

## Online supplementary material

### **Major types of dietary fat intake and cognitive function in older populations: A systematic review and meta-analysis**

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**Supplementary Table 1:** Search terms included for each library search.

**Supplementary Table 2:** The cut-off values and RR for all category of fat intake in relation to cognitive outcomes.

**Supplementary Table 1** Search terms included for each library search

**PUBMED**

((High Fat Diet[Title/Abstract]) OR High Fat Diets[Title/Abstract]) OR Dietary Fat[Title/Abstract]) OR Fat Intake[Title/Abstract]) OR Total Fat [Title/Abstract]) OR Unsaturated Fats[Title/Abstract]) OR Unsaturated Dietary Fat[Title/Abstract]) OR Unsaturated Dietary Fats[Title/Abstract]) OR Unsaturated Fatty Acids[Title/Abstract]) OR Saturated Fat [Title/Abstract]) OR Saturated Dietary Fat [Title/Abstract]) OR Saturated Dietary Fats [Title/Abstract]) OR Saturated Fatty Acids[Title/Abstract]) OR Monounsaturated Fat[Title/Abstract]) OR Monounsaturated Dietary Fat[Title/Abstract]) OR Monounsaturated Dietary Fats[Title/Abstract]) OR Monounsaturated Fatty Acids[Title/Abstract]) OR Polyunsaturated fat[Title/Abstract]) OR Polyunsaturated Dietary Fat[Title/Abstract]) OR Polyunsaturated Dietary Fats[Title/Abstract]) OR Polyunsaturated Fatty Acids[Title/Abstract]) OR SFA[Title/Abstract]) OR MUFA[Title/Abstract]) OR PUFA[Title/Abstract]) OR "Fatty Acids"[Mesh]) OR "Fats, Unsaturated"[Mesh]) OR "Dietary Fats, Unsaturated"[Mesh]) OR "Fatty Acids, Unsaturated"[Mesh]) OR "Fatty Acids, Monounsaturated"[Mesh]) OR "Diet, High-Fat"[Mesh]) OR "Dietary Fats"[Mesh])

**AND**

(Cognitive Function[Title/Abstract]) OR Cognitive Decline[Title/Abstract]) OR Cognitive Defect[Title/Abstract]) OR Mild Cognitive Impairment[Title/Abstract]) OR Cognitive Impairment[Title/Abstract]) OR Cognitive Dysfunctions[Title/Abstract])OR Dementias[Title/Abstract]) OR Alzheimer's disease[Title/Abstract]) OR Alzheimer[Title/Abstract])) OR (((("Cognition"[Mesh]) OR "Cognition Disorders"[Mesh]) OR "Cognitive Dysfunction"[Mesh]) OR "Dementia"[Mesh]) OR "Alzheimer Disease"[Mesh]))

**EMBASE**

('Fat intake'/exp OR 'Fatty acid'/exp OR 'Saturated Fatty acid'/exp OR 'Monounsaturated fatty acid'/exp OR 'Polyunsaturated fatty acid'/exp OR 'High Fat Diet\*':ab,ti OR 'Dietary Fat\*':ab,ti OR 'Total fat\*':ab,ti OR 'Saturated Fat\*':ab,ti OR 'Saturated Dietary Fat\*':ab,ti OR 'Unsaturated Dietary Fat\*':ab,ti OR 'Unsaturated Fatty Acids\*':ab,ti OR 'Monounsaturated fat\*':ab,ti OR 'Monounsaturated Dietary Fat\*':ab,ti OR 'Polyunsaturated fat\*':ab,ti OR 'Polyunsaturated Dietary Fat\*':ab,ti OR 'Saturated Fatty Acids\*':ab,ti OR 'Unsaturated Fatty Acids\*':ab,ti OR 'Monounsaturated Fatty Acids\*':ab,ti OR 'Polyunsaturated Fatty Acids\*':ab,ti OR 'SFA\*':ab,ti OR 'PUFA\*':ab,ti OR 'MUFA\*':ab,ti)

**AND**

('cognition'/exp OR 'cognitive defect'/exp OR 'dementia'/exp OR 'Alzheimer disease'/exp OR 'mild cognitive impairment'/exp OR 'cognitive function':ab,ti OR 'cognitive decline':ab,ti OR 'dementias':ab,ti OR 'cognition disorders':ab,ti OR 'cognitive dysfunction\*':ab,ti OR 'Alzheimer\*':ab,ti OR 'cognitive impairment':ab,ti OR 'MCI':ab,ti)

**WEB OF SCIENCE**

#1Topic=(Cognition OR Cognitive function OR Cognitive Decline OR Cognitive Defect OR MCI OR Mild Cognitive Impairment OR cognitive impairment OR Dementias OR Alzheimer Disease OR Cognition Disorders OR Cognitive Dysfunction OR Dementia OR Alzheimer\*)

#2 Topic=(High Fat Diet\* OR Diet\*, High-Fat OR Fatty Acid OR Fat intake OR Dietary Fat\* OR Fat Intake OR

Total Fat OR Saturated Fat OR Saturated Dietary Fat\* OR Saturated Fatty Acids OR Unsaturated Fat OR Unsaturated Dietary Fat\* OR Unsaturated Fatty Acids OR Monounsaturated Fat OR Monounsaturated Dietary Fat\* OR Monounsaturated Fatty Acids OR Polyunsaturated fat OR Polyunsaturated Dietary Fat\* OR Polyunsaturated Fatty Acids OR SFA OR MUFA OR PUFA)

# 3 #2 AND #1

**PsycINFO**

(SU fat intake OR TX high fat diet\* OR TX fatty acid OR TX total fat intake OR TX saturated fat OR TX MUFA OR TX PUFA OR TX SFA OR SU fat intake OR SU high fat diet OR SU fatty acids OR SU total fat intake OR SU saturated fatty acids OR SU saturated fatty acids OR SU monounsaturated fatty acids OR SU monounsaturated fats OR SU polyunsaturated fatty acids OR SU polyunsaturated fat)

AND

(SU cognition OR SU cognitive function OR SU cognitive decline OR SU cognitive disorders OR SU cognitive dysfunction or cognitive impairment OR SU dementia or Alzheimer or cognitive impairment)

**Supplementary Table 2** The cut-off value and RR for all category of fat intake in relation to cognitive outcomes.

Author/Year	Type of fat	Fat category	Cognitive outcomes	Risk (95% CI)	
Solfrizzi et al. 2006	SFA	≤ 15.5g	MCI	1.00	
		15.6 - 19.2g		1.13 (0.30 - 4.21)	
		19.3 - 24.2g		1.16 (0.31 - 4.31)	
		≥ 24.3g		0.86 (0.21 - 3.49)	
	MUFA	≤32.7g		1.00	
		32.8 - 42.8g		0.88 (0.27 - 2.92)	
		42.9 - 51.8g		0.55 (0.15 - 1.95)	
		≥ 51.9g		0.43 (0.11 - 1.75)	
		PUFA		≤ 5.8g	1.00
				5.9 - 7.2g	0.77 (0.22 - 2.62)
	7.2 - 8.9g			0.35 (0.08 - 1.60)	
	≥ 9g			0.25 (0.03 - 1.86)	
	Okereke et al. 2012	SFA		Q1(7.0%E)	1.00
				Q2	1.23 (0.88 - 1.71)
Q3(9.8%E)			1.28 (0.88 - 1.87)		
Q4			1.54 (1.02 - 2.33)		
Q5(13.1%E)			1.64 (1.04 - 2.58)		
MUFA		Q1(7.8%)	1.00		
		Q2	0.96 (0.68 - 1.34)		
		Q3(11.0%E)	0.73 (0.49 - 1.08)		
		Q4	0.66 (0.42 - 1.03)		
		Q5(14.4%E)	0.52 (0.31 - 0.88)		
Roberts et al. 2012	Total fat	Q1(4.1%E)	1.00		
		Q2	1.28 (0.95 - 1.73)		
		Q3(5.7%E)	1.23 (0.90 - 1.69)		
		Q4	1.33 (0.96 - 1.85)		
	SFA	Q5(7.7%E)	1.37 (0.97 - 1.94)		
		Q1 (< 27g)	1.00		
		Q2 (27 - 31g)	0.78 (0.52 - 0.84)*		
		Q3 (32 - 35g)	0.52 (0.32 - 0.84)*		
MUFA	Q4 (> 35g)	0.56 (0.34 - 0.91)*			
	Q1 (< 8.4)	1.00			
	Q2 (8.4 - 10.2g)	0.70 (0.45 - 1.09)			
	Q3 (10.3 - 12g)	0.85 (0.55 - 1.32)			
PUFA	Q4 (> 12g)	0.64 (0.39 - 1.05)			
	Q1 (< 8.9g)	1.00			
	Q2 (8.9 – 10.5g)	0.88 (0.57 - 1.36)			
	Q3 (10.6 – 12g)	0.69 (0.44 - 1.09)			
PUFA	Q4 (> 12g)	0.78 (0.47 - 1.28)			
	Q1 (< 4.3g)	1.00			

		Q2 (4.3 – 5.2g)		1.24 (0.81 - 1.89)
		Q3 (5.3 – 6.1g)		0.89 (0.58 - 1.38)
		Q4 (> 6.1g)		0.66 (0.42 - 1.05)
		T1		1.00
	Total fat	T2		1.00 (0.82 - 1.22)
		T3		0.98 (0.80 - 1.20)
		T1		1.00
	SFA	T2		0.93 (0.76 - 1.14)
		T3	MCI	0.89 (0.73 - 1.09)
		T1		1.00
	MUFA	T2		1.06 (0.87 - 1.30)
		T3		1.03 (0.84 - 1.26)
		T1		1.00
	PUFA	T2		1.04 (0.85 - 1.27)
		T3		1.06 (0.87- 1.30)
Vercambre et al. 2009		T1		1.00
	Total fat	T2		1.17 (0.94 - 1.45)
		T3		1.03 (0.83 - 1.28)
		T1		1.00
	SFA	T2		0.99 (0.80 - 1.23)
		T3		1.02 (0.82 - 1.26)
		T1	Dementia	1.00
	MUFA	T2		1.16 (0.93 - 1.44)
		T3		1.16 (0.93-1.44)
		T1		1.00
	PUFA	T2		1.14 (0.92 - 1.42)
		T3		1.04 (0.84 - 1.30)
		≤ 75.5g		1.0
	Total fat	75.5-85.5g		2.1 (0.9 - 4.7)
		> 85.5g		2.4 (1.1 - 5.2)*
		≤ 29.0g	Dementia	1.0
	SFA	29.0-34.0g		1.8 (0.8 - 4.1)
		> 34.0g		1.9 (0.9 - 4.0)
Kalmijn et al. 1997		≤ 75.5g		1.0
	Total fat	75.5-85.5g		1.8 (0.7 - 4.5)
		> 85.5g		1.6 (0.6 - 3.9)
		≤ 29.0g	AD	1.0
	SFA	29.0-34.0g		1.8 (0.7 - 4.7)
		> 34.0g		1.3 (0.5 - 3.3)
		Q1		1.00
	Total fat	Q2	Dementia	0.43 (0.1 - 1.03)
Laitinen et al. 2006		Q3		1.03 (0.50 - 2.13)
		Q4		0.75 (0.33 - 1.74)
	SFA			1.00

			2.45 (1.10 - 5.47)*
			1.39 (0.53 - 3.69)
			2.74 (0.65 - 11.56)
			1.00
	MUFA		0.49 (0.21 - 1.13)
			0.83 (0.36 - 1.92)
			1.01 (0.29 - 3.55)
			1.00
	PUFA		0.40 (0.17 - 0.94)*
			0.67 (0.29 - 1.56)
			0.48 (0.16 - 1.38)
			1.00
	Total fat		0.52 (0.20 - 1.36)
			1.36 (0.61 - 3.06)
			0.79 (0.29 - 2.12)
			1.00
	SFA		3.28 (1.48 - 9.87)*
			1.90 (0.63 - 5.71)
		AD	2.34 (0.51 - 10.74)
			1.00
	MUFA		0.58 (0.23 - 1.46)
			1.03 (0.41 - 2.61)
			1.02 (0.26 - 4.01)
			1.00
	PUFA		0.53 (0.21 - 1.37)
			0.70 (0.27 - 1.85)
			0.69 (0.22 - 2.19)
			1.0
Luchsinger et al. 2002	Total fat	Q1	1.46 (0.97 - 2.19)
		Q2	1.56 (1.05 - 2.33)*
		Q3	1.41 (0.93 - 2.13)
		Q4	1.0
		Q1 (40.6g)	1.0
		Q2 (50.2g)	1.1 (0.4 - 2.7)
	Total fat	Q3 (56.6g)	0.9 (0.3 - 2.3)
		Q4 (62.7g)	0.7 (0.3 - 1.6)
		Q5 (71.0g)	0.9 (0.4 - 1.8)
		Q1 (13.0g)	1.0
Morris et al. 2003		Q2 (16.1g)	1.8 (0.7 - 4.3)
	SFA	Q3 (18.5g)	1.1 (0.5 - 2.8)
		Q4 (20.7g)	1.4 (0.5 - 3.6)
		Q5 (25.1g)	2.2 (1.1 - 4.7)*
		Q1 (15.2g)	1.0
	MUFA	Q2 (18.7g)	1.0 (0.4 - 2.3)
		Q3 (21.7g)	0.8 (0.3 - 2.2)

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		Q4 (23.9g)		0.5 (0.2 - 1.2)
		Q5 (27.7g)		0.8 (0.4 - 1.8)
Eskelinen et al. 2008	Total fat	D1 (0-38.0)		1.00
		D2 (>38.0)		1.69 (1.00 - 2.87)
	SFA	D1 (0-21.6)		1.00
		D2 (>21.6)	MCI	2.36 (1.17 - 4.74)
	MUFA	D1 (0-11.3)		1.00
		D2 (>11.3)		1.81 (0.87 - 3.80)
	PUFA	D1 (0-2.1)		1.00
		D2 (>2.1)		0.94 (0.45 - 1.96)

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\*Statistically significant difference ( $p < 0.05$ ).

SFA: saturated fat; MUFA: monounsaturated fat; PUFA: polyunsaturated fat.