

## Supplementary Appendix 1: Systematic searches in three databases

Search date: 19/02/2020

Publication year: Custom year range 01/01/2015 to 31/12/2019

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily 1946 to February 18, 2020

1	Dietary Fats/ or fatty acids/ or Eicosanoic Acids/ or Fatty Acids, Unsaturated/ or Eicosanoids/ or Fatty Acids, Monounsaturated/ or Fatty Acids, Omega-3/ or Fatty Acids, Omega-6/ or Trans Fatty Acids/ or Decanoic Acids/ or Fats, Unsaturated/	159,431
2	(dietary fat* or dietary lipid* or (fat* adj3 consum*) or (fat* adj3 intak*) or (fat* adj3 health*) or (lipid* adj3 health*) or low-fat diet* or high-fat diet*).ti,ab.	62,659
3	((fat adj3 qualit*) or unsaturated fat* or saturated fat* or monounsaturated fat* or polyunsaturated fat* or MUFA or PUFA or trans-fat* or omega?3 or omega?6 or EPA or eicosapentaean* or docosahexaen* or n?3 fatty acids or n?6 fatty acids or linoleic acid or linolenic acid or CLA or conjugated linoleic acid or serum fatty acid* or plasma fatty acid* or blood fatty acid* or erythrocyte fatty acid* or phospholipid ester fatty acid* or cholesteryl ester fatty acid*).ti,ab.	89,728
4	1 or 2 or 3	244,127
5	"systematic review"/	121,902
6	exp guideline/	33,313
7	((systematic adj3 review*) or meta-analy* or metaanaly* or guideline or clinical guid* or practical guid* or guidance or recommendation* or advice or advisory).ti,ab.	690,078
8	5 or 6 or 7	717,861
9	4 and 8	7,822
10	exp Animals/ not humans/	4,669,518
11	9 not 10	7,492
12	limit 11 to yr="2015 - 2019"	2,488

Cochrane Library: 19/02/2020

Publication year: Custom year range 01/01/2015 to 31/12/2019

#1	MeSH descriptor: [Dietary Fats] this term only	3,544
#2	MeSH descriptor: [Fatty Acids] this term only	1,527
#3	MeSH descriptor: [Eicosanoic Acids] this term only	8
#4	MeSH descriptor: [Fatty Acids, Unsaturated] this term only	699
#5	MeSH descriptor: [Eicosanoids] this term only	80
#6	MeSH descriptor: [Fatty Acids, Monounsaturated] this term only	679
#7	MeSH descriptor: [Fatty Acids, Omega-3] explode all trees	2,942
#8	MeSH descriptor: [Fatty Acids, Omega-6] explode all trees	742
#9	MeSH descriptor: [Trans Fatty Acids] this term only	52
#10	(dietary fat* or dietary lipid* or (fat* near3 consum*) or (fat* near3 intak*) or (fat* near3 health*) or (lipid* near3 health*) or low-fat diet* or high-fat diet*).ti,ab	3,858
#11	((fat near3 qualit*) or unsaturated fat* or saturated fat* or monounsaturated fat* or polyunsaturated fat* or MUFA or PUFA or trans-fat* or omega-3 or omega-6 or EPA or eicosapentaeen* or docosahexaen* or n-3 fatty acids or n-6 fatty acids or linoleic acid or linolenic acid or CLA or conjugated linoleic acid or serum fatty acids or plasma fatty acids or blood fatty acids or erythrocyte fatty acids or phospholipid ester fatty acids or cholesteryl ester fatty acids).ti,ab	3,858
#12	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 with Cochrane Library publication date Between Jan 2015 and Dec 2019	4,178
	"#12 - #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11" with Cochrane Library publication date Between Jan 2015 and Dec 2019	<b>1,913 Cochrane Reviews matching</b>

Epistemonikos:

Publication year: Custom year range 01/01/2015 to 31/12/2019

Publication type: Systematic Reviews

Search date: 19/02/2020

(title:(((title:(dietary fat\*) OR abstract:(dietary fat\*)) OR (title:(dietary lipid\*) OR abstract:(dietary lipid\*)) OR (title:(fat consum\*) OR abstract:(fat consum\*)) OR (title:(fat intak\*) OR abstract:(fat intak\*)) OR (title:(low-fat diet\*) OR abstract:(low-fat diet\*)) OR (title:(or high-fat diet\*) OR abstract:(or high-fat diet\*)))) OR abstract:(((title:(dietary fat\*) OR abstract:(dietary fat\*)) OR (title:(dietary lipid\*) OR abstract:(dietary lipid\*)) OR (title:(fat consum\*) OR abstract:(fat consum\*)) OR (title:(fat intak\*) OR abstract:(fat intak\*)) OR (title:(low-fat diet\*) OR abstract:(low-fat diet\*)) OR (title:(or high-fat diet\*) OR abstract:(or high-fat diet\*)))))) OR (title:(fat qualit\*) OR abstract:(fat qualit\*)) OR (title:(unsaturated fat\*) OR abstract:(unsaturated fat\*)) OR (title:(saturated fat\*) OR abstract:(saturated fat\*)) OR (title:(monounsaturated fat\*) OR abstract:(monounsaturated fat\*)) OR (title:(polyunsaturated fat\*) OR abstract:(polyunsaturated fat\*)) OR (title:(MUFA) OR abstract:(MUFA)) OR (title:(PUFA) OR abstract:(PUFA)) OR (title:(trans-fat\*) OR abstract:(trans-fat\*)) OR (title:(omega-3) OR abstract:(omega-3)) OR (title:(omega-6) OR abstract:(omega-6)) OR (title:(EPA) OR abstract:(EPA)) OR (title:(eicosapentaeen\*) OR abstract:(eicosapentaeen\*)) OR (title:(docosahexaen\*) OR abstract:(docosahexaen\*)) OR (title:(n-3 fatty acids) OR abstract:(n-3 fatty acids)) OR (title:(n-6 fatty acids) OR abstract:(n-6 fatty acids)) OR (title:(linoleic acid) OR abstract:(linoleic acid)) OR (title:(linolenic acid) OR abstract:(linolenic acid)) OR (title:(CLA) OR abstract:(CLA)) OR (title:(conjugated linoleic acid) OR abstract:(conjugated linoleic acid)) OR (title:(serum fatty acids) OR abstract:(serum fatty acids)) OR (title:(plasma fatty acids) OR abstract:(plasma fatty acids)) OR (title:(blood fatty acids) OR abstract:(blood fatty acids)) OR (title:(erythrocyte fatty acids) OR abstract:(erythrocyte fatty acids)) OR (title:(phospholipid ester fatty acids) OR abstract:(phospholipid ester fatty acids)) OR (title:(cholesteryl ester fatty acids) OR abstract:(cholesteryl ester fatty acids))

→ 1,649

Supplementary Appendix 2: Full-text publications excluded with reason

<b>References</b>	<b>Reason for exclusion</b>
[1-114]	Not relevant study design
[115-132]	Not relevant intervention (type of fat)
[133-146]	Not relevant intervention (supplements)
[147-178]	Not relevant outcome
[179-193]	Not relevant population
[194-197]	Not relevant design of included studies
[198]	Retracted publication

Supplementary Table 1: General characteristics of the included systematic reviews of randomized controlled trials and prospective cohort studies

First author	Aim of review	Type of included studies	N (studies)	N (participants)	Population	Intervention or exposure	Comparison	Outcomes	Direction of effect (RCTs) or association (prospective cohort studies)	Certainty of the evidence	Date searched	Databases searched
Abdelhamid et al. 2018 [199]	Assess effects of increasing total PUFA intake on CVD and ACM, lipids and adiposity in adults.	RCTs	4	4,739	Adults (<1/3 with prevalent CVD)	PUFA	Higher vs. lower intake	ACM	o	NA	April 2017	Cochrane Library, Medline, Embase
			4	2,404				CVD mortality	o			
			4	2,455				BW	↑			
			4	2,019				TC	o			
			4	339				TG	o			
			4	1,959				HDL	o			
			2	208				LDL	o			
Alexander et al. 2015 [200]	Estimate the potential association between long-chain n-3 PUFA and prostate cancer.	Prospective cohort studies	13	446,243	General population	Long-chain n-3 PUFA	Highest vs. lowest intake category	Prostate cancer	o	NA	2013	Medline
Alexander et al. 2017 [201]	Conduct MAs of prospective cohort studies to estimate the association between EPA+DHA intake and CHD risk.	Prospective cohort studies	17	732,000	General population	EPA and DHA	Highest vs. lowest intake category	CHD	↓	NA	November 2015	PubMed, Ovid/ Medline, Embase, Cochrane Library

Anjom-Shoae et al. 2019 [202]	Conduct a SR and MA of prospective cohort studies to examine the association of dietary intake and serum levels of trans fatty acids with risk of breast cancer.	Prospective cohort studies	6	246,351	General population	TFA	Highest vs. lowest intake category	Breast cancer	o	NA	June 2018	PubMed, Web of Science, Scopus, ProQuest, Science Direct and Embase
			3	41,694		CLA			o			
Arab et al. 2016 [203]	Discuss evidence between breast cancer incidence, metastasis, death and other related factors of breast cancer and CLA dietary intake.	Prospective cohort studies	3	124,215	General population	CLA	Highest vs. lowest intake category	Breast cancer	no MA conducted	NA	November 2013	PubMed, Cochrane Library, Scopus, Google scholar, Iran Medex, Magiran
Balk et al. 2017 [204]	Evaluate the effect of n-3 fatty acids on clinical and selected intermediate CVD outcomes and the association of n-3 FA intake with CVD outcomes.	Prospective cohort studies	5	178,249	General population	EPA+DHA +DPA	Dose-response: per 1 g/d increase	Stroke	↓	Low	June 2015	Medline, Embase, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, CAB Abstracts
		Prospective cohort studies	3	100,767	General population	EPA+DHA +DPA	Dose-response: per 1 g/d increase	ACM	o	High		
		Prospective cohort studies	6	90,778	General population	EPA+DHA +DPA	Dose-response: per 1 g/d increase	CVD mortality	↓	Low		
		Prospective cohort studies	6	73,093	General population	ALA	Dose-response: per 1 g/d increase	CHD	o	Low		
Berger et al. 2015 [205]	Examine the effects of dietary cholesterol on	Prospective cohort studies	7	86,798	General population	Dietary cholesterol	Highest vs. lowest intake category	CAD death	no MA conducted	NA	December 2013	Medline, Cochrane Central, Common-
			1	1,941				Stroke	no MA			

	CVD risk.							conducted				wealth Agricultural Bureau Abstracts
		RCTs	13	319	Healthy adults (without hyperlipidemia, metabolic syndrome, or diabetes; no cholesterol- lowering drugs)		Higher vs. lower intake	TC	↑			
			13	319				LDL	↑			
			11	244				HDL	↑			
			7	138				TG	o			
Cao et al. 2016 [206]	Assess the association between dietary total fat and fatty acids intake and risk of breast cancer.	Prospective cohort studies	19	883,371	General population	Total fat	Highest vs. lowest intake category	Breast cancer	↑	NA	September 2015	PubMed, Embase
			20	1,220,608		SFA		o				
			17	1,037,980		MUFA		o				
			16	1,012,088		PUFA		o				
Chen et al. 2015 [207]	Investigate if there exists any association of cholesterol with pancreatic carcinoma risk.	Prospective cohort studies	3	306,458	General population	Dietary cholesterol	Highest vs. lowest intake category	Pancreatic cancer	o	NA	July 2014	Cochrane Central Library, PubMed, Medline, Embase, CNKI, CBM, WangFang database
Chen et al. 2016 [208]	Attempt to quantitatively summarize the evidence on long- chain n-3 PUFA and ACM, a SR and MA was carried out in the present study.	Prospective cohort studies	6	361,273	General population	Long-chain n-3 PUFA	Highest vs. lowest intake category	ACM	↓	NA	November 2015	PubMed, Embase
			3	204,791		EPA		↓				
			3	204,791		DHA		↓				

Chen et al. 2017 [209]	Epidemiological evidence for the effect of n-3 fatty acids on the risk of T2D is controversial. A MA based on prospective cohorts was carried out to evaluate this issue.	Prospective cohort studies	8	426,852	General population	Mixed n-3 fatty acids	Highest vs. lowest intake category	T2D	o	NA	May 2016	PubMed, Cochrane Library, Medline, Sigle, Embase, National Research Register
			1	36,328		EPA or DHA			↑	NA		
Cheng et al. 2015 [210]	Clarify the association between long chain n-3 PUFA intake and the risk of stroke morbidity and mortality.	Prospective cohort studies	14	514,483	General population	Long-chain n-3 PUFA	Highest vs. lowest intake category	Stroke	↓	NA	May 2015	PubMed, Embase, Web of Knowledge, Google Scholar
Cheng et al. 2016a [211]	Clarify the relationship between MUFA intake and stroke risk	Prospective cohort studies	10	314,511	General population	MUFA	Highest vs. lowest intake category	Stroke	o	NA	January 2016	PubMed, Embase, Web of Knowledge
Cheng et al. 2016b [212]	Summarize available evidence regarding the relation between SFA intake and stroke risk.	Prospective cohort studies	15	476,569	General population	SFA	Highest vs. lowest intake category	Stroke	↓	NA	February 2016	PubMed, Embase, Web of Knowledge
Cheng et al. 2018 [213]	Assess the relationship between dietary cholesterol and stroke risk.	Prospective cohort studies	7	269,777	General population	Dietary cholesterol	Highest vs. lowest intake category	Stroke	o	NA	September 2017	PubMed, Medline, Embase, Web of Knowledge, Google Scholar



de Souza et al. 2015 [214]	Systematically review associations between intake of SFA and TFA and ACM, CVD and associated mortality, CHD and associated mortality, ischemic stroke, and T2D.	Prospective cohort studies	5	99,906	General population	SFA	Highest vs. lowest intake category	ACM	o	Very low	May 2015	Medline, Embase, Cochrane Central Registry of Controlled Trials, Evidence-Based Medicine Reviews, Cinahl	
			3	90,501				CVD mortality	o	Very low			
			8	237,454				T2D	o	Very low			
			2	20,346		TFA		ACM	↑	Low			
			6	145,922				CHD	↑	Moderate			
			3	190,284				Ischemic stroke	o	Very low			
			6	230,135				T2D	o	Very low			
			1	71,464				Industrial TFA	ACM	o			Very low
			2	69,848					CHD	↑			Very low
			1	71,464		Ruminant TFA		ACM	o	Very low			
			3	73,546				CHD	o	Very low			
			5	12,942				T2D	↓	Very low			
Fu et al. 2015 [215]	Perform a dose-response MA to estimate the trend and quantify the association for dietary intakes of individual n-3 PUFAs with prostate cancer risk based on prospective	Prospective cohort studies	5	352,371	General population	ALA	Dose-response: per 0.5 g/d increment	Prostate cancer	o	NA	February 2014	PubMed, Embase	
			5	381,058		EPA			o				

	studies only.											
Gjuladin-Hellon et al. 2018 [216]	Compare the effects of very low, low, and moderate carbohydrate, HFD versus high-carbohydrate, LFD on LDL-C and other lipid markers in overweight/ obese adults.	RCTs	8	1,633	Overweight / obese adults	Total fat	LFD vs. LCD	LDL	↓	NA	June 2017	Medline, PubMed, Cochrane Central, Cinahl Plus
			8	1,633				HDL	↓			
			8	1,633				TG	↑			
			6	1,365				TC	o			
Gong et al. 2016 [217]	Indicate the link of cholesterol consumption and endometrial cancer risk.	Prospective cohort studies	1	301,107	General population	Dietary cholesterol	Dose-response per 100 mg /d increment	Endometrial cancer	o	NA	June 2015	PubMed, Embase, Web of Science
Han et al. 2015 [218]	To summarize the evidence regarding the association between dietary fat intake and gastric cancer risk.	Prospective cohort studies	1	494,978	General population	Total fat	Highest vs. lowest intake category	Gastric cancer	o	NA	March 2015	PubMed, Embase
						SFA			↑			
						MUFA			o			
						PUFA			↓			
Han et al. 2017 [219]	Quantitatively assess the association between fat consumption and the risk for Non-Hodgkin's lymphoma.	Prospective cohort studies	2	123,566	General population	Total fat	Highest vs. lowest intake category	Non-Hodgkin's lymphoma	↑	NA	March 2016	PubMed, Cochrane, Embase, Google Scholar

Hannon et al. 2017 [220]	Assess the evidence of the effect of SFA replacement with UFA in metabolically healthy adults with overweight and obesity on markers of dyslipidemia and body composition.	RCTs	8	663	Overweight and Obese adults; Metabolically healthy	SFA	Replacement of SFA with PUFA and MUFA	TC	o	NA	June 2016	PubMed, Cinahl, Cochrane Library
			8	663				LDL	o			
			8	663				HDL	o			
			7	643				TG	o			
			6	387				BW	o			
			2	60				FM	o			
			3	117				WC	o			
Harcombe et al. 2017 [221]	Re-examine the totality of epidemiological evidence currently available relating to dietary fat guidelines.	Prospective cohort studies	6	88,800	General population	Total fat	Highest vs. lowest intake category	CHD Deaths	o	NA	September 2015	Medline, Embase, Cochrane Library
			6						o			
Hooper et al. 2015 [222]	Assess the effects of proportion of energy intake from fat on measures of weight and body fatness in people not aiming to lose weight, using all appropriate RCTs and prospective cohort studies in adults.	RCTs, prospective cohort studies	30	53,647	Adults (varying health status)	Total fat	LFD vs. HFD	BW	↓	High	November 2014	Central, Medline, Embase, Cinahl
			1	15,671				WC	↓			
			18	7,285				LDL	↓			
			19	7,166				HDL	o			
			20	7,715				TC	↓			
			17	6,976				TG	o			

Hou et al. 2015 [223]	Evaluate the associations between dietary fat and fatty acid intakes and epithelial ovarian cancer.	Prospective cohort studies	4	1,097,051	General population	Total fat	Highest vs. lowest intake category	Epithelial ovarian cancer	o	NA	May 2015	PubMed, Embase, and Web of Science
			4	1,097,051		SFA			o			
			3	999,776		MUFA			o			
			3	999,776		PUFA			o			
Imamura et al. 2016 [224]	Performed a SR and dose-response meta-regression of RCTs that tested the effects of isocaloric diets with differing composition of dietary macronutrients on multiple key metrics of glycemic control	RCTs	99	4,144	Adults	SFA	Isocaloric replacement of 5% energy/d with MUFA	FG	o	NA	November 2015	PubMed, Embase, Ovid, Biosis, Web of Knowledge, CAB, Cinahl, Cochrane Library, Sigle, Faculty1000
			23	618				HbA1c	↓			
			99	4,144		SFA	Isocaloric replacement of 5% energy/d with PUFA	FG	↓			
			23	618				HbA1c	↓			
			99	4,144		MUFA	Isocaloric replacement of 5% energy/d with PUFA	FG	o			
			23	618				HbA1c	o			
Jiang et al. 2015 [225]	Systematically and quantitatively assess the evidence of total dietary fat intake with endometrial risk.	Prospective cohort studies	4	537,810	General population	Total fat	Highest vs. lowest intake category	Endometrial cancer	↓	NA	June 2015	PubMed, Embase, Web of Science
Jovanovski et al. 2019 [226]	Synthesize the evidence for the effect of substituting a high carbohydrate diet for a high-MUFA diet on blood	RCTs	14	980	Healthy adults or with metabolic disorders	MUFA	High-MUFA vs. high-carbohydrate	SBP	o	Moderate	June 2017	Medline, Embase, Cochrane Central Register of Controlled Clinical Trials
								DBP	o	Moderate		

	pressure											
Kang et al. 2019 [227]	Conduct a MA to evaluate potential dose-response relation between SFA intake and stroke.	Prospective cohort studies	14	598,435	General population	SFA	Highest vs. lowest intake category	Stroke	↓	NA	December 2016	PubMed, Embase, Cochrane Library Central Register of Controlled Trials, Web of Science
Kim et al. 2018 [228]	Review the available literature and summarized the results by conducting a MA of prospective cohort studies	Prospective cohort studies	11	783,323	General population	Total fat	Highest vs. lowest intake category	Colorectal cancer	o	NA	June 2018	PubMed, Web of Science, Cochrane library
			9	353,531		SFA			o			
			7	296,286		MUFA			o			
			14	933,712		PUFA			o			
Kim et al. 2019 [229]	Assess the evidence of the association between the intake n-3 PUFAs and the risk of colorectal cancer.	Prospective cohort studies	17	1,358,236	General population	n-3 PUFA	Highest vs. lowest intake category	Colorectal cancer	o	NA	July 2019	PubMed, Embase
			7	NA		ALA			o			
			5			EPA			↓			
			5			DHA			↓			
			3			DPA			o			
Kolahdouz et al. 2017 [230]	Conduct a SR and MA to assess the association of CLA with breast cancer risk.	Prospective cohort studies	2	129,224	General population	CLA	Highest vs. lowest intake category	Breast cancer	o	NA	May 2015	PubMed, Ovid, Scopus, Google scholar
Leslie et al. 2015 [231]	Summarize the current evidence with regards to the beneficial effect of n-3	RCTs	14	633	Healthy adults, moderately hyperlipidemic	n-3 PUFA	Dose response	TG	no MA conducted	NA	October 2013	PubMed
								TC	no MA conducted			

	PUFA on circulating TG levels in normolipidemic to borderline hyperlipidemic, otherwise healthy, individuals							HDL	no MA conducted				
								LDL	no MA conducted				
Li et al. 2016 [232]	To summarize the evidence from observational studies to test the hypothesis that dietary cholesterol intake increases the risk of breast cancer.	Prospective cohort studies	6	377,909	General population	Dietary cholesterol	Highest vs. lowest intake category	Breast cancer	o	NA	July 2015	PubMed, Embase, Web of Science, China National Knowledge Infrastructure	
Li et al. 2017 [233]	Examine the prospective associations between long-term dietary n-3 PUFAs intakes and risk of atrial fibrillation.	Prospective cohort studies	6	201,996	General population	n-3 PUFA	Highest vs. lowest intake category	Atrial fibrillation	o	NA	May 2017	PubMed, Embase	
Lin et al. 2018 [234]	Evaluate the relationship between dietary cholesterol intake and lung cancer risk.	Prospective cohort studies	6	241,920	General population	Dietary Cholesterol	Highest vs. lowest intake category	Lung cancer	o	NA	October 2017	Web of Science, PubMed, CNKI, Sinomed, VIP	
Lu et al. 2018 [235]	Conduct a MA to compare LFD vs. HFD on cardio-metabolic indicators in people who are	RCTs	14	2,076	Metabolically healthy adults	Total fat	LFD (<30% of total energy consumption) vs. HFD (≥30% of	BW	o	NA	October 2016	Medline, Embase, Cochrane Trial Register	
			16	2,048				TC	↓				
			18	2,088				LDL	↓				

	overweight or obese without metabolic disturbance		18	2,227			total energy consumption) diet	HDL	↓				
			19	2,416				TG	↑				
			10	741				SBP	o				
			10	741				DBP	↑				
			14	1,884				FG	o				
			6	555				CRP	o				
Ma et al. 2017 [236]	Assess whether weight loss interventions for adults with obesity affect all cause, cardiovascular, cancer mortality, CVD, cancer, and BW.	RCTs	34	21,699	Adults, a mean BMI ≥30 at baseline	Weight loss diets (all but one RCT: LFD with or without increasing physical activity)	Weight loss (LFD) interventions compared with control interventions	ACM	↓	High	December 2015	Medline, Embase, Cochrane Central Register of Controlled Trials	
			8	9,090			CVD mortality	o	Moderate				
			8	2,619			Cancer mortality	o	Very low				
			24	15,176			CVE	o	High				
			19	6,330			Cancer	o	Very low				
			8	9,867			BW	↓	NA				
Mansoor et al. 2016 [237]	Conduct a MA of RCTs assessing the effects of LCD vs. LFD on weight loss and risk factors of CVD	RCTs	11	1,369	Healthy adults	Total fat	LFD (<30% of energy as fat and limited energy content) vs. LCD (20–30g/d in the first phase or <20% of total energy)	BW	↑	NA	May 2015	Medline, Embase, Cochrane Trial Register	
			11	1,369			TG	↑					
			4	357			TC	o					
			11	1,369			HDL	↓					
			11	1,369			LDL	↓					
			8	905			SBP	o					
			8	905			DBP	O					

Mensink et al. 2016 [238]	Assess the effect of modifying SFA intake on serum lipid and lipoprotein levels by exchanging SFA with MUFA, PUFA or carbohydrates.	RCTs	74	2,172	Apparently healthy adults	SFA	Dose-response: 1% of energy from SFA replaced by carbohydrates	TC	↓	High	December 2013	PubMed
			69	2,026				LDL	↓	High		
			68	2,017				HDL	↓	High		
			72	2,156				TG	↑	High		
			74	2,172			Dose-response: 1% of energy from SFA replaced by MUFA	TC	↓	High		
			69	2,026				LDL	↓	High		
			68	2,017				HDL	o	High		
			72	2,156				TG	↓	High		
			74	2,172			Dose-response: 1% of energy from SFA replaced by PUFA	TC	↓	High		
			69	2,026				LDL	↓	High		
			68	2,017				HDL	↓	High		
			72	2,156				TG	↓	High		
			74	NA		PUFA	Dose-response: 1% of energy from PUFA replaced by MUFA	TC	↑	NA		
			69	NA				LDL	↑	NA		
			68	NA				HDL	↑	NA		
			72	NA				TG	↑	NA		
Morio et al. 2016 [239]	Evaluate the evidence related to the association between dietary saturated fat and risk of insulin resistance and T2D.	Prospective cohort studies	7	164,106	General population	SFA	Highest vs. lowest intake category	T2D or insulin resistance	no MA conducted	NA	August 2014	Medline, the Food Science and Technology Abstracts database, Cochrane Library
		RCTs	13	50,353			Higher vs. lower SFA intake	T2D or insulin resistance				



Qiu et al. 2016 [240]	Conduct a MA with more-detailed analyses of 1) the epidemiologic evidence regarding the association of dietary fat consumption with risk of ovarian cancer, 2) the association between dietary fat intake and the risk of ovarian cancer and pathological subtypes.	Prospective cohort studies	6	745,748	General population	Total fat	Highest vs. lowest category of intake	Ovarian cancer	o	NA	December 2015	PubMed
			6	745,748		SFA			o			
			5	648,473		MUFA			o			
			5	648,473		PUFA			o			
			2	158,025		TFA			o			
Ruan et al. 2019 [241]	To evaluate the association between fat intake and the risk of three major types of skin cancer including basal cell carcinoma, squamous cell carcinoma and cutaneous malignant melanoma.	Prospective cohort studies	2	175,675 in all 3 cohorts	General population	Total fat	Highest vs. lowest intake category	Basal cell carcinoma	o	NA	December 2018	PubMed, Embase
			2					Squamous cell carcinoma	o			
			1					Cutaneous malignant melanoma	o			
			2			SFA		Basal cell carcinoma	o			
			2					Squamous cell carcinoma	o			

			1					Cutaneous malignant melanoma	o			
			2					Basal cell carcinoma	o			
			2			PUFA		Squamous cell carcinoma	↑			
			1					Cutaneous malignant melanoma	o			
			2					Basal cell carcinoma	↓			
			2			MUFA		Squamous cell carcinoma	o			
			1					Cutaneous malignant melanoma	o			
Sackner-Bernstein et al. 2015 [242]	Compare the effects of LCD vs. LFD on weight and atherosclerotic cardiovascular disease risk in overweight and obese patients	RCTs	17	1,797	Overweight and obese adults; no comorbidities except for dyslipidemia	Total fat	LFD vs. LCD	BW	↑	NA	2014	PubMed
								TC	↓			
								HDL	↓			
								LDL	↓			
								TG	↑			
								SBP	o			
Su et al. 2017 [243]	Investigate the effect of increasing dietary LA intake on the	RCTs	15	803	Adults	LA	Higher vs. lower LA intake	CRP	o	NA	February 2017	PubMed, Embase, Cochrane

	blood concentrations of inflammatory markers.											Library
Telle-Hansen et al. 2017 [244]	Summarize the literature between 2010 and 2016 regarding the effects of dietary fat intake on levels of inflammatory markers in overweight and obesity.	RCTs	1	417	Overweight and obese adults	Dietary intake (including total fat, SFA, MUFA, PUFA and/or fatty acids)	Higher vs. lower intake	CRP	no MA conducted	NA	September 2016	Medline, Embase, PubMed
Tobias et al. 2015 [245]	Determine whether LFD contribute to greater weight loss than participants' usual diet, LCD, and other HFD interventions.	RCTs	18	2,736	Non-pregnant adults	Total fat	LFD vs. LCD	BW	↑	NA	July 2014	Medline, Embase, Cochrane Central Register of Controlled Trials, and Cochrane Database of Systematic Reviews
			18	3,837			LFD vs. HFD		o			
			5	1,007			LFD vs. control		↓			
Wan et al. 2017 [246]	Clarify the association between long chain n-3 PUFA consumption with risk of ACM.	Prospective cohort studies	6	430,579	General population	Long-chain n-3 PUFA	Highest vs. lowest intake category	ACM	↓	NA	March 2017	PubMed, Scopus, Web of Science
Wanders et al. 2019 [247]	Investigate the effects of plant-derived PUFAs on glucose metabolism and insulin resistance.	RCTs	11	505	Adults	Plant-derived PUFA	Higher PUFA intake vs. higher SFA or carbohydrates or combination	FG	o	Moderate	January 2018	Scopus, PubMed

							of SFA and carbohydrates					
Wang et al. 2015 [248]	Evaluate the effect of dietary cholesterol and serum total cholesterol on the risk of pancreatic cancer	Prospective cohort studies	3	306,458	General population	Dietary cholesterol	Highest vs. lowest intake category	Pancreatic cancer	o	NA	June 2014	PubMed, Embase, CNKI, CBM
Wei et al. 2018 [249]	Investigate the potential dose-response relationship between ALA intake and CHD risk.	Prospective cohort studies	13	345,202	General population	ALA	Highest vs. lowest intake category	CHD	↓	NA	August 2017	PubMed, Embase, Web of Science
Wu et al. 2015 [250]	Assess the association between dietary fatty acids intake and endometrial cancer risk.	Prospective cohort studies	3	581,420	General population	SFA	Dose-response: per 10g/d	Endometrial cancer	o	NA	June 2015	PubMed, Embase, Web of Science
			2	524,583		MUFA			o			
			2	524,583		PUFA			o			
Xia et al. 2015 [251]	Investigate the association between dietary SFA intake and risk of breast cancer.	Prospective cohort studies	24	1,786,537	General population	SFA	Highest vs. lowest intake category	Breast cancer	o	NA	April 2015	PubMed, Web of Science
Xu et al. 2015 [252]	Investigate the relationship between the consumption of	Prospective cohort studies	11	322,020	General population	Total fat	Dose-response: per 28.4 g/d	Prostate cancer	o	NA	March 2015	PubMed, Science Direct, Wiley Online
			9	625,789		SFA			o			

	different types of fats and the risk for prostate cancer.		8	617,790		MUFA	increment		o			Library
			7	582,077		PUFA			o			
Yang et al. 2016 [253]	Investigate the summary effects on fish or n-3 PUFA intake and elevated blood pressure.	Prospective cohort studies	3	36,112	General population	n-3 PUFA	Highest vs. lowest intake category	Hypertension	o	NA	October 2015	PubMed, Embase
Yao et al. 2015 [254]	Assess the relationship between fatty acids and the risk of pancreatic cancer.	Prospective cohort studies	6	1,064,199	General population	SFA	Highest vs. lowest intake category	Pancreatic cancer	o	NA	June 2014	Medline, Embase, Web of Science
			5	873,654		MUFA			o			
			6	940,270		PUFA			o			
Zhao et al. 2016 [255]	Assess the associations between dietary fat intake and endometrial cancer risk.	Prospective cohort studies	4	552,740	General population	Total fat	Highest vs. lowest intake category	Endometrial cancer	o	NA	September 2015	PubMed, Embase, Web of Science
			3	372,874		SFA			o			
			2	524,583		MUFA			↓			
			2	369,177		PUFA			o			
			2	91,057		LA			o			
Zhou et al. 2016 [256]	Perform a MA to summarize the evidence regarding the relationship of dietary linoleic acid with breast cancer risk.	Prospective cohort studies	6	335,952	General population	LA	Highest vs. lowest intake category	Breast cancer	o	NA	November 2014	PubMed, Embase

Zhu et al. 2019 [257]	Assess the relation of dietary fat intake and CVDs risk, and evaluate the dose-response relationship of CVDs and dietary fat intake.	Prospective cohort studies	30	1,302,057 (in all 44 studies)	General population	Total fat	Highest vs. lowest intake category	CVD	o	NA	July 2018	PubMed, Embase, Cochrane Library
			17			TFA			↑			
			37			SFA			o			
			27			MUFA			o			
			28			PUFA			o			

ACM: all-cause mortality; ALA: alpha linolenic acid; BW: body weight; CAD: coronary artery disease; CHD: coronary heart disease; CLA: conjugated linoleic acid; CRP: C-reactive protein; CVE: cardiovascular events; CVD: cardiovascular disease; DBP: diastolic blood pressure; DHA: Docosahexaenoic acid; DPA: Docosapentaenoic acid; EPA: Eicosapentaenoic acid; FM: fat mass; FG: fasting glucose; HbA1c: glycosylated hemoglobin; HDL: high-density lipoprotein cholesterol; HFD: high-fat diet; LA: linoleic acid; LCD: low-carbohydrate diet; LDL: low-density lipoprotein cholesterol; LFD: low-fat diet; MA: meta-analysis; MUFA: monounsaturated fatty acids; NA: not available; PUFA: polyunsaturated fatty acids; RCTs: randomized controlled trials; SBP: systolic blood pressure; SFA: saturated fatty acids; SR: systematic reviews; T2D: type 2 diabetes; TC: total cholesterol; TG: triacylglycerols; TFA: trans fatty acids; UFA: unsaturated fatty acid; WC: waist circumference.

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