Mediterranean diet, cancer and cardiovascular risk in a network of Italian studies

Carlo La Vecchia
Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy

Ancel Keys
(1904-2004)

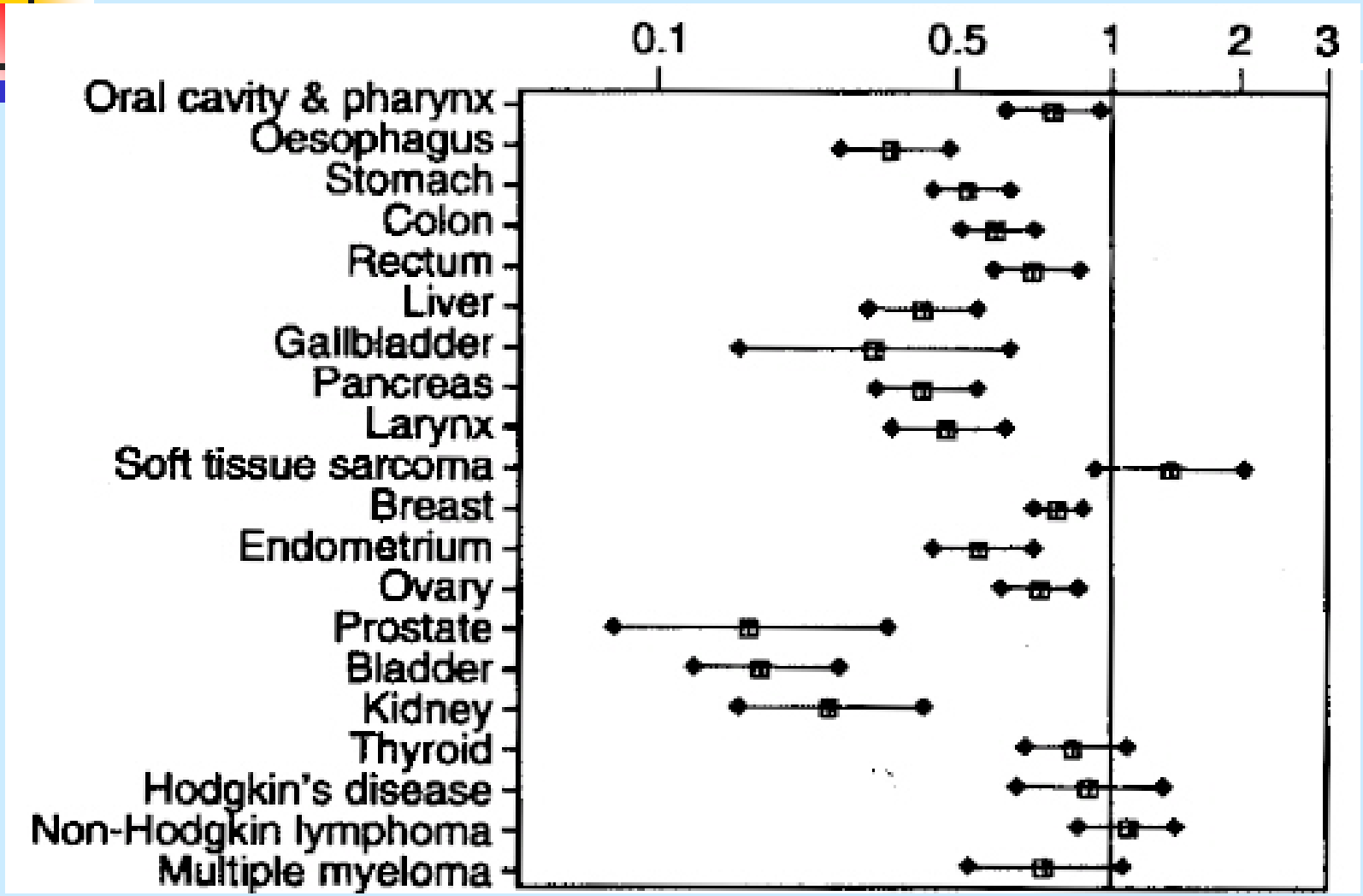
Traditional Mediterranean diet

- Abundant and variable plant foods
- High consumption of cereals
- Olive oil as the main (added) fat
- Low intake of (red) meat
- Moderate consumption of wine

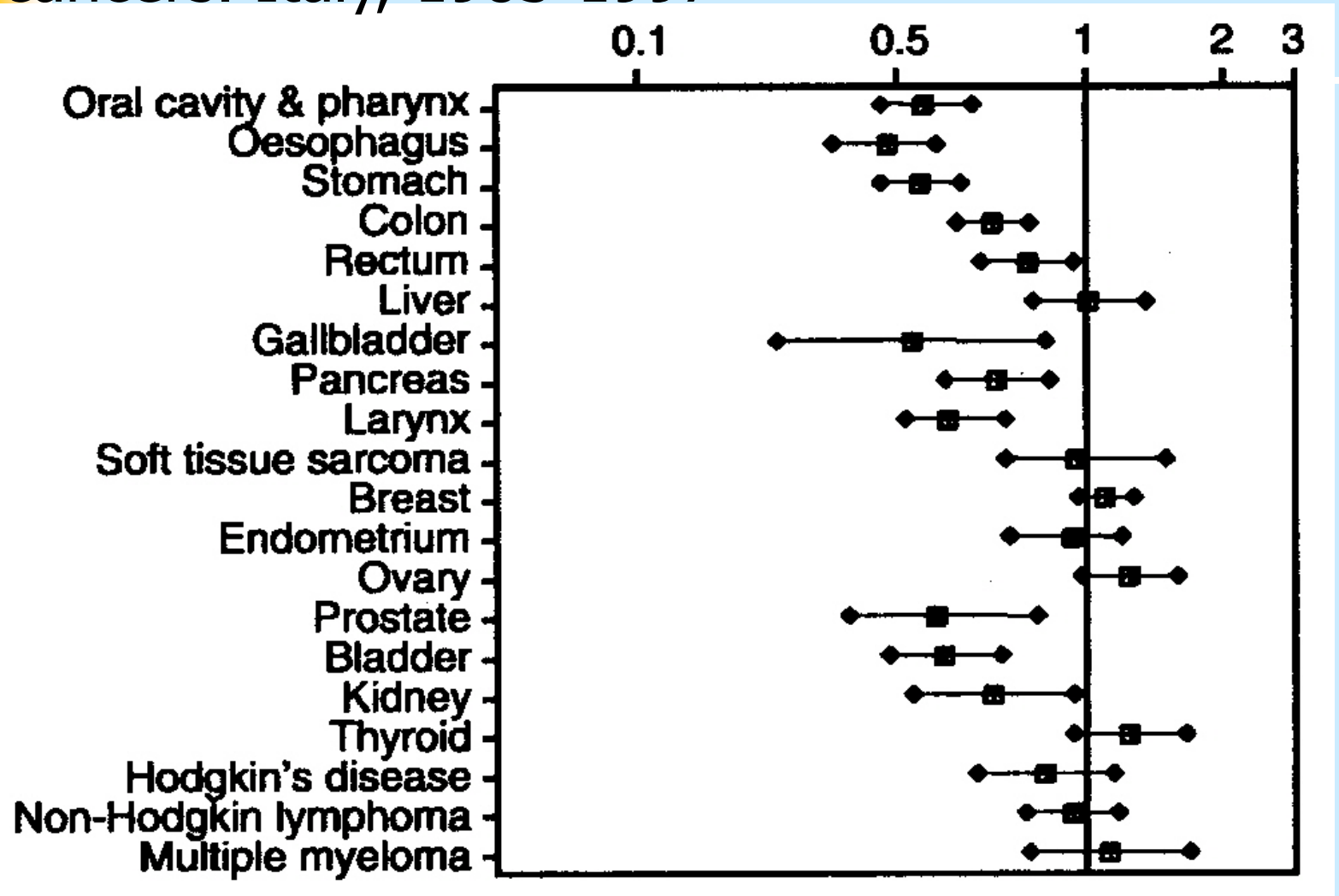
Fruit and vegetables

A diet rich in fruit and vegetables protects against common epithelial cancers, including in particular those of the digestive tract.

VEGETABLE consumption - Relative risks of various cancers. Italian case-control studies



FRUIT consumption - Relative risk of various cancers. Italy, 1983-1997

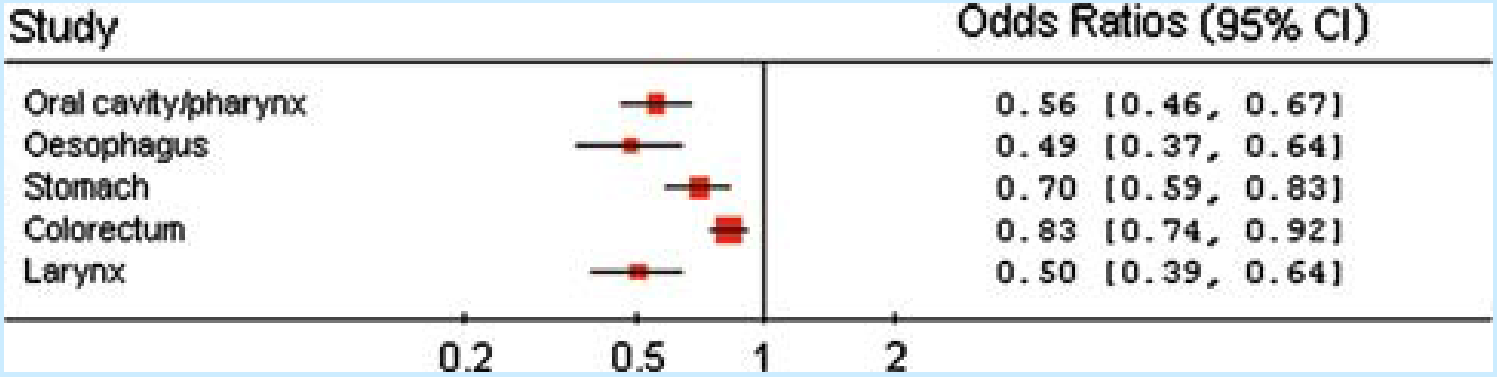


Tomatoes – Digestive tract cancers

Type of cancer	1 (low)[b]	4 (high)
Oral cavity, pharynx, and oesophagus (n = 402)	1	0.65 (0.4–1.0)
Stomach (n = 723)	1	0.43 (0.3–0.6)
Colon (n = 955)	1	0.39 (0.3–0.5)
Rectum (n = 629)	1	0.42 (0.3–0.6)

(La Vecchia et al., 2002)

Citrus fruit (Foschi et al, 2010)



Population attributable risks for cancers on the upper digestive and respiratory tract in Italy.

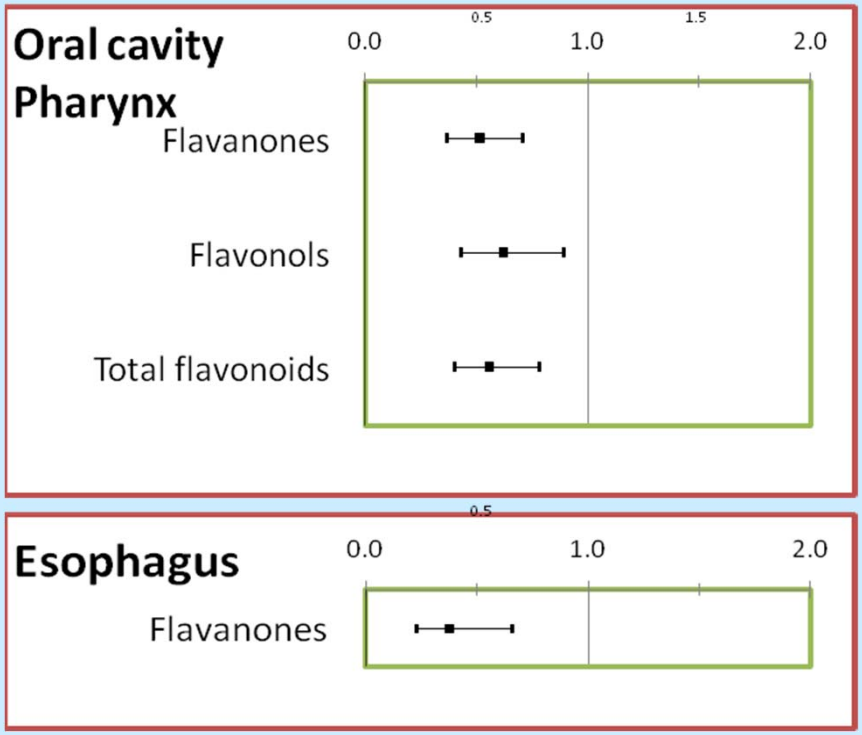
Type of cancer	Population attributable risk (%)	
	Vegetables and fruit	Vegetables and fruit + tobacco + alcohol
Oral cavity and pharynx		
Men	25	94
Women	17	57
Esophagus		
Men	40	90
Women	29	58
Stomach	60	-
Colorectal	43	-

Flavonoids and cancer risk*

Flavanols
Flavanones
Anthocyanidins
Flavonols
Flavones
Isoflavones
Total flavonoids

Rossi M, Garavello W, Talamini R, Negri E, Bosetti C, Dal Maso L, Lagiou P, Tafani A, Polesel J, Barman J, Ramazzotti V, Franceschi S, La Vecchia C. (2007) Flavonoids and the risk of oral and pharyngeal cancer: a case-control study from Italy. Cancer Epidemiol Biomarkers Prev. 16:1621-5.

Rossi M, Garavello W, Talamini R, La Vecchia C, Franceschi S, Lagiou P, Zambon P, Maso LD, Bosetti C, Negri E. (2007) Flavonoids and risk of squamous cell esophageal cancer. Int J Cancer. 120:1560-4.



*ORs for the highest versus the lowest quintile of intake

Lycopene – Esophageal cancer

Type of cancer (no. cases : no.controls)	Intake quintile, OR (95% CI)				
	1	**2**	**3**	**4**	**5**
Esophagus (304:743)					
Lycopene	1+	1.0 (0.6-1.6)	0.8 (0.5-1.3)	0.6 (0.4-1.0)	0.7 (0.4-1.1)
Carotene	1+	0.4 (0.3-0.7)	0.5 (0.3-0.8)	0.3 (0.2-0.6)	0.3 (0.2-0.6)

(La Vecchia et al., 2002)

Red meat and fish

Frequent red meat consumption was an unfavorable indicator of cancer risk (Tavani et al., 2000).

Frequent fish intake tended to be inversely related to risk of several common neoplasms (Fernandez et al., 1999).

Meat and cancer risk

Carcinogenicity of consumption of red and processed meat

In October, 2015, 22 scientists from ten countries met at the International Agency for Research on Cancer (IARC) in Lyon, France, to evaluate the carcinogenicity of the consumption of red meat and processed meat. These assessments will be published in volume 114 of the IARC Monographs.[1]

Red meat refers to unprocessed mammalian muscle meat—for example, more than 200 g per person per day.[4] Less information is available on the consumption of processed meat.

The Working Group assessed more than 800 epidemiological studies that investigated the association of cancer with consumption of red meat or processed meat in many countries, from several continents, with diverse ethnicities and diets. For the evaluation, day of red meat and an 18% increase (95% CI 1·10–1·28) per 50 g per day of processed meat.[12]

Data were also available for more than 15 other types of cancer. Positive associations were seen in cohort studies and population-based case-control studies between consumption of red meat and cancers of the pancreas and the prostate (mainly

Lancet Oncol 2015

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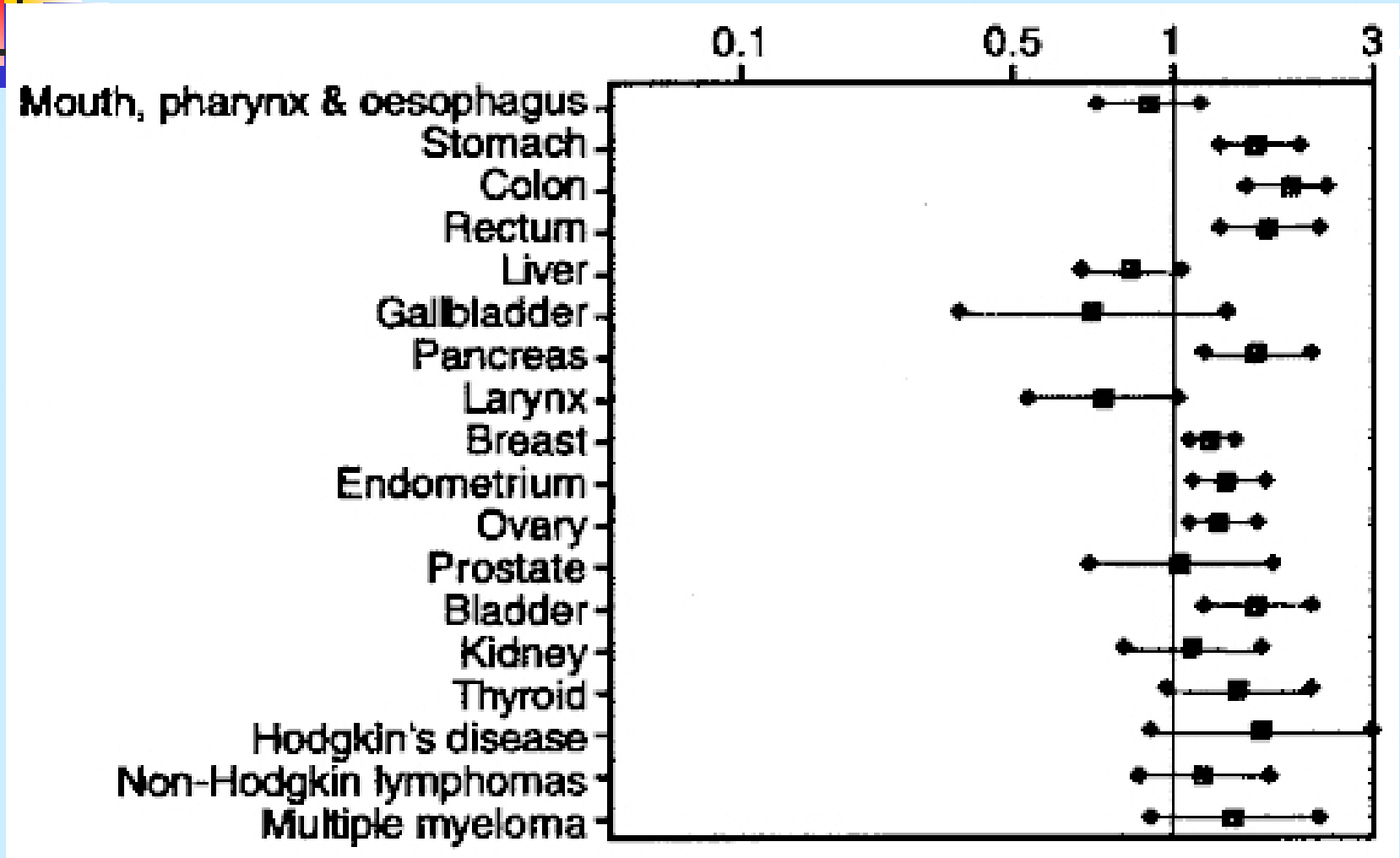
RED MEAT consumption - Relative risk of various cancers. Italy, 1983-1997



(*Tavani et al., Int J Cancer 2000*)

Processed meat and colorectal cancer in Italy

Table 2. Odds ratios (OR) for approximate sex-specific tertiles among controls of processed meat consumption and corresponding 95% confidence intervals (CI) among 3745 colorectal cancer cases and 6804 controls, overall and by anatomical subsites of colorectal cancer. Italy, 1985-2010.

	Processed meat consumption[a]						*p* for trend
	Low		Intermediate		High		
	Ca/Co	OR	Ca/Co	OR[b] (95% CI)	Ca/Co	OR[b] (95% CI)	
Overall	1626/2942	1[c]	878/1704	0.94(0.84-1.04)	1241/2158	1.04(0.94-1.16)	0.47
Substites[d]							
Colon	1014/2942	1[c]	526/1704	0.91(0.80-1.03)	814/2158	1.11(0.98-1.25)	0.13
Proximal	215/2942	1[c]	109/1704	1.12(0.87-1.44)	164/2158	1.38(1.08-1.75)	0.0095
Distal	469/2942	1[c]	250/1704	0.96(0.81-1.15)	359/2158	1.06(0.90-1.25)	0.51
Overlapping and NOS	330/2942	1[c]	167/1704	0.76(0.62-0.94)	291/2158	1.00(0.83-1.21)	0.94
Rectum	605/2942	1[c]	352/1704	0.98(0.85-1.15)	426/2158	0.93(0.80-1.08)	0.34

[a]Approximate sex-specific tertiles among controls: low (<15 g/day for both men and women), intermediate (15-25 g/day for men and 15-21.5 for women), high (>25 g/day for men and >21.5 g/day for women)

Rosato et al., Nutrition and Cancer, 2017

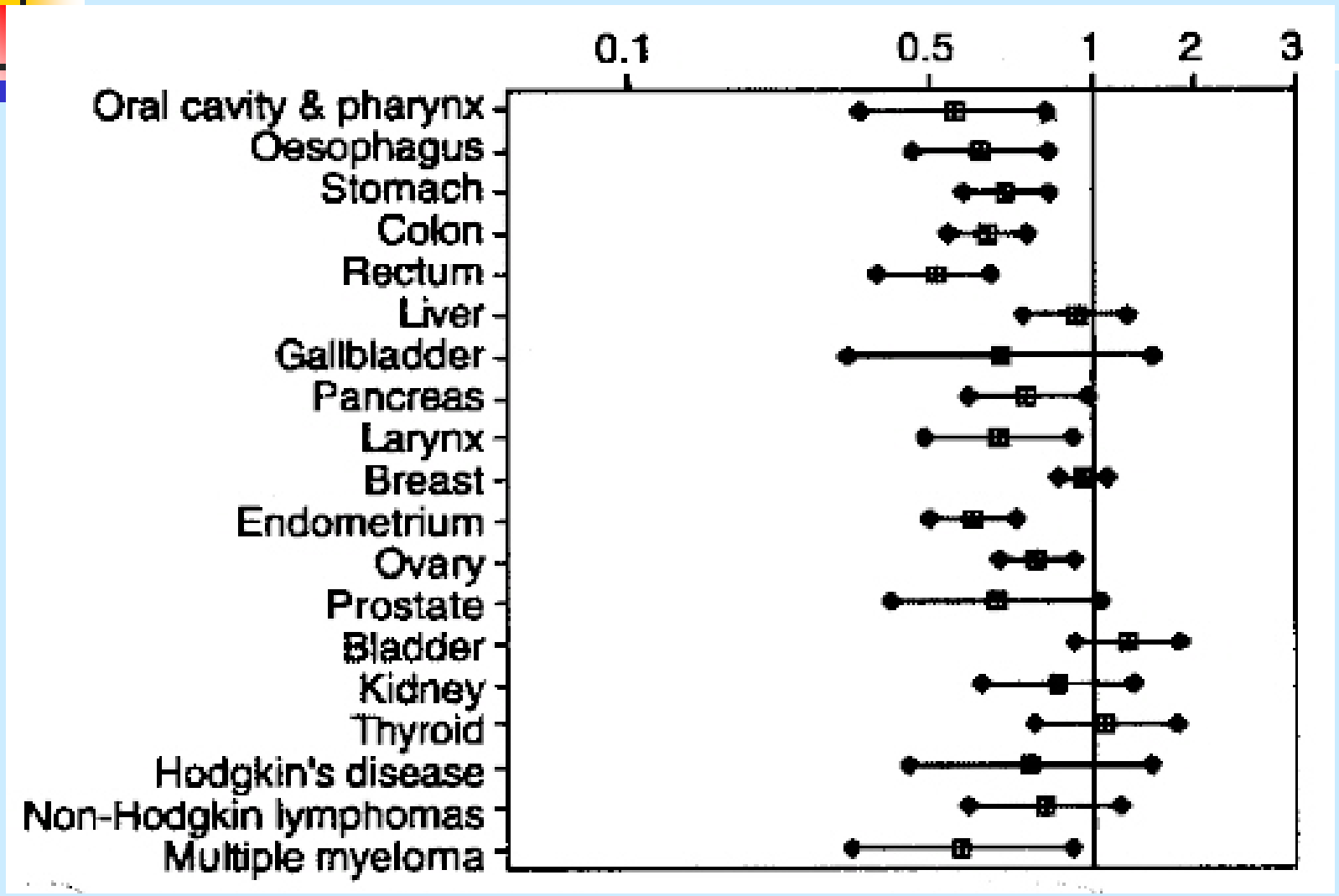
Median consumption of processed meat in Italy

	Portions/week		Grams/day	
	Men	Women	Men	Women
Oral cavity and pharynx	2.00	2.00	14.29	14.29
Esophagus	2.00	2.00	14.29	14.29
Stomach *	3.50	3.00	25.00	21.43
Colorectum *	3.00	2.50	21.43	17.86
Liver	2.00	2.00	14.29	14.29
Biliary tract	3.00	2.00	21.43	14.29
Pancreas	2.50	2.00	17.86	14.29
Larynx	2.00	2.50	14.29	17.86
Breast	.	2.00	.	14.29
Endometrium	.	2.00	.	14.29
Ovary	.	2.00	.	14.29
Prostate	2.00	.	14.29	.
Kidney	2.00	2.00	14.29	14.29
Bladder	2.00	2.00	14.29	14.29

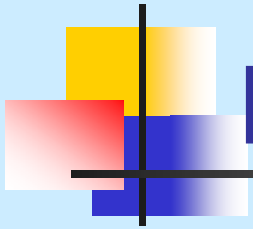
	Portions/week		Grams/day	
	Men	Women	Men	Women
Controls	2.00	2.00	14.29	14.29

* Incluso vecchio questionario con 3 domande

FISH consumption - Relative risk of various cancers. Italy, 1983-1997



(*Fernandez et al., Am J Clin Nutr 1999*)



Fats

The issue of fats, and of specific types of fats, on the risk of breast and colorectal cancers, as well as of several other neoplasms, remains a major open question.

In a large study from Italy, isocaloric substitution of 5% of total calories as saturated fats by unsaturated ones was associated with reduction in breast (OR= 0.67) and colorectal (OR=0.78) cancer risk.

Olive oil and cancer risk

Olive oil is a major source of monounsaturated fats in Mediterranean countries, but also an important source of several micronutrients and food components.

It appears to be a favourable indicator of the risk of various common cancers.

Olive oil, other seasoning fats and breast cancer

Oil or fat	Continuing OR (95% CI) per unit difference between 1° and 4° quintile
Olive oil	0.89
(unit= 30 g)	(0.81-0.99)
Specific seed oils	0.88
(unit= 9.5 g)	(0.83-0.94)
Mixed seed oils	0.96
(unit= 2.8 g)	(0.96-1.00)
Butter	1.00
(unit= 4.5 g)	(0.95-1.06)
Margarine	0.96
(unit= 4.2 g)	(0.85-1.08)

(La Vecchia et al., 1995)

Olive oil and breast cancer

All six studies of breast cancer that provided ORs according to level of olive oil consumption reported risk estimates below unity. We pooled these estimates and calculated a summary RR of 0.62 (95% CI, 0.44-0.88) for the highest level of olive oil consumption.

Olive oil and colorectal cancer

	Tertile of intake, RR (95% CI)[a]		χ^2_{trend}
	2	3	
Olive oil			
Colorectal	0.87 (0.75-1.01)	0.83 (0.70-0.99)	4.49*
Colon	0.82 (0.68-0.98)	0.81 (0.66-0.99)	4.05*
Rectum	0.96 (0.77-1.19)	0.88 (0.68-1.12)	1.13

(Braga et al., Cancer 1998)

Olive oil and upper digestive tract cancers

Cancer	Quintile of intake, RR (95% CI)[a]				χ^2 trend
	2	3	4	5	
Oral/pharyngeal					
Olive oil	0.6 (0.4-0.9)	0.7 (0.5-1.1)	0.7 (0.5-1.1)	0.4 (0.3-0.7)	7.15
Mixed seed oils	0.7 (0.5-1.1)	1.0 (0.7-1.4)	0.9 (0.6-1.3)	1.1 (0.7-1.7)	0.12
Butter	1.2 (0.8-1.8)	1.3 (0.8-1.9)	1.8 (1.2-2.7)	2.3 (1.6-3.5)	22.32
Esophageal					
Olive oil	0.3 (0.2-0.6)	0.3 (0.5-1.2)	0.3 (0.4-1.0)	0.3 (0.3-0.7)	9.98
Mixed seed oils	0.7 (0.4-1.2)	0.8 (0.5-1.3)	0.8 (0.5-1.4)	0.4 (0.2-0.8)	1.41
Butter	1.6 (0.9-2.7)	1.7 (1.0-2.9)	1.5 (0.9-2.6)	2.2 (1.3-3.7)	4.66
Laryngeal					
Olive oil	0.6 (0.4-0.9)	0.8 (0.5-1.2)	0.6 (0.4-1.0)	0.4 (0.3-0.7)	8.62
Mixed seed oils	1.3 (0.8-2.1)	1.8 (1.1-2.9)	2.6 (1.6-4.1)	2.2 (1.3-3.5)	16.16
Butter	1.4 (0.9-2.2)	1.0 (0.6-1.5)	1.4 (0.9-2.1)	0.9 (0.6-1.4)	0.33

(Franceschi et al, 1999; Bosetti et al, 2000; Bosetti et al 2002)

Olive oil and UADT cancers

The evidence is suggestive of a protective effect of olive oil consumption on the risk of UADT cancers.

The studies differed in the categories of consumption considered and were conducted in different European countries.

They all reported significant inverse associations between olive oil and cancer, with reductions in risk from 22% to 74% for the highest consumption (Pelucchi et al., 2011).

Olive oil and cancer risk

It is not clear whether such activity is due to oleic acid itself or to the presence of antioxidants, such as vitamin E and polyphenols and other food components, in olive oil.

The observed associations may not be due to specific components, but to the fact that olive oil is a general indicator of healthier (Mediterranean).

Dietary Inflammatory Index (DII)

- Dietary Inflammatory Index (DII) has been directly related to several cancers, including oesophageal, gastric, colorectal and liver neoplasms.

Total inflammatory index (DII) and esophageal cancer

Table 4 Odds ratios (OR) of esophageal squamous cell cancer and corresponding 95 % confidence intervals (CI) for energy-adjusted dietary inflammatory index (DII) both as continuous and as quintiles, among 304 cases and 743 controls, Italy, 1992–1997

	Energy-adjusted DII quintiles					p-value for trend	OR (95 % CI)[c]
	\ - 1.20	- 1.20, - 0.45	- 0.46, 0.26	0.27, 1.28	[1.28		
Cases/controls	41/168	48/161	47/164	76/133	92/117		
Conditioned OR[a] (95 % CI)	1[d]	1.33 (0.67, 1.92)	1.08 (0.64, 1.83)	2.15 (1.32, 3.52)	3.27 (2.02, 5.30)	\ 0.0001	1.39 (1.25, 1.54)
Multivariable OR[b] (95 % CI)	1[d]	0.87 (0.46, 1.62)	1.02 (0.55, 1.88)	1.48 (0.83, 2.64)	2.47 (1.40, 4.36)	\ 0.0001	1.23 (1.10,1.38)

Shivappa et al., 2015

Mediterranean diet score and cancers of the upper digestive tract

An *a priori* defined score, summarising eight of the major characteristics of the Mediterranean diet (Trichopoulou et al., 1997), was applied to data of case-control studies of oral, oesophageal and laryngeal cancers.


From
Dimitrios and Antonia
Trichopoulos
Best wishes for a HAPPY NEW YEAR
and a picture from our summer

Mediterranean diet score and cancers of the upper digestive tract

	Mediterranean diet score (number of characteristics)		
	<3	4	≥6
Oral/pharyngeal			
Cases/controls	214/241	120/376	41/201
OR (95% CI)	1	0.41 (0.30-0.57)	0.40 (0.26-0.62)
Oesophageal			
Cases/controls	102/147	66/174	14/83
OR (95% CI)	1	0.63 (0.41-0.95)	0.26 (0.13-0.51)
Laryngeal			
Cases/controls	183/225	98/279	19/124
OR (95% CI)	1	0.47 (0.33-0.66)	0.23 (0.13-0.40)

(Bosetti et al., CEBP 2003)

Mediterranean diet score and cancers of the upper digestive tract

A priori defined nutritional pattern, which include several aspects of the Mediterranean diet, favourably affect the risk of cancers of the upper aerodigestive tract.

Mediterranean diet score and gastric cancer

	Overall		
Number of MDS components[2]	Cases ($N = 999$), N (%)	Controls ($N = 2,628$), N (%)	OR[1] (95% CI)
0–3	339 (34.1)	635 (24.2)	1.00[3]
4	234 (23.5)	593 (22.6)	0.78 (0.63–0.96)
5	196 (19.7)	621 (23.7)	0.61 (0.49–0.77)
≥6	225 (22.6)	776 (29.6)	0.57 (0.45–0.70)
p value for trend			<0.0001
OR[1,4]			0.86 (0.82–0.90)

(Praud et al. 2014)

MEDITERRANEAN DIET SCORE AND HEPATOCELLULAR CARCINOMA

Table 2. Odds ratios[a] (OR) and 95% confidence intervals (CI) for hepatocellular carcinoma (HCC), according to the Mediterranean diet score in Italy (1999–2002) and Greece (1995–1998).

	HCC cases (%) n = 518	Controls (%) n = 772	OR[a] (95% CI)
Mediterranean diet score[b]			
0-3	198 (38.8)	223 (29.0)	1.00[c]
4	113 (22.2)	166 (21.6)	0.66 (0.41-1.04)
≥5	199 (39.0)	79 (49.3)	0.51 (0.34-0.75)
χ^2 for trend = 11.2; p <0.001			
1 point increment			0.86 (0.77-0.95)

Turati et al., 2014

INTERACTION BETWEEN HEPATITIS MARKERS AND MEDITERRANEAN DIET SCORE ON HCC

Table 3. Odds ratios[a] (OR) and 95% confidence intervals for hepatocellular carcinoma according to the combination of the Mediterranean diet score and chronic infection with hepatitis B and/or hepatitis C viruses, and indexes of departure from additivity of effects in Italy (1999–2002) and Greece (1995–1998).

	Mediterranean diet score	
	≥5	0-4
Hepatitis[b]		
No	44:343[c] 1[d]	75:358 1.64 (1.07-2.50)
Yes	155:32 43.95 (25.93-74.49)	236:28 74.25 (42.84-128.67)
Indices of departure from additivity of effects		
Relative excess risk due to interaction (RERI) = 29.65, $p = 0.119$		
Synergy index (S) = 1.68, $p = 0.082$		

Turati et al., 2014

MEDITERRANEAN DIET SCORE AND PANCREATIC CANCER

Table 2. Odds ratios[a] and 95% CI for pancreatic cancer according to the MDS[b] among 688 pancreatic cancer cases and 2204 controls. Italy, 1983–2008

	First study (1983–1992)					Second study (1992–2008)					Overall				
	Cases		Controls			Cases		Controls			Cases		Controls		
MDS[d]	*N*	%	*N*	%	OR[a] (95% CI)	*N*	%	*N*	%	OR[a] (95% CI)	*N*	%	*N*	%	OR[a,c] (95% CI)
<3	110	30.5	380	24.8	1[d]	36	11.0	50	7.7	1[d]	146	21.3	430	19.7	1[d]
3	110	30.5	360	23.5	1.18 (0.85–1.62)	50	15.3	94	14.4	0.69 (0.37–1.29)	160	23.3	454	20.8	0.93 (0.71–1.23)
4	76	21.1	359	23.4	0.81 (0.58–1.15)	72	22.1	151	23.2	0.62 (0.35–1.12)	148	21.5	510	23.3	0.66 (0.50–0.88)
5	42	11.6	263	17.2	0.60 (0.40–0.91)	81	24.9	156	23.9	0.68 (0.38–1.23)	123	17.9	419	19.2	0.57 (0.42–0.77)
⩾6	23	6.4	171	11.2	0.57 (0.34–0.95)	87	26.7	201	30.8	0.51 (0.29–0.92)	110	16.0	372	17.0	0.48 (0.35–0.67)
P-value for trend					0.0009					0.048					<0.0001
OR[c]					0.88 (0.81–0.95)					0.89 (0.81–0.99)					0.85 (0.80–0.91)

Bosetti et al., 2013

MEDITERRANEAN DIET SCORE AND NASOPHARYNGEAL CARCINOMA

Table 2. Distribution of 198 cases of nasopharyngeal carcinoma and 594 controls, odds ratios (OR) and 95% confidence intervals (CI) for scores of the Mediterranean diet. Italy, 1992–2008.

	Ca	%	Co	%	OR[a]	95% CI	OR[b]	95% CI
Mediterranean diet score[c]								
0-4	102	52.0	265	44.8	1.00	-	1.00	-
5-6	77	39.3	242	40.9	0.82	0.58-1.16	0.81	0.56-1.14
≥7	17	8.7	85	14.4	0.51	0.29-0.91	0.51	0.28-0.91
χ^2trend (p-value)					5.3	0.021	5.4	0.021

Turati et al., 2016

Mediterranean Score (Trichopoulou) and acute myocardial infarction (Turati et al., 2015)

	Cases		Controls					
	n	%	*n*	%	OR*	95 % CI	OR†	95 % CI
Mediterranean diet score‡ (approximate tertiles)								
<4	274	36·2	212	31·1	1·00	–	1·00	–
4–5	320	42·3	267	39·1	0·91	0·71, 1·17	0·85	0·65, 1·12
≥6	163	21·5	203	29·8	0·57	0·43, 0·75	0·55	0·40, 0·75
χ-trend and *P* value					14·46	<0·01	13·30	<0·01
Continuous OR§					0·92	0·86, 0·98	0·91	0·85, 0·98

(Turati et al., 2015)

a

Mediterranean score, glycemic load (GL) and type 2 diabetes

GL	MDS	
	Low ≤4	High >4
High[b]		
Diabetes incidence[c]	511/49,253	688/67,563
HR (95% CI)	1[d]	0.89 (0.79, 1.00)
Low[b]		
Diabetes incidence[c]	734/75,649	397/42,470
HR (95% CI)	0.89 (0.78, 1.02)	0.82 (0.71, 0.95)

(Rossi et al., 2013)

Conclusions (1)

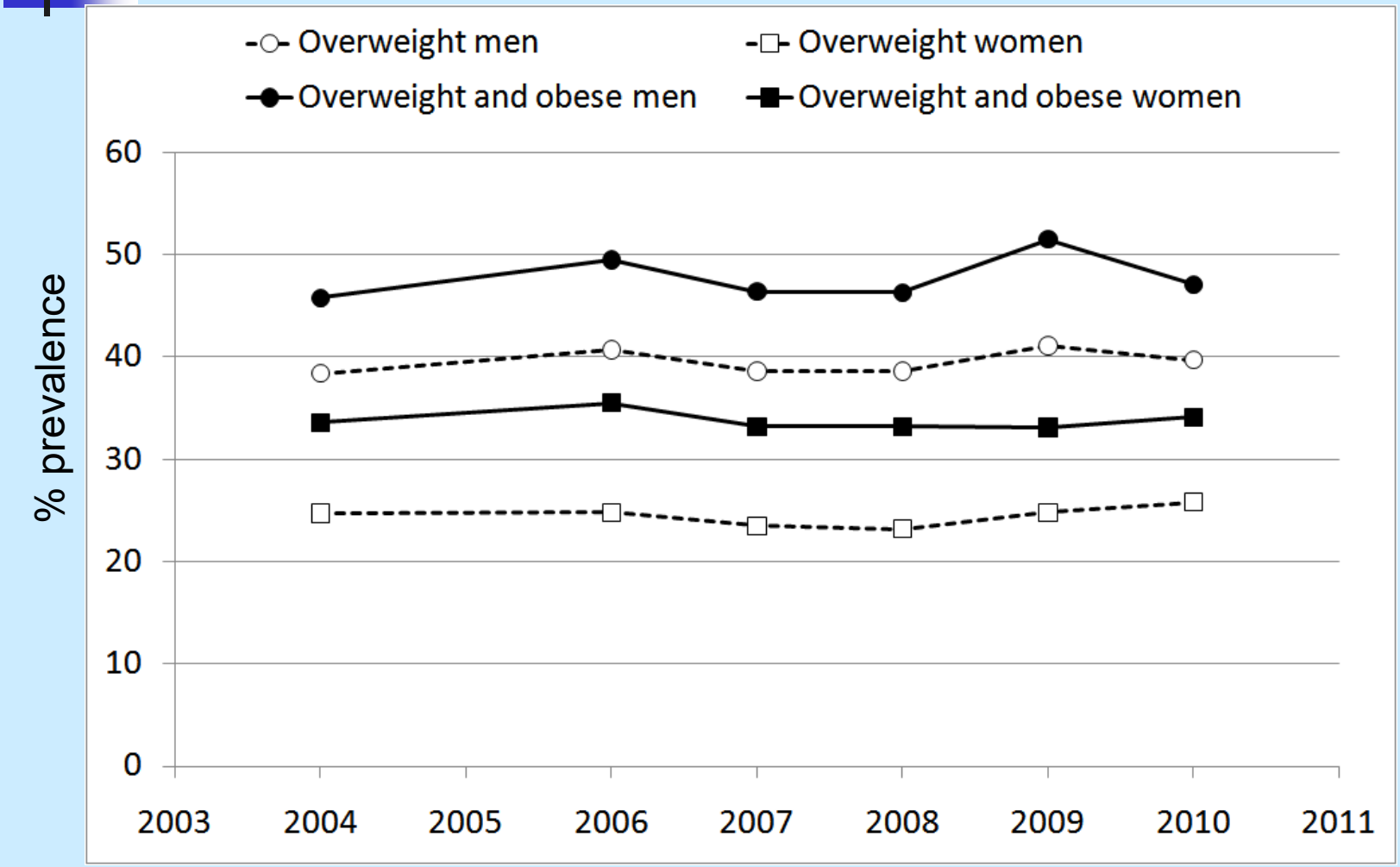
A low risk diet for cancer would not only imply increasing fruit and vegetables, avoiding red meat, but also prefer whole grain carbohydrates to refined ones, and olive oil and other unsaturated fats to saturated ones.

CONCLUSIONS (2)

Mediterranean diet may also help control of body weight, which is a priority in cancer prevention.

No increase in overweight obesity in Italy (and France).

Recent trends in overweight ± obesity in Italy



Overweight – Post-menopausal breast cancer

BMI	Age (years)					
	50–59		60–69		≥70	
	Cases–controls	OR (95% CI)	Cases–controls	OR (95% CI)	Cases–controls	OR (95% CI)
1 (< 21.8 kg m^{-2})	221:232	1[b]	245:238	1[b]	97:113	1[b]
2 (21.8–23.8 kg m^{-2})	263:219	1.26 (1.0–1.6)	255:189	1.33 (1.0–1.7)	115:109	1.35 (0.9–2.0)
3 (23.9–25.7 kg m^{-2})	267:204	1.34 (1.0–1.8)	255:223	1.17 (0.9–1.5)	97:114	1.05 (0.7–1.6)
4 (25.8–28.4 kg m^{-2})	252:193	1.38 (1.1–1.8)	276:223	1.25 (1.0–1.6)	117:99	1.60 (1.1–2.4)
5 (>28.4 kg m^{-2})	244:204	1.30 (1.0–1.7)	261:215	1.24 (1.0–1.6)	143:89	2.14 (1.4–3.2)

La Vecchia et al., 1997

BMI and different ages and endometrial cancer risk

Table 2. Multivariate relative risk estimates (and 95% confidence intervals) of endometrial cancer in relation to body mass index at different ages*

Body mass index (kg/m^2)	Age (years)		
	3rd decade (20 to 29)	5th decade (40 to 49)	7th decade (60 to 69)
< 20	1†	1†	1†
20–25	1.2 (0.9–1.8)	0.7 (0.4–1.5)	2.4 (0.3–23.1)
25–30	1.6 (0.9–2.7)	1.2 (0.5–2.7)	3.5 (0.3–43.9)
≥ 30	–	2.1 (0.8–5.8)	8.1 (0.4–150.5)

* From Levi *et al*, 1992; † Reference category

EVOLUTION IN MESSAGE DIVULGATION

Sáez-Almendros et al. Environmental Health 2013, 12:118
http://www.ehjournal.net/content/12/1/118

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Environmental footprints of Mediterranean versus Western dietary patterns: beyond the health benefits of the Mediterranean diet

Sara Sáez-Almendros[1], Biel Obrador[2], Anna Bach-Faig[3] and Lluis Serra-Majem[4,5*]

Abstract

Background: Dietary patterns can substantially vary the resource consumption and environmental impact of a given population. Dietary changes such as the increased consumption of vegetables and reduced consumption of animal products reduce the environmental footprint and thus the use of natural resources. The adherence of a given population to the Mediterranean Dietary Pattern (MDP) through the consumption of the food proportions and composition defined in *the new Mediterranean Diet pyramid* can thus not only influence human health but also the environment. The aim of the study was to analyze the sustainability of the MDP in the context of the Spanish population in terms of greenhouse gas emissions, agricultural land use, energy consumption and water consumption. Furthermore, we aimed to compare the current Spanish diet with the Mediterranean Diet and in comparison with the western dietary pattern, exemplified by the U.S.A. food pattern, in terms of their corresponding environmental footprints.

Methods: The environmental footprints of the dietary patterns studied were calculated from the dietary make-up of each dietary pattern, and specific environmental footprints of each food group. The dietary compositions were obtained from different sources, including food balance sheets and household consumption surveys. The specific environmental footprints of food groups were obtained from different available life-cycle assessments.

Results: The adherence of the Spanish population to the MDP has a marked impact on all the environmental footprints studied. Increasing adherence to the MDP pattern in Spain will reduce greenhouse gas emissions (72%), land use (58%) and energy consumption (52%), and to a lower extent water consumption (33%). On the other hand, the adherence to a western dietary pattern implies an increase in all these descriptors of between 12% and 72%.

Conclusions: The MDP is presented as not only a cultural model but also as a healthy and environmentally-friendly model, adherence to which, in Spain would have, a significant contribution to increasing the sustainability of food production and consumption systems in addition to the well-known benefits on public health.

Keywords: Mediterranean diet, Environmental footprints, Western pattern, Sustainable diets, Spain, Sustainability, Environment

Med Diet 4.0: the Mediterranean diet with four sustainable benefits

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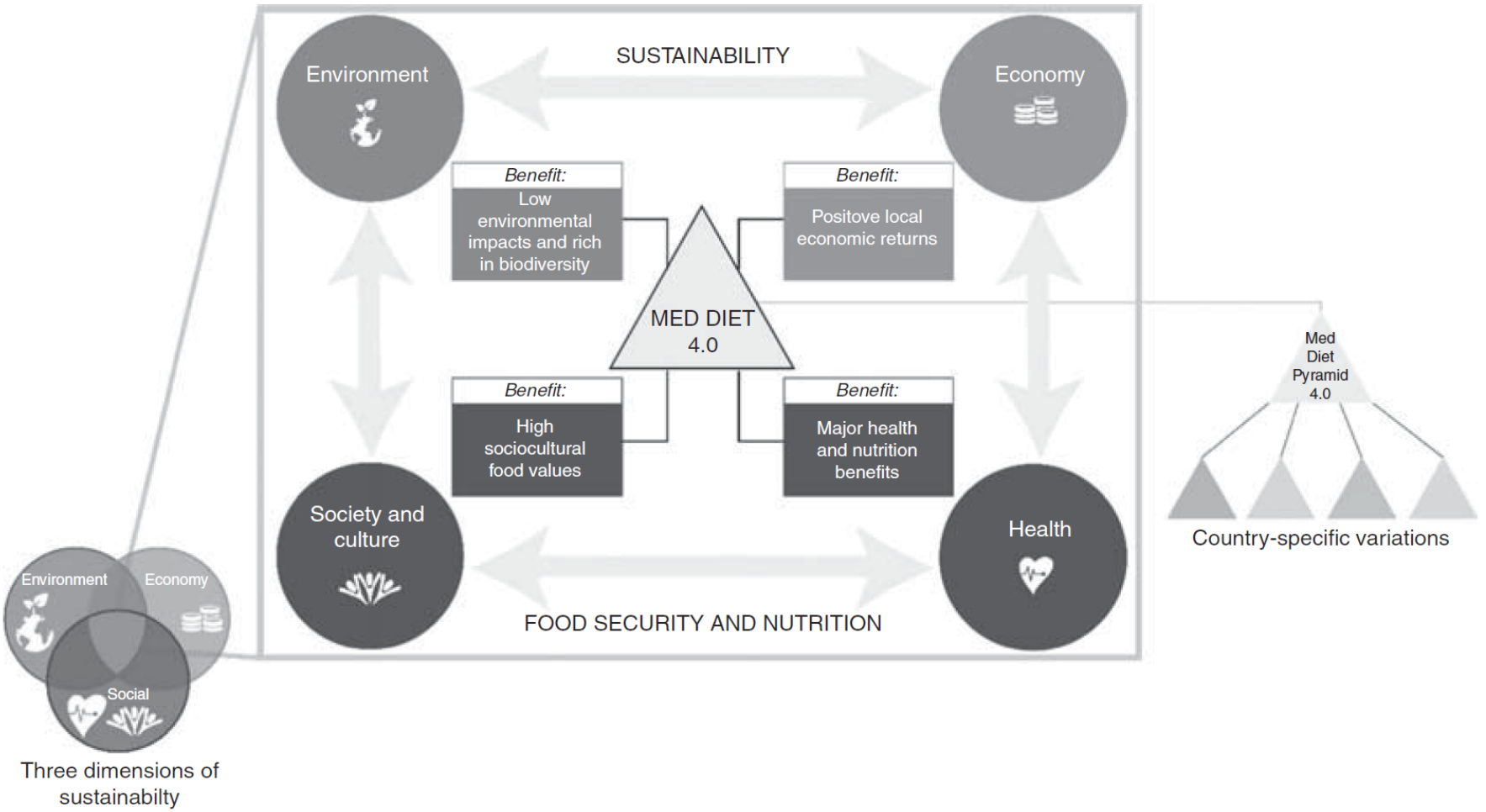
Abstract
OBJECTIVE:
To characterize the multiple dimensions and benefits of the Mediterranean diet as a sustainable diet, in order to revitalize this intangible food heritage at the country level; and to develop a multidimensional framework - the Med Diet 4.0 - in which four sustainability benefits of the Mediterranean diet are presented in parallel: major health and nutrition benefits, low environmental impacts and richness in biodiversity, high sociocultural food values, and positive local economic returns.

DESIGN:
A narrative review was applied at the country level to highlight the multiple sustainable benefits of the Mediterranean diet into a single multidimensional framework: the Med Diet 4.0. Setting/subjects We included studies published in English in peer-reviewed journals that contained data on the characterization of sustainable diets and of the Mediterranean diet. The methodological framework approach was finalized through a series of meetings, workshops and conferences where the framework was presented, discussed and ultimately refined.

RESULTS:
The Med Diet 4.0 provides a conceptual multidimensional framework to characterize the Mediterranean diet as a sustainable diet model, by applying principles of sustainability to the Mediterranean diet.

CONCLUSIONS:
By providing a broader understanding of the many sustainable benefits of the Mediterranean diet, the Med Diet 4.0 can contribute to the revitalization of the Mediterranean diet by improving its current perception not only as a healthy diet but also a sustainable lifestyle model, with country-specific and culturally appropriate variations. It also takes into account the identity and diversity of food cultures and systems, expressed within the notion of the Mediterranean diet, across the Mediterranean region and in other parts of the world. Further multidisciplinary studies are needed for the assessment of the sustainability of the Mediterranean diet to include these new dimensions.

Med Diet 4.0: the Mediterranean diet with four sustainable benefits



Mediterranean Diet