EVIDENZE E NUOVE PROSPETTIVE NEL TRATTAMENTO DELLE PATOLOGIE TROMBOEMBOLICHE

15/16 MARZO 2018

Via F. Albani, 73 - Varese

Alimentazione e fattori di rischio cardiovascolari nella popolazione Italiana Prof. Licia Iacoviello, MD, PhD.

Dipartimento di Medicina e Chirurgia, Università dell'Insubria, Varese. Dipartimento di Epidemiologia e Prevenzione. IRCCS Neuromed, Pozzilli

Saturated fatty acids and mortality rates from CHD in the Seven Countries Study (1958-1983)



U=USA F=FINLAND N=NETHERLANDS I=ITALY G,C=GREECE S, D,Cr=FORMER YUGOSLAVIA J=JAPAN

Kromhout D. Prev Med, 1995



Risk Factors for CHD according to Fat Intake: The Italian Nine Communities Study



Olive Oil Consumption and All-causes Mortality after AMI: GISSI-Prevention trial



Barzi F et al. Eur J Clin Nutr. 2003

Changing the "Mediterranean" Diet in Italy: The Pollica Study



Ferro-Luzzi et al, Am J Clin Nutr, 1984



Strazzullo et al, J Hypertension, 1986

Changing the "Western" Diet in Finland: The Finnish Study



Ehnholm C et al N Engl J Med 1982

Mediterranean Diet is characterized by:



- ✓ High intake of vegetables, legumes, fruit, dried fruit and (whole)-grain cereals
- ✓ Predominant intake of olive oil compared to low intake of animal fats
- Habitual intake of fish
- ✓ Moderate intake of dairy products
- ✓ Moderate intake of meat and poultry
- ✓ Regular but quite moderate intake of wine, consumed during meals
- A way of thinking to food (Variety, Seasonality, Conviviality)

Greek Mediterranean Index

Composed by 9 components scoring 1 or 0

- Vegetables, legumes, fresh and dried fruit, dairy products, cereals, fish and monosaturated/saturated ratio:
 - > score = 1 for intake higher than median
 - Score = 0 for intake lower than median
- Red and processed meat:
 - score = 1 for intake lower than median
 - Score = 0 for intake higher than median



• Alcohol:

- score = 1 for intake 5-25 g/d (women) or 10-50 g/d (men)
- Score = 0 for no or higher intake

Cumulative Score from 0 to 9

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

JUNE 26, 2003

VOL.348 NO.26

Adherence to a Mediterranean Diet and Survival in a Greek Population

Antonia Trichopoulou, M.D., Tina Costacou, Ph.D., Christina Bamia, Ph.D., and Dimitrios Trichopoulos, M.D.

Table 4. Hazard Ratios for Death Associated with a Two-Point Increment in the Mediterranean-Diet Score.*				
Variable	No. of Deaths/ No. of Participants	Hazard Ratio for Death (95% CI)		
		Crude	Age- and Sex-Adjusted	Fully Adjusted
Death from any cause	275/22,043	0.74 (0.65–0.86)	0.79 (0.69–0.91)	0.75 (0.64–0.87)
Death from coronary heart disease	54/22,043	0.68 (0.50-0.94)	0.74 (0.54–1.02)	0.67 (0.47–0.94)
Death from cancer	97/22,043	0.81 (0.64–1.03)	0.85 (0.67–1.08)	0.76 (0.59–0.98)

Meta-analysis of associations between a 2-point increase of adherence score to the Mediterranean diet and the risk of diseases

18 cohort prospective studies, 2,190,627 subjects analyzed

Outcomes	Relative Risk (95% CI)
All-cause mortality	0.92 (0.90-0.94)
Mortality from or incidence of cardiovascular diseases	0.90 (0.87-0.93)
Mortality from or incidence of neoplastic diseases	0.94 (0.92-0.96)
Incidence of neurodegenerative diseases	0.87 (0.81-0.94)

The NEW ENGLAND JOURNAL of MEDICINE

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Primary Prevention of Cardiovascular Disease with a Mediterranean Diet

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ABSTRACT

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.

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.

The authors' affiliations are listed in the Appendix. Address reprint requests to Dr. Estruch at the Department of Internal Medicine, Hospital Clinic, Villarroel 170, 08036 Barcelona, Spain, or at restruch@ clinic.ub.es, or to Dr. Martínez-González at the Department of Preventive Medicine and Public Health, Facultad de Medicina-Clínica Universidad de Navarra, Irunlarrea 1, 31008 Pamplona, Spain, or at mamartinez@unav.es.

*The PREDIMED (Prevención con Dieta Mediterránea) study investigators are listed in the Supplementary Appendix

PREDIMED DIETARY INTERVENTION

7447 men and women at high CVD risk randomised to

- Mediterranean diet plus Extra-virgin olive oil (approximately 1 liter per week)
- Mediterranean diet plus 30 g of mixed nuts per day (15 g of walnuts, 7.5 g of hazelnuts, and 7.5 g of almonds)
- Control group: low fat diet
- No total calorie restriction advised,
- No physical activity promoted.
- Median follow-up: 4.8 years

Incidence of Cardiovascular disease in the Total Study Population

N=7747	Cardiovascular disease
MeDiet + extra virgin olive oil	0.70 (0.54-0.92)
MeDiet + mixed nuts	0.72 (0.54-0.96)

Estruch R et al, N Engl J Med. 2013;368:1279-90

The PREDIMED (PREvención con Dleta MEDiterránea)

Favorable effect of both MeDiets on:

- Insulin sensitivity
- Diabetes
- Blood pressure
- Lipid profiles
- lipoprotein particles
- Inflammation
- Oxidative stress
- Carotid atherosclerosis.
- Thelomere length

The Mediterranean diet in the Moli-sani study

The "common soil" hypothesis Cardiovascular, cerebrovascular disease and cancer are trees that embed their roots in a common ground



Donati, 2003, 2007 and 2010 Iacoviello et al, 2008



The Moli-sani study identikit

- ~ 25,000 people living in Molise
- Aged 35 years or more (7% over 75 yrs)
- Recruitment phase: 2005-2010
- follow-up every 5 years
- ✓ Study duration ... ∞ ... years



A typical "Moli-sani" day Questionnaires

 Anamnestic questionnaire provided the basic situation of each volunteer from a clinical and lifestyle point of view





EPIC Food Frequency Questionnaire provided information about one of the main environmental factors involved in cardiovascular and tumor risk



Dietary patterns, cardiovascular risk factors and C-reactive protein in a healthy Italian population

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S. Sieri^b, M.B. Donati^a, G. de Gaetano^a,
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Nutr Metab Cardiovasc Dis. 2009 Mar 18. [Epub ahead of print]

A posteriori dietary pattern in the Moli-sani population



Centritto F et al, NMCD 2009

A posteriori dietary pattern and metabolic risk of cardiovascular disease



Centritto F et al, NMCD 2009

A posteriori dietary pattern and metabolic risk of cardiovascular disease



Centritto F et al, NMCD 2009

Citation: Nutrition & Diabetes (2016) 6, e218; doi:10.1038/nutd.2016.20



ORIGINAL ARTICLE Association of pasta consumption with body mass index and waist-to-hip ratio: results from Moli-sani and INHES studies

G Pounis, A Di Castelnuovo, S Costanzo, M Persichillo, M Bonaccio, A Bonanni, C Cerletti, MB Donati, G de Gaetano and L lacoviello on behalf of the Moli-sani and INHES investigators¹

BACKGROUND/OBJECTIVES: Pasta as a traditional component of Mediterranean diet (MeD) in Italy has not been studied in detail in the management of body weight. This study aimed at evaluating the association of pasta intake with body mass index (BMI) and waist-to-hip ratio, in two large epidemiological datasets.

SUBJECTS/METHODS: A total of 14 402 participants aged \geq 35 years randomly recruited from the general population of the Molise region (Moli-sani cohort) and 8964 participants aged > 18 years from all over Italy (Italian Nutrition & HEalth Survey, INHES) were separately analyzed. The European Prospective Investigation into Cancer and Nutrition (EPIC)-food frequency questionnaire and one 24-h dietary recall were used for dietary assessment. Weight, height, waist and hip circumference were measured in Moli-sani or self-reported in INHES. Residuals methodology corrected for either total energy intake or body weight was used for the analysis of pasta intake.

RESULTS: Higher pasta intake was associated with better adhesion to MeD in both genders (*P* for both < 0.001). In the Moli-sani study, after multivariable analysis, pasta-energy residuals were negatively associated with BMI in women but not in men (β -coef = -0.007, *P* = 0.003 for women and β -coef = -0.001, *P* = 0.58 for men). When pasta intake-body weight residuals were used, pasta intake was significantly and negatively associated with BMI in crude and multi-adjusted models (including adhesion to MeD) in both genders and Moli-sani and INHES studies (for all β -coef < 0, *P* < 0.05). In the Moli-sani study, pasta-body weight residuals were significantly and negatively associated with waist and hip circumference and waist-to-hip ratio (for all β -coef < 0, *P* < 0.05). **CONCLUSIONS:** As a traditional component of MeD, pasta consumption was negatively associated with BMI, waist circumference and waist-to-hip ratio and with a lower prevalence of overweight and obesity.

Nutrition & Diabetes (2016) 6, e218; doi:10.1038/nutd.2016.20; published online 4 July 2016

Odds of obesity according to iso-caloric pasta intake in Moli-sani and INHES study







Optimal pasta intake -Normal weight, healthy, free-living population

BMI 18-25Kg/m²

Table 7. Optima	ıl medi	ian pasta intake for	normal weight,	free-living	and healthy
Moli-sani participants.					
		Women	Men		р
		$(N=2,643)^1$	(N=1,47	'9) ¹	r
Pasta intake					
g/c	day	54 (35, 78)	73 (48,	91)	< 0.001
g/kg of BW/c	day	0.96 (0.62, 1.36)	1.06 (0.71,	1.36)	< 0.001
¹ The optimal median (1 st , 3 rd quartile) intake of pasta was calculated in the normal weight,					
free-living and healthy Moli-sani population.					
The expression of dietary intakes or dietary recommendations according to body weight					

makes the nutrition references and advises more personalized



Adherence to the Mediterranean diet and risk of cardiovascular disease





Adherence to the Mediterranean diet and risk of cardiovascular disease and overall mortality in persons with Diabetes (n=1,995)



Bonaccio M et al. Eur J Prev Cardiol. 2016;23(4):400-7.

ORIGINAL ARTICLE

A high-score Mediterranean dietary pattern is associated with a reduced risk of peripheral arterial disease in Italian patients with Type 2 diabetes

E. CICCARONE, *† A. DI CASTELNUOVO,* M. SALCUNI,‡ A. SIANI,§ A. GIACCO,¶ M. B. DONATI,** G. DE GAETANO,** F. CAPANI† and L. IACOVIELLO* on behalf of the Gendiabe Investigators††

Dietary score	Cases (144) N (%)	Controls (288) N (%)	OR multiv	CI 95%
0 – 8	42 (30%)	62 (2 3%)	1.0	-
9 – 10	58 (41%)	105 (39%)	0.73	(0.42 – 1.26)
≥ 11	40 (29%)	102 (38%)	0.44	(0.24 - 0.83)

Possible mechanisms of Mediterranean diet in the Moli-sani study



PLATELET AND WBC COUNTS ACCORDING TO ADHERENCE TO THE MEDITERRANEAN DIET

← PLT ----WBC



Adherence to Mediterranean diet (Greek score)

Bonaccio M et al, Blood, 2014



Low-grade inflammation score

✓ The score was obtained by 10-tiles of 4 biomarkers

- C-reactive protein
- Platelet count
- Leukocyte count
- . Granulocyte/lymphocyte ratio
- higher levels scored increasing positively while lower levels got negative scoring.
- The INFLA-score ranged between -16 and 16 and came up as the sum of the 4 components



Adherence to the Mediterranean diet and subclinical inflammation

(platelet count, leukocyte count, neutrophil/lymphocyte ratio, C reactive protein).



Odds ratios from the model adjusted for age, sex, energy intake, leisure-time PA, sport activity, BMI, smoking, CVD, cancer, diabetes, hypercholesterolemia, hypertension.

Subclinical inflammation and all-cause mortality



Bonaccio et al, Haematologica 2016

Oli-SAN

Adherence to the Mediterranean diet and Plasma D-Dimer levels



Di Castelnuovo A, et al. Haematologica. 2017; 102:e61-e64.

Oli-SAN

D-dimer levels and risk of all-cause mortality



Di Castelnuovo A, et al. Haematologica. 2017; 102:e61-e64.

0

Does Italian people still adhere to the Mediterranean diet?

Adherence to Mediterranean diet in the Moli-sani cohort (MAI index)

WOMEN	25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
NICOTERA (1960)	-	-	-
POLLICA (1967)	3.3	6.0	10.0
MOLI-SANI (2009)	2.0	2.6	3.6

MEN	25th PERCENTILE	50th PERCENTILE	75th PERCENTILE
NICOTERA (1960)	5.4	7.5	10.8
POLLICA (1967)	3.2	6.0	8.4
MOLI-SANI (2009)	2.5	3.6	5.4



Prevalence of high adherence to Mediterranean diet over time according to age groups within the Moli-sani cohort

High adherence = Greek Mediterranean score >=6



Bonaccio M et al. NMCD 2014

Mediterranean diet : facts or fancies ?

- Mediterranean diet is associated with an improvement of several risk factors for cardiovascular disease.
- Mediterranean diet is effective in reducing mortality, cardiovascular risk and cancer risk in the general and in high risk populations.
- All individual components of Mediterranean diet have a positive effect on health, but the stronger effect should be attributed at the Mediterranean diet as a whole.
- There are strong physiological mechanisms that mediate the effects of Mediterranean diet on health.

Mediterranean diet : facts or fancies ?

- The adhesion to Mediterranean diet is decreasing over the years
- Main causes of this decrease are socioeconomic
- Public health actions are necessary to increase the adhesion to the Mediterranean diet

