評価対象論文リスト（要因：魚、アウトカム：循環器病）

評価判定日：2024/11/5

①既存の系統的レビュー・メタ解析・統合解析

1	Qian F, Tintle N, Jensen PN, et al. Omega-3 Fatty Acid Biomarkers and Incident Atrial Fibrillation. *J Am Coll Cardiol* . 2023;82(4):336-349. doi:10.1016/j.jacc.2023.05.024
2	Mohan D, Mente A, Dehghan M, et al. Associations of Fish Consumption With Risk of Cardiovascular Disease and Mortality Among Individuals With or Without Vascular Disease From 58 Countries [published correction appears in JAMA Intern Med. 2021 May 1;181(5):727. doi: 10.1001/jamainternmed.2021.1536.]. *JAMA Intern Med* . 2021;181(5):631-649. doi:10.1001/jamainternmed.2021.0036
3	Yamagishi K, Iso H, Shimazu T, et al. Fish intake and risk of mortality due to aortic dissection and aneurysm: A pooled analysis of the Japan cohort consortium. Clin Nutr. 2019;38(4):1678-1683. doi:10.1016/j.clnu.2018.08.007
4	O'Keefe JH, Tintle NL, Harris WS, et al. Omega-3 Blood Levels and Stroke Risk: A Pooled and Harmonized Analysis of 183 291 Participants From 29 Prospective Studies [published correction appears in Stroke. 2024 Mar;55(3):e109. doi: 10.1161/STR.0000000000000461.]. Stroke. 2024;55(1):50-58. doi:10.1161/STROKEAHA.123.044281

②日本人集団の個別疫学研究

5	Iso H, Kobayashi M, Ishihara J, et al. Intake of fish and n3 fatty acids and risk of coronary heart disease among Japanese: the Japan Public Health Center-Based (JPHC) Study Cohort I. *Circulation* . 2006;113(2):195-202. doi:10.1161/CIRCULATIONAHA.105.581355
6	Hamazaki K, Iso H, Eshak ES, et al. Plasma levels of n-3 fatty acids and risk of coronary heart disease among Japanese: The Japan Public Health Center-based (JPHC) study. Atherosclerosis. 2018;272:226-232. doi:10.1016/j.atherosclerosis.2017.12.004

■メタ解析、系統的レビュー

			Include study						Design	Category	Relative risk (95% CI or p)	Weight	**Magnitude of association**
Author	Title	Year	Ref No.	First author	Year	Study period	Study location	Event (*Definition)					
F Qian et al	Omega-3 Fatty Acid Biomarkaers and Incident Atrial Fibrillation	2023						Atrial Fibrillation Incident	Prospective cohort study	Categorical analysis: Q5 (ref) vs Q1			
						No. of Studies				**EPA**			
						10				Phospholipids	0.92 (0.83-1.02)		
						4				Total plasma/serum	0.97 (0.75-1.25)		
						3				Cholesterol ester	1.06 (0.90-1.26)		
						1				Adipose tissue	0.86 (0.54-1.37)		
						16				Overall	0.94 (0.86-1.02)		-
										DPA			
						9				Phospholipids	0.87 (0.79-0.97)		
						4				Total plasma/serum	1.17 (0.91-1.51)		
						1				Adipose tissue	0.72 (0.42-1.23)		
						13				Overall	0.90 (0.82-0.98)		↓
										DHA			
						10				Phospholipids	0.84 (0.76-0.92)		
						5				Total plasma/serum	0.91 (0.74-1.11)		
						3				Cholesterol ester	0.94 (0.81-1.10)		
						1				Adipose tissue	0.73 (0.45-1.19)		
						17				Overall	0.87 (0.80-0.94)		↓
										EPA + DHA			
						10				Phospholipids	0.84 (0.76-0.92)		
						4				Total plasma/serum	0.95 (0.74-1.23)		
						3				Cholesterol ester	1.00 (0.84-1.18)		
						1				Adipose tissue	0.73 (0.44-1.20)		
						16				Overall	0.88 (0.81-0.95)		↓

■コホート研究（コホートのプール解析含む）

			Study subjects						Category	Number among cases	Relative risk (95%CI or p)	P for trend	Confounding variables considered	**Magnitude of association**
Author	Title	Year	Study period	Number of subjects	Source of subjects	Event followed	Number of incident cases or deaths	Participant's race						
Yamagishi K et al	Fish intake and risk of mortality due to aortic dissection and aneurysm: A pooled analysis of the Japan cohort consortium	2019		366,048	Japan Cohort Consortium (eight cohort participants).	Mortality due to aortic dissection and aneurysm	No. of aortic disease cases Men; 469 Women; 270	Japanese	**Total aortic diseases**				age, sex, body mass index, smoking status, alcohol intake	
									Frequency of fish intake					
									Seldom or 1-2 times/month	81	1.20 (0.92, 1.57)	0.53		
									1-2 times/week	205	1.00 (Reference)			
									3-4 times/week	253	1.15 (0.95, 1.39)			
									Almost every day	200	1.12 (0.90, 1.40)			-
									Aortic dissection (5 studies)					
									Frequency of fish intake					
									Seldom or 1-2 times/month	37	1.32 (0.88, 1.99)	0.85		
									1-2 times/week	87	1.00 (Reference)			
									3-4 times/week	124	1.46 (0.89, 2.41)			
									Almost every day	80	1.10 (0.67, 1.80)			-
									Aortic aneurysm (7 studies)					
									Frequency of fish intake					
									Seldom or 1-2 times/month	44	1.18 (0.56, 2.47)	0.95		
									1-2 times/week	104	1.00 (Reference)			
									3-4 times/week	114	1.00 (0.76, 1.31)			
									Almost every day	98	1.07 (0.80, 1.43)			-
O'Keefe JH et al	Omega-3 Blood Levels and Stroke Risk: A Pooled and Harmonized Analysis of 183 291 Participants From 29 Prospective Studies	2024		183291	29 international prospective cohorts	stroke incidence	total stroke; 10,561 ischemic stroke; 8,220 emorrhagic stroke 1,142	Japanese	**Total stroke**					
									DHA					
									Q1		1.00 (Reference)	0.04		
									Q2		0.92 (0.85–1)			
									Q3		0.93 (0.86–1.02)			
									Q4		0.90 (0.83–0.98)			
									Q5		0.88 (0.81–0.96)			↓
									EPA					
									Q1		1.00 (Reference)	0.001		
									Q2		1.00 (0.92–1.08)			
									Q3		0.82 (0.75–0.89)			
									Q4		0.91 (0.83–0.99)			
									Q5		0.83 (0.76–0.91)			↓
									DPA					
									Q1		1.00 (Reference)	0.21		
									Q2		1.00 (0.91–1.11)			
									Q3		1.03 (0.93–1.13)			
									Q4		1.01 (0.91–1.12)			
									Q5		0.89 (0.8–0.99)			↓
									EPA+DHA					
									Q1		1.00 (Reference)	0.007		
									Q2		0.94 (0.86–1.02)			
									Q3		0.92 (0.84–0.99)			
									Q4		0.92 (0.84–0.99)			
									Q5		0.83 (0.76–0.91)			↓
									Ischemic stroke					
									DHA					
									Q1		1.00 (Reference)	0.03	age, sex, race, field center, body mass index,	
									Q2		0.9 (0.82–0.99)			
									Q3		0.9 (0.82–0.99)			
									Q4		0.88 (0.8–0.96)			

			Q5		0.86 (0.78–0.95)		education, occupation, smoking, physical activity, alcohol intake, prevalent DM, prevalent hypertension, prevalent dyslipidemia, prevalent atherosclerotic CVD, history of AF, circulating omega-6 fatty acid levels	↓
			EPA					
			Q1		1.00 (Reference)			
			Q2		0.99 (0.9–1.08)			
			Q3		0.81 (0.74–0.9)	0.002		
			Q4		0.91 (0.82–1.00)			
			Q5		0.82 (0.74–0.91)			↓
			DPA					
			Q1		1.00 (Reference)			
			Q2		1.04 (0.94–1.16)			
			Q3		1.04 (0.93–1.16)	0.47		
			Q4		1.04 (0.94–1.16)			
			Q5		0.93 (0.83–1.05)			-
			EPA+DHA					
			Q1		1.00 (Reference)			
			Q2		0.93 (0.85–1.02)			
			Q3		0.88 (0.8–0.97)	0.006		
			Q4		0.89 (0.81–0.98)			
			Q5		0.82 (0.74–0.91)			↓
			Hemorrhagic stroke					
			DHA					
			Q1		1.00 (Reference)			
			Q2		1.08 (0.82–1.42)			
			Q3		1.03 (0.78–1.36)	0.79		
			Q4		1.02 (0.77–1.36)			
			Q5		1.09 (0.82–1.46)			-
			EPA					
			Q1		1.00 (Reference)			
			Q2		0.96 (0.73–1.26)			
			Q3		0.82 (0.62–1.09)	0.45		
			Q4		0.86 (0.65–1.14)			
			Q5		0.9 (0.67–1.21)			-
			DPA					
			Q1		1.00 (Reference)			
			Q2		0.83 (0.61–1.13)			
			Q3		0.64 (0.47–0.89)	0.45		
			Q4		0.89 (0.66–1.22)			
			Q5		0.79 (0.57–1.09)			-
			EPA+DHA					
			Q1		1.00 (Reference)			
			Q2		1.14 (0.86–1.51)			
			Q3		1.00 (0.75–1.35)	0.82		
			Q4		1.17 (0.87–1.57)			
			Q5		1.04 (0.76–1.42)			-

Iso H et al	Intake of Fish and n3 Fatty Acids and Risk of Coronary Heart Disease Among Japanese: The Japan Public Health Center-Based (JPHC) Study Cohort I	2006	1990-2002.1.1	41578	Japan Public Health Center-Based (JPHC) Study Cohort I	Coronary Heart Disease	258	Japanese	**Quintiles of Fish Intake**			0.25	age; sex; cigarette smoking; alcohol intake; body mass index; histories of hypertension, diabetes; medication use for hypercholesterolemia; education level; sports at leisure time; quintiles of dietary intake of fruits, vegetables, saturated fat, monounsaturated fat, n6 polyunsaturated fat, cholesterol, and total energy; and PHC.	
									Q1 (low)	78	1.00 (Reference)			
									Q2	46	0.71 (0.48–1.05)			
									Q3	52	0.93 (0.63–1.38)			
									Q4	45	0.83 (0.53–1.30)			
									Q5 (high)	37	0.63 (0.38–1.04)			↓↓
									Quintiles of n3 Polyunsaturated Fatty Acid Intake			0.18		
									Q1 (low)	83	1.00 (Reference)			
									Q2	44	0.70 (0.47–1.03)			
									Q3	48	0.75 (0.50–1.12)			
									Q4	45	0.75 (0.48–1.18)			
									Q5 (high)	38	0.58 (0.35–0.97)			↓↓
K Hamazak et al	Plasma levels of n-3 fatty acids and risk of coronary heart disease among Japanese: The Japan Public Health Center-based (JPHC) study	2018	cohortⅠ: 1990-2007.12.31, cohortⅡ: 1993-2007.12.31	Plasma n3 PUFA phospholipid levels were measured at baseline by gas chromatography in 209 cases with CHD and 418 controls matched for sex, age, date of blood draw, time elapsed since last meal before blood collection, and study location.	Japan Public Health Center-based (JPHC) study	Coronary heart disease	209	Japanese	**Quartile for total n-3 PUFAs**				body mass index, cigarette smoking status, ethanol intake, hypertension status, medication use for hypercholesterolemia, and serum glucose category	-
									Q1 (low)	57	1.00 (Reference)	0.51		
									Q2	55	0.71 (0.40, 1.25)			
									Q3	39	0.51 (0.26, 1.01)			
									Q4 (high)	58	0.79 (0.41, 1.51)			
									他、Myocardial infarction、Sudden cardiac death等についても検討している					