

What is already known on this topic

The model of care for cancer patients that encompasses diagnosis, treatment, and palliative care is well developed

What this study adds

Patients with advanced cardiac failure have a different illness trajectory from those with inoperable lung cancer

Such patients and their carers have different concerns, a poorer understanding of the illness and prognosis, and less opportunity to address end of life issues than patients with lung cancer

Health, social, and palliative care services are less readily available to those with a non-cancer diagnosis

Care for patients with advanced cardiac failure should be proactive and designed to meet their specific needs

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Fish, meat, and risk of dementia: cohort study

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The role of dietary fat in dementia arouses increasing interest.¹ Fatty acids could be involved through several mechanisms, including atherosclerosis, thrombosis, and inflammation.² We evaluated whether there is a relation between consumption of fish (rich in polyunsaturated fatty acids) or meat (rich in saturated fatty acids) and risk of dementia.

Participants, methods, and results

We obtained data from the PAQUID (Personnes Agées QUID) epidemiological study of cognitive and functional ageing (www.healthandage.net/html/min/paquid/entrance.htm). During the third wave of the study (1991-2) investigators visited 1674 people aged 68 and over without dementia and living at home in 75 parishes in southwestern France and recorded their frequency of consumption of meat and fish or seafood: daily, at least once a week (but not every day), from time to time (but not every week), never. Participants were followed up two, five, and seven years afterwards: 1416 (84.6%) had at least one follow up visit. All the participants who had lost three points or more on the minimal state examination since a previous visit or were

suspected of having dementia according to the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised (DSM-III-R) were visited by a neurologist to confirm the diagnosis.

We calculated the incidence of dementia per 100 person years. We used a Cox proportional hazards model with delayed entry to estimate the relative risk of dementia, taking into account age, sex, and education (at least the French primary school diploma "Certificat d'Etudes Primaires" versus less education³).

During the seven years of follow up 170 new cases of dementia occurred, including 135 cases of Alzheimer's disease. The table shows a significant trend between increasing consumption of fish or seafood and decreasing incidence of dementia (P for trend=0.0091). Frequency of fish or seafood consumption was higher in the participants with higher education (879/1051 (83.6%) v 262/365 (71.8%) consuming fish at least weekly; P<0.0001). Participants who ate fish or seafood at least once a week had a significantly lower risk of being diagnosed as having dementia in the seven subsequent years (age and sex adjusted hazard ratio 0.66, 95% confidence interval 0.47 to 0.93). When we added education into the model the

Incidence of dementia according to fish and meat consumption in elderly people in southwestern France

	Total No	No of cases	Dementia		Alzheimer's disease	
			Incidence (95% CI) per 100 person years	No of cases	Incidence (95% CI) per 100 person years	No of cases
Fish or seafood consumption:						
Once a day	19	1	1.00 (0.00 to 2.97)	1	1.00 (0.00 to 2.97)	
At least once a week (but not every day)	1122	124	2.05 (1.69 to 2.41)	99	1.64 (1.31 to 1.96)	
From time to time (but not weekly)	240	35	2.90 (1.94 to 3.87)	27	2.24 (1.39 to 3.08)	
Never	35	10	6.61 (2.51 to 10.70)	8	5.29 (1.62 to 8.95)	
Meat consumption:						
Once a day	934	110	2.22 (1.80 to 2.63)	87	1.75 (1.38 to 2.12)	
At least once a week (but not every day)	450	53	2.21 (1.61 to 2.80)	44	1.83 (1.29 to 2.37)	
From time to time (but not weekly)	26	4	3.49 (0.07 to 6.90)	2	1.74 (0.00 to 4.16)	
Never	6	3	9.39 (0.00 to 20.01)	2	6.26 (0.00 to 14.93)	

hazard ratio was almost unchanged (0.73) but the 95% confidence interval (0.52 to 1.03) slightly overlapped 1.00, indicating that the “protective” effect of weekly fish or seafood consumption was partly explained by higher education of regular consumers. Participants who ate fish or seafood at least once a week had a hazard ratio, adjusted for age and sex, of 0.69 for developing Alzheimer's disease in the seven following years, with borderline significance (95% confidence interval 0.47 to 1.01). We found no significant association between meat consumption and risk of dementia—*P* for trend=0.59; age and sex adjusted hazard ratio for weekly consumers 0.56 (0.26 to 1.20).

Comment

Elderly people who eat fish or seafood at least once a week are at lower risk of developing dementia, including Alzheimer's disease. The Rotterdam study found similar results but had a much shorter follow up (mean 2.1 years).⁴ Given that the first consequences of dementia on everyday living can appear three years before diagnosis,⁵ poor dietary habits could be a consequence rather than a cause of cognitive decline in the Rotterdam participants.

In addition to providing vascular protection, the n-3 fatty acids contained in fish oils could reduce inflammation in the brain and may have a specific role in brain development and regeneration of nerve cells.² Healthy dietary habits acquired in infancy could be associated with achievement of higher education. Highly educated people might also adhere more closely to dietary recommendations on fish consumption.

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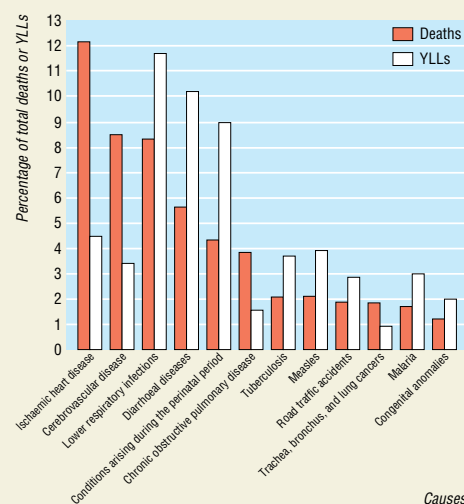
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The burden of disease

Leading causes of death and premature death worldwide, 1990



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In contrast to crude data on deaths, the time based measure years of life lost (YLL) can identify the causes of premature death. This table shows the leading causes of death and of premature death, and gives many pointers for health policy.