



Seafood Health Facts: Making Smart choices Balancing the Benefits and Risks of Seafood Consumption *Resources for Healthcare Providers and Consumers*

Scientific Publications and References [1]

This section contains information and links to key scientific journal articles and government and health organization reports on risks and benefits of seafood consumption. These resources are designed to give an in-depth review of the subject.

Reviews of Risks-Benefits of Seafood Consumption

Food and Agriculture Organization of the United Nations/World Health Organization Expert Consultations: Risks and Benefits of Fish Consumption. 2010.

The purpose of the FAO/WHO Expert Consultation was to provide a framework for assessing the net health benefits or risks of fish consumption that would assist governments to prepare advice for their own populations. This is the Executive Summary of the report and draws the general conclusion that benefits from fish consumption outweigh the risks for all populations.

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Harris WS, Mozaffarian D, Lefevre M, Toner CD, Colombo J, Cunnane SC, Holden JM, Klurfeld DM, Morris MC and Whelan J. 2009. Towards establishing dietary reference intakes for eicosapentaenoic and docosahexaenoic acids. *Journal of Nutrition* 139(4):804S-819.

This is a result of a workshop held by the Technical Committee on Dietary Lipids of the International Life Sciences Institute North America to consider whether the body of evidence specific to the major chronic diseases in the United States—coronary heart disease (CHD), cancer, and cognitive decline—had evolved sufficiently to justify reconsideration of DRI for EPA+DHA.

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Institute of Medicine of the National Academies, Committee on Nutrient Relationships in Seafood: Selections to Balance Benefits and Risks, Nesheim MC, Yaktine AL, editors. 2007. *Seafood Choices: Balancing benefits and risks*. National Academies Press: Washington, D.C.

At the request of government agencies the National Academy of Sciences and the Institute of Medicine (IOM) of the National Academies convened an expert committee to examine relationships between the benefits and risks of seafood in order to help consumers make informed choices.

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Cohort Studies

Hibbeln JR, Davis JM, Steer C, Emmett P, Rogers I, Williams C and Golding J. 2007. Maternal seafood consumption in pregnancy and neurodevelopmental outcomes in childhood (ALSPAC study): an observational cohort study. *Lancet* 369(9561):578-585.

A cohort of 11,875 pregnant women completed a food frequency questionnaire assessing seafood consumption at 32 weeks' gestation. Researchers recorded beneficial effects on child development with maternal seafood intakes of more than 340 g per week, suggesting that advice to limit seafood consumption could actually be detrimental.

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Mozaffarian D, Rimm EB. 2006. Fish intake, contaminants, and human health: evaluating the risks and the benefits. *Journal of the American Medical Association*.296:1885-89.

This study involved examination of scientific publications, government reports, systematic reviews and meta-analyses related to four categories: (1) association between intake of fish or fish oils and reduced risk of cardiovascular events and mortality, (2) effects of methylmercury and fish oil on early neurodevelopment, (3) association between methylmercury exposure and negative cardiovascular or neurologic effects in adults, and

(4) health risks of PCBs and dioxins in fish. Results showed that coronary death could be reduced in the U.S. by 36% with moderate fish consumption.

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Whelton SP, He J, Whelton PK and Muntner P. 2004. Meta-analysis of observational studies on fish intake and coronary heart disease. *American Journal of Cardiology* 93(9):1119-1123.

Some 19 observational studies in which there was a group that consumed fish on a regular basis and a comparison group that consumed little or no fish were reviewed. Findings suggest that fish consumption may be an important component of lifestyle modification for the prevention of coronary heart disease.

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Risk-Benefit Models

Ponce RA, Bartell SM, Wong EY, LaFlamme D, Carrington C, Lee RC, Patrick DL, Faustman EM and Bolger M. 2000. Use of Quality-adjusted life year weights with dose-response models for public health decisions: A case study of the risks and benefits of fish consumption. *Risk Analysis* 20(4):529-542.

One of the first papers using QALY (Quality Adjusted Life Year) for developing a quantitative model for studying the risks and benefits of seafood consumption.

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Cohen JT, Bellinger DC, Connor WE, Kris-Etherton PM, Lawrence RS, Savitz DA, Shaywitz BA, Teutsch SM and Gray GM. 2005. A quantitative risk-benefit analysis of changes in population fish consumption. *American Journal of Preventative Medicine* 29(4):325-334.

One in a series of studies that explores the risk-benefits of seafood consumption in various populations with end-points being coronary heart disease and, neurodevelopment. Authors use unique quantitative methods and use of QALYs to determine the overall impacts of seafood consumption.

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Other Studies of Interest

Shimshack JP and Ward MB. 2010. Mercury advisories and household health trade-offs. *Journal of Health Economics* 29(5):674-685.

The authors discuss how health advisories may have unintended consequences for reducing overall seafood consumption.

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Harris WS, Kris-Etherton PM and Harris KA. 2008. Intakes of long-chain omega-3 fatty acid associated with reduced risk for death from coronary heart disease. *Current Atherosclerosis Reports*. 10:503-509.

Summary of studies looking at EPA and DHA intakes and epidemiological studies in the U.S.

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Oken E, Radesky JS, Wright RO, Bellinger DC, Amarasinghwardena CJ, Kleinman KP, Hu H and Gillman MW. 2008b. Maternal fish intake during pregnancy, blood mercury levels, and child cognition at age 3 years in a US cohort. *American Journal of Epidemiology* 167(10):1171-1181.

One of the few studies looking at the balance of contaminant risk and nutritional benefit from maternal prenatal fish consumption for child cognitive development in the U.S.

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Myers GJ, Davidson PW, Cox C, Shamlaye CF, Palumbo D, Cernichiari E, Sloane-Reeves J, Wilding GE, Kost J, Huang LS and Clarkson TW. 2003. Prenatal methylmercury exposure from ocean fish consumption in the Seychelles child development study. *Lancet*. 361(9370):1686-1692.

This long-term study in the Seychelles Islands shows no correlations of mercury in the diet with child neurological development.

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Grandjean P, Weihe P, White RF, Debes F, Araki S, Yokoyama K, Murata K, Sorensen N, Dahl R and Jorgensen PJ. 1997. Cognitive deficit in 7-year-old children with prenatal exposure to methylmercury. *Neurotoxicology and Teratology*. 19(6):417-428.

This long-term study in the Faroe Islands shows a correlation of mercury in the diet and cognitive deficits.

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