Burden of Diseases Nutrition and Chronic Diseases Expert Group (NutriCoDE)*

		Proportion of CHD Deaths (%) due to (95%UI)		
	Population	Higher SFA (>10%E) Intake†	Insufficient N-6 PUFA (<12%E)intake‡	High TFA (>0.5%E) intake §
Italy				
Age 25-69	36342055	1.7 (1.3, 2.1)	13.9 (12.1, 15.6)	5.2 (4.7, 5.8)
Age 70+	9165930	1.1 (0.6, 1.5)	9.7 (7.6, 11.8)	3.1 (2.6, 3.7)
Female	23795067	1.1 (0.8, 1.5)	9.9 (8.3, 11.5)	3.4 (3, 3.8)
Male	21712918	1.3 (0.9, 1.7)	11.4 (9.6, 13.2)	3.8 (3.3, 4.3)
All	45507985	1.2 (1, 1.5)	10.7 (9.5, 11.8)	3.6 (3.3, 4)

Omega-3, omega-6 in plasma PL and all-cause mortality



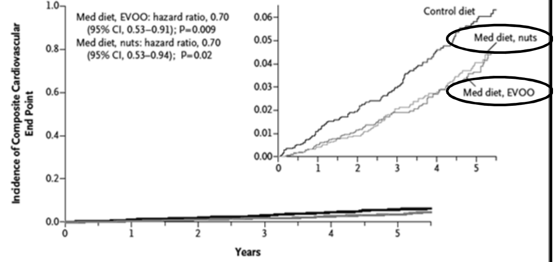
Wu JHY et al, Circulation 2014

Plasma fatty acids in vegans and omnivorous

Fatty acids	Vegans (n = 40)	Soldiers (n = 78)
14:0	0.76 ± 0.64	0.83 ± 0.36
16:0	22.39 ± 1.44	23.21 ± 1.27*
18:0	14.28 ± 1.08	14.38 ± 0.83
18:1trans	0.38 ± 0.25	1.26 ± 0.55*
18:1n9	17.95 ± 1.88	16.16 ± 1.33*
18:2trans	0.51 ± 0.33	0.90 ± 0.18*
18:2n6	18.70 ± 2.68	18.50 ± 1.91
18:3n3	0.49 ± 0.21	0.32 ± 0.13*
20:3n6	2.08 ± 0.42	1.97 ± 0.42
20:4n6	11.95 ± 1.90	12.94 ± 1.65
20:5n3 (EPA)	0.56 ± 0.22	0.40 ± 0.18*
22:4n6	2.44 ± 0.49	2.34 ± 0.44
22:5n3	2.02 ± 0.48	1.51 ± 0.27*
22:6n3 (DHA)	2.28 ± 0.70	2.61 ± 0.65
Omega-3 Index[a]	3.48 ± 0.81	3.47 ± 0.72

Sarter B et al, Clin Nutr 2014

The PREDIMED Study: incidence of Primary End-Points in the Nuts, EV Olive Oil and in the Control Groups



No. at Risk

Control diet	2450	2268	2020	1583	1268	946
Med diet, EVOO	2543	2486	2320	1987	1687	1310
Med diet, nuts	2454	2343	2093	1657	1389	1031

Estruch R et al, N Engl J Med 2013

Olio di oliva V/EV o "normale"

Risk of cardiovascular events and mortality according to baseline extra-virgin olive oil intake

	Energy-adjusted tertiles of extra-virgin olive oil, g/day				
	1 (low) (n = 2,405)	**2 (n = 2,406)**	**3 (high) (n = 2,405)**	***P for trend***	**Energy-adjusted extra virgin olive oil intake (10 g/d)**
Mean extra-virgin olive oil intake	**9.1 ± 11.23**	**19.5 ± 20.0**	**34.6 ± 27.4**		
Major CVD events					
Cardiovascular event, % (n)	4.6 (111)	4.2 (101)	2.7 (65)		3.8 (277)
Multivariable model 1	1 (Ref.)	1.01 (0.77, 1.33)	0.60 (0.43, 0.82)	< 0.01	0.89 (0.84, 0.95)
Multivariable model 2	1 (Ref.)	1.00 (0.76, 1.32)	0.60 (0.44, 0.84)	< 0.01	0.90 (0.85, 0.95)
Multivariable model 3	1 (Ref.)	0.99 (0.75, 1.31)	0.61 (0.44, 0.85)	< 0.01	0.90 (0.85, 0.95)
All-cause mortality	**1 (low) (n = 2,405)**	**2 (n = 2,406)**	**3 (high) (n = 2,405)**	***P for trend***	
All causes of mortality, % (n)	5.2 (125)	4.2 (100)	4.1 (98)		4.5 (323)
Multivariable model 1	1 (Ref.)	0.88 (0.67, 1.15)	0.81 (0.61, 1.07)	0.19	0.95 (0.91, 1.00)
Multivariable model 2	1 (Ref.)	0.84 (0.64, 1.10)	0.80 (0.60, 1.07)	0.20	0.95 (0.90, 1.00)
Multivariable model 3	1 (Ref.)	0.84 (0.64, 1.10)	0.82 (0.61, 1.09)	0.25	0.96 (0.91, 1.01)

Guasch-Ferrè M et al, BMC Medicine 2014

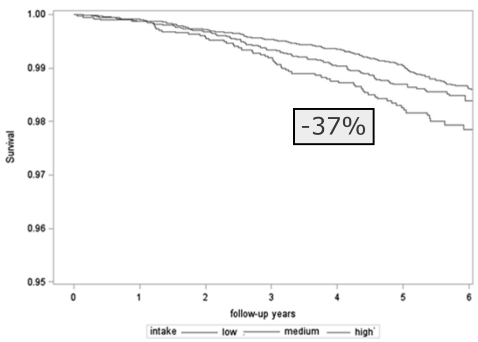
Olio di oliva V/EV o "normale"

Risk of cardiovascular events and mortality according to baseline common olive oil intake

	Energy-adjusted tertiles of common olive oil, g/day				
	1 (low) (n = 2,405)	**2 (n = 2,406)**	**3 (high) (n = 2,405)**	***P for trend***	**Energy-adjusted common olive oil intake (10 g/d)**
Mean common olive oil intake	**12.1 ± 11.7**	**18.6 ± 18.5**	**21.7 ± 25.9**		
Major CVD events					
Cardiovascular event, % (n)	3.5 (85)	3.6 (86)	4.4 (106)		3.8 (277)
Multivariable model 1	1 (Ref)	1.06 (0.78, 1.45)	1.20 (0.88, 1.62)	0.23	1.04 (0.99, 1.10)
Multivariable model 2	1 (Ref)	1.01 (0.74, 1.38)	1.13 (0.83, 1.54)	0.35	1.04 (0.98, 1.10)
Multivariable model 3	1 (Ref)	0.99 (0.73, 1.36)	1.11 (0.82, 1.51)	0.40	1.03 (0.98, 1.09)
All-cause mortality	**1 (low) (n = 2,405)**	**2 (n = 2,406)**	**3 (high) (n = 2,405)**	***P for trend***	
All causes of mortality, % (n)	4.2 (101)	4.4 (106)	4.8 (116)		4.5 (323)
Multivariable model 1	1 (Ref)	1.14 (0.86, 1.51)	1.17 (0.88, 1.51)	0.34	1.01 (0.96, 1.07)
Multivariable model 2	1 (Ref)	1.10 (0.83, 1.47)	1.16 (0.87, 1.54)	0.37	1.01 (0.96, 1.07)
Multivariable model 3	1 (Ref)	1.09 (0.82, 1.45)	1.14 (0.85, 1.51)	0.44	1.01 (0.96, 1.07)

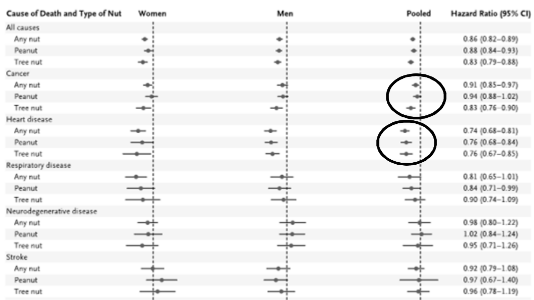
Guasch-Ferrè M et al, BMC Medicine 2014

Polyphenol intake and all-cause mortality risk: a re-analysis of the PREDIMED trial



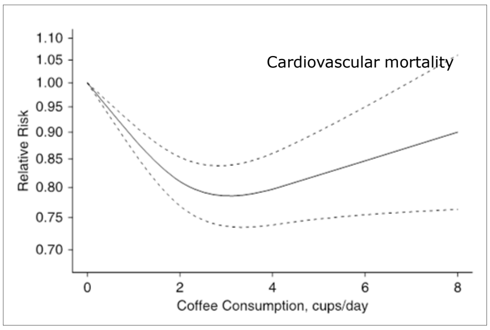
Tresserra-Rimbau A et al, BMC Medicine 2014

Cause specific mortality, according to frequency of nut consumption



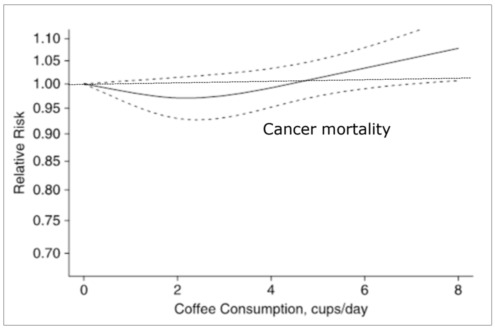
Bao Y et al, N Engl J Med 2013

Coffee Consumption and Mortality From All Causes, Cardiovascular Disease, and Cancer: A Dose-Response Meta-Analysis



Crippa A et al, Am J Epidemiol 2014

Coffee Consumption and Mortality From All Causes, Cardiovascular Disease, and Cancer: A Dose-Response Meta-Analysis



Crippa A et al, Am J Epidemiol 2014

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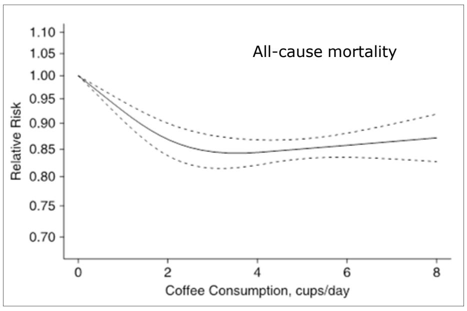
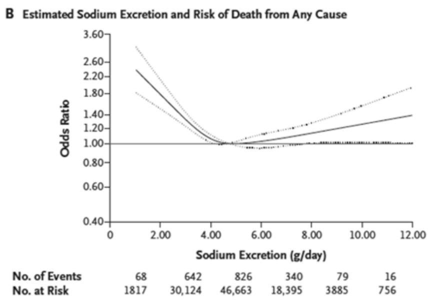


Crippa A et al, Am J Epidemiol 2014

Sodium, Potassium and all cause mortality: the PURE Study



O'Donnell M et al, N Engl J Med, 2014

Research

Original Investigation

Dietary Sodium Content, Mortality, and Risk for Cardiovascular Events in Older Adults

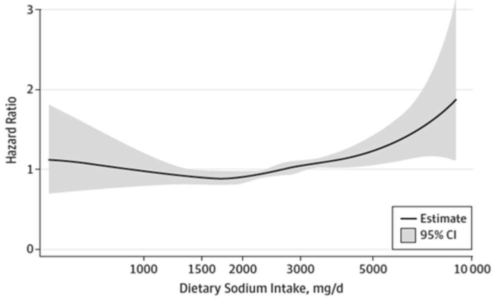
The Health, Aging, and Body Composition (Health ABC) Study

Andreas P. Kalogeropoulos, MD, MPH, PhD; Vasiliki V. Georgiopoulou, MD; Rachel A. Murphy, PhD; Anne B. Newman, MD, MPH; Douglas C. Bauer, MD; Tamara B. Harris, MD, MS; Zhou Yang, MPH, PhD; William B. Applegate, MD, MPH; Stephen B. Kritchevsky, PhD

Circa 2500 soggetti di età media 73 anni, di ambo i sessi
Consumo di sale accertato mediante questionari alimentari
CVD all'arruolamento: 25% circa; BMI medio: 27
Follow-up: 10 anni
End-point primario: mortalità per tutte le cause

Kalogeropoulos AP et al, JAMA Intern Med 2015

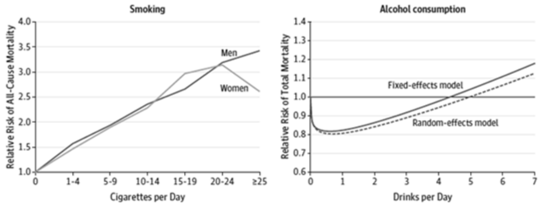
Dietary sodium and mortality in the Health ABC Study



Kalogeropoulos AP et al, JAMA Intern Med 2015

J-Shaped Curves and Public Health

Figure. Examples of Linear Curve for Mortality vs Cigarette Use and J-Shaped Curve for Mortality vs Alcohol Consumption



Chokshi DA et al, JAMA 2015

Sensibilità al sale in vari gruppi

TABLE 1 Salt Sensitivity in Various Groups*

Salt Resistant	Salt Sensitive
Young	Aged
Middle-aged	Hypertensive
Normotensive	African American
Caucasian	Chronic kidney disease
	History of pre-eclampsia
	Low birth weight

*Data derived from Weinberger et al. (4), de Bier et al. (9), Koomans et al. (10), Martillotti et al. (11), Weinberger (12,13), and Weinberger et al. (14)

Farquhar WB et al, J Am Coll Cardiol 2015

Healthy eating and mortality in a cohort of CHD patients whit state-of-the-art drug treatment

The Dutch Healthy Nutrient and Food Score (DHNaFS) included 11 nutrient-dense food groups:
vegetables, fruit, whole grains, protein-rich plant foods (mostly legumes), potatoes, lean meat, fish, eggs, low-fat milk and yogurt, oils and soft margarines, and noncaloric drinks.

The Dutch Undesirable Nutrient and Food Score (DUNaFS) included 13 food groups high in solid fats, sodium, and/or added sugar: processed fruit, high-fat meat, processed meat, full-fat milk, cheese; refined grains, butter and hard margarines, soups, spreads, ready-to-eat meals, savory snacks, sweet snacks, and sugar-sweetened beverages.

4,307 CHD pts from the Alpha-Omega Trial, 60-80 yrs at baseline, 10 yrs follow-up

Sijstma FPC et al, Am J Clin Nutr, 2015

Healthy eating and mortality in a cohort of CHD patients whit state-of-the-art drug treatment

Multivariable adjusted HRs for all-cause and CVD mortality across quintiles of the DHNaFS and the DUNaFS[1]

	Q1	Q2	Q3	Q4	Q5	P-trend
All cause mortality						
DHNaFS						
Model 1	1	0.89 (0.72, 1.10)	0.74 (0.61, 0.90)	0.67 (0.54, 0.84)	0.57 (0.45, 0.71)	<0.0001
Model 2	1	0.97 (0.78, 1.20)	0.81 (0.66, 0.99)	0.78 (0.62, 0.99)	0.72 (0.56, 0.93)	0.0015
Model 3	1	0.95 (0.76, 1.18)	0.77 (0.63, 0.95)	0.76 (0.60, 0.97)	0.70 (0.55, 0.91)	0.0006
DUNaFS						
Model 1	1	1.12 (0.90, 1.39)	1.03 (0.83, 1.27)	1.09 (0.87, 1.36)	0.95 (0.75, 1.20)	0.552
Model 2	1	1.19 (0.94, 1.49)	1.10 (0.87, 1.39)	1.24 (0.95, 1.62)	1.08 (0.79, 1.48)	0.857
Model 3	1	1.22 (0.97, 1.54)	1.14 (0.89, 1.45)	1.28 (0.98, 1.68)	1.15 (0.84, 1.58)	0.702
Cardiovascular mortality						
DHNaFS						
Model 1	1	0.84 (0.60, 1.16)	0.62 (0.46, 0.84)	0.59 (0.41, 0.83)	0.61 (0.44, 0.85)	<0.0001
Model 2	1	0.88 (0.63, 1.23)	0.63 (0.46, 0.87)	0.65 (0.45, 0.94)	0.72 (0.50, 1.03)	0.008
Model 3	1	0.88 (0.63, 1.23)	0.59 (0.43, 0.82)	0.59 (0.41, 0.87)	0.68 (0.47, 0.99)	0.0002
DUNaFS						
Model 1	1	1.17 (0.83, 1.63)	0.90 (0.64, 1.26)	1.14 (0.81, 1.61)	1.05 (0.74, 1.48)	0.99
Model 2	1	1.19 (0.84, 1.68)	0.87 (0.60, 1.27)	1.17 (0.78, 1.76)	1.09 (0.68, 1.74)	0.651
Model 3	1	1.22 (0.86, 1.73)	0.92 (0.63, 1.34)	1.23 (0.82, 1.85)	1.15 (0.72, 1.84)	0.759

4,307 CHD pts from the Alpha-Omega Trial, 60-80 yrs at baseline, 10 yrs follow-up

Sijstma FPC et al, Am J Clin Nutr, 2015

Healthy eating and mortality in a cohort of CHD patients whit state-of-the-art drug treatment

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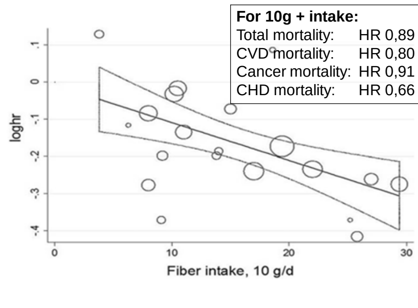
4,307 CHD pts from the Alpha-Omega Trial, 60-80 yrs at baseline, 10 yrs follow-up

Sijstma FPC et al, Am J Clin Nutr, 2015

Fiber consumption and all-cause, cardiovascular, and cancer mortalities: A systematic review and meta-analysis of cohort studies

For 10g + intake:
Total mortality: HR 0,89
CVD mortality: HR 0,80
Cancer mortality: HR 0,91
CHD mortality: HR 0,66

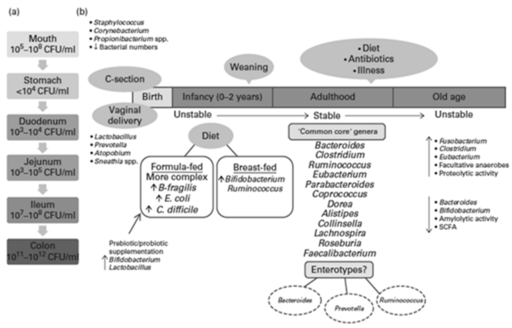


Liu L et al, Mol Nutr Food Res, 2014

Uomini e batteri: il concetto del "superorganismo"

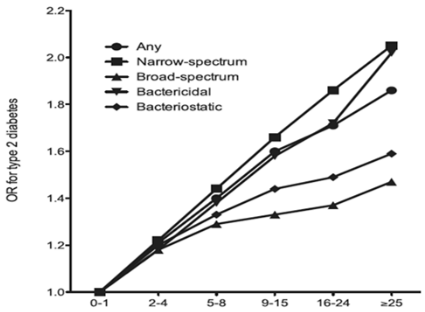
- Nel nostro organismo albergano 10 volte più cellule batteriche che cellule "umane" (10^{14} vs 10^{13})
- Durante l'evoluzione abbiamo "trasmesso" (o lasciato) ai batteri intestinali molte funzioni biosintetiche essenziali (SCFA, ad esempio)
- Il trasferimento di batteri all'organismo umano inizia durante il parto (per via vaginale) e continua con l'allattamento al seno

Intestinal microbiota, diet and health



Power SE et al, Brit J Nutr, 2014

Uso di antibiotici e rischio di sviluppare la malattia diabetica



Mikkelsen HK et al, J Clin Endocrinol Metab, 2015

Alcuni temi che vanno emergendo, in sintesi:

- Maggiore flessibilità sui saturi, maggiore enfasi sui PUFA omega-6 e omega-3
- Latte e latticini: maggiore flessibilità
- Olio di oliva: solo EV (o vergine), possibilmente di gusto marcato
- Polifenoli: aumentare l'apporto da tutte le fonti (caffè, tè, cioccolato, frutti rossi, frutta a guscio, ecc.)
- Più attenzione al sodio e meno al potassio
- Attenzione al microbiota intestinale