The Evidence that the Mediterranean Diet is the Gold Standard

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The recorded history of the traditional Mediterranean diet as a health promoting diet started with the work of Ancel Keys and his colleagues in the legendary seven countries study.
Mediterranean diet is the dietary pattern found in the olive growing areas of the Mediterranean region in the late 50’ and early 60’
<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Greece</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Life expectancy at age 45 in years</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>27</td>
<td>31</td>
<td>27</td>
</tr>
<tr>
<td>(F)</td>
<td>33</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td><strong>Coronary Heart Disease</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>189</td>
<td>33</td>
<td>34</td>
</tr>
<tr>
<td>(F)</td>
<td>54</td>
<td>14</td>
<td>21</td>
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<tr>
<td><strong>Cerebrovascular Diseases</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>30</td>
<td>26</td>
<td>102</td>
</tr>
<tr>
<td>(F)</td>
<td>24</td>
<td>23</td>
<td>57</td>
</tr>
<tr>
<td><strong>Breast Cancer</strong></td>
<td></td>
<td></td>
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<tr>
<td>(F)</td>
<td>22</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td><strong>Stomach Cancer</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>(M)</td>
<td>6</td>
<td>10</td>
<td>48</td>
</tr>
<tr>
<td>(F)</td>
<td>3</td>
<td>6</td>
<td>26</td>
</tr>
<tr>
<td><strong>Colon, Rectal Cancer</strong></td>
<td></td>
<td></td>
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<tr>
<td>(M)</td>
<td>11</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>(F)</td>
<td>10</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total Cancer</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(M)</td>
<td>102</td>
<td>83</td>
<td>98</td>
</tr>
<tr>
<td>(F)</td>
<td>87</td>
<td>61</td>
<td>77</td>
</tr>
</tbody>
</table>

*Source: W. Willett, Science 1994*
The Mediterranean Diet and Food Culture – a Symposium

Edited by Elisabet Helsing and Antonia Trichopoulou
An alpha-linolenic acid-rich Mediterranean diet seems to be more efficient than presently used diets in the secondary prevention of coronary events and death.

The protective effect of the Mediterranean dietary pattern was maintained up to 4 years after the first infarction, confirming previous intermediate analyses.

De Longeril M.  Lancet 1994
de Lorgeril M.  Circulation 1999
The MD can be thought of as having 9 components:

- high olive oil consumption
- high consumption of legumes
- high consumption of cereals, mostly unrefined
- high consumption of fruits
- high consumption of vegetables
- moderate consumption of dairy products, mostly as cheese and yogurt
- moderate to high consumption of fish
- low consumption of meat and meat products
- moderate wine consumption, if it is accepted by religion and social norms
Diet and overall survival in elderly people

Trichopoulou A. et al. BMJ 1995
A one unit increase in diet score, devised a priori on the basis of characteristic component of the traditional common diet in the Mediterranean region was associated with 17% reduction in overall mortality (95% CI 1% to 31%).
A randomized controlled trial of a moderate-fat, low-energy diet compared with a low fat, low-energy diet for weight loss in overweight adults

A moderate-fat, Mediterranean-style diet, controlled in energy

offers an alternative to a low-fat diet

with

superior long-term participation and adherence, with consequent improvements in weight loss

McManus et al. IJO, 2001
per 2-unit increase in Mediterranean diet score

A higher degree of adherence to the Mediterranean diet was associated with a significant reduction in:

- **total mortality**
  - adjusted mortality ratio 0.75

- **coronary heart disease**
  - adjusted mortality ratio 0.67

- **cancer**
  - adjusted mortality ratio 0.76
Rather than single foods or nutrients, a global health dietary pattern could exert protective effect.

The combination of different types of food with healthy characteristics might be necessary to express their protective potential.
Increased adherence to the Mediterranean diet, 2-point increments in score inversely associated with CBVD incidence

(adjusted hazard ratio = 0.85, 95% CI: 0.74, 0.96)
and mortality (adjusted hazard ratio = 0.88, 95% CI: 0.73, 1.06).

These inverse trends were mostly evident among women and with respect to Ischemic rather than hemorrhagic CBVD
A higher degree of adherence to the Mediterranean diet was associated with an 8% reduction in overall mortality.

But the reduction was considerably higher in Mediterranean countries like Spain and Greece.
2671 EPIC participants from nine countries 60 years or older had prevalent myocardial infarction but no stroke or cancer at enrollment

Increased adherence to modified Mediterranean diet by two units was associated with 18% lower overall mortality rate.

## Adherence to MD & overall mortality

<table>
<thead>
<tr>
<th>Study</th>
<th>Weight (%)</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trichopoulou et al. 1995</td>
<td>9.68</td>
<td>0.69 (0.48–0.99)</td>
</tr>
<tr>
<td>Kouris-Blazos et al. 1999</td>
<td>6.22</td>
<td>0.79 (0.50–1.25)</td>
</tr>
<tr>
<td>Lasheras et al. 2000</td>
<td>2.81</td>
<td>0.48 (0.22–1.02)</td>
</tr>
<tr>
<td>Trichopoulou et al. 2003</td>
<td>16.81</td>
<td>0.75 (0.64–0.87)</td>
</tr>
<tr>
<td>Knoops et al. 2004</td>
<td>11.19</td>
<td>0.88 (0.82–0.94)</td>
</tr>
<tr>
<td>Trichopoulou et al. 2005</td>
<td>8.22</td>
<td>0.93 (0.89–0.97)</td>
</tr>
<tr>
<td>Lagiou et al. 2006</td>
<td>12.61</td>
<td>0.93 (0.83–1.04)</td>
</tr>
<tr>
<td>Mitrou et al. 2007 (males)</td>
<td>15.71</td>
<td>0.92 (0.91–0.94)</td>
</tr>
<tr>
<td>Mitrou et al. 2007 (females)</td>
<td>100</td>
<td>0.93 (0.91–0.95)</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td></td>
<td><strong>0.91 (0.89-0.94)</strong></td>
</tr>
</tbody>
</table>

- **-25%**
- **-9%**

Sofi et al., BMJ 2008
WHAT WAS ALREADY KNOWN ON THIS TOPIC

Several prospective cohort studies have indicated that conformity to the traditional Mediterranean diet is associated with longevity.

No study has investigated the relative importance of individual components of the Mediterranean diet score in the generation of this association.
Anatomy of health effects of Mediterranean diet: Greek EPIC prospective cohort study.

The contributions of the individual components of the Med diet to this association were:

23.5% moderate ethanol consumption,

16.6% low consumption of meat and meat products

16.2% high vegetable consumption

11.2% high fruit and nut consumption

10.6% high monounsaturated to saturated lipid ratio

9.7% high legume consumption

The contributions of high cereal consumption and low dairy consumption and fish intake were minimal,

Trichopoulou A. et al. BMJ 2009
The whole argument concerning wine drinking is how best to balance the risks and the benefits.
In this large study, greater adherence to the Mediterranean diet was associated with longer telomeres.

These results further support the benefits of adherence to the Mediterranean diet for promoting health and longevity.
The traditional Mediterranean diet is associated with longer survival.

This could be partly attributed to Mediterranean traditional foods on which this diet largely relies.
Clay statuette of a woman teaching her daughter how to cook. Boston Museum of Fine Arts 5th century BC.
Inorganic constituents

log(daily intake, mg)

Mediterranean menu
EC daily recommendations


Investigation of the potential of 194 traditional Greek foods to bear nutrition claims

Comparison of energy content and nutritional composition to the European specifications on a wide range of nutritional components

Overall, about 1024 nutrition claims were relevant for the 194 traditional foods studied

The flavonol, flavone and flavan-3-ol content of a typical traditional serving of fava complemented with "caper in casserole" sauce.

“Countries, communities and cultures that maintain their own traditional food systems are better able to conserve local food specialities with a corresponding diversity of crop varieties and animal breeds. They are also more likely to show a lower prevalence of diet-related chronic diseases. The Mediterranean diet offers a clear example.”
Clay statuette of a woman teaching her daughter how to cook.
Boston Museum of Fine Arts 5th century BC.