Supplementary material

Table 1. Characteristics of studies included in the meta-analysis

			Cases			Controls		
Study (*N* = 100)	**Year**	**Country**	***n***	**% F**	**Age**	***n***	**% F**	**Age**
Zhou et al. [33]								
1. Ban et al. [57] *	2009	Japan	197	59.90	80 ± 1	47	38.30	75 ± 1
2. Cacabelos et al. [58]	2003	Spain	147	-	71.73 ± 9.61	109	-	50.20 ± 12.06
3. Caramelli et al.[59]	1999	Brazil	24	-	67.2 ± 10.6	32	59.38	68.2 ± 10.6
4. Chen et al. [60]	2019	China	117	52.14	67.64 ± 6.65	117	62.39	66.06 ± 6.00
5. Hoshino, Kamino, Matsumoto [61] *	2002	Japan	82	71.95	77.0 ± 6.8	40	67.50	84.2 ± 3.1
6. Kouzuki et al. [62]	2018	Japan	42	61.90	80.5 ± 5.7	18	72.22	75.6 ± 5.5
7. Kuo et al. [63] *	1998	America	64	-	81.6 ± 0.9	36	-	78.7 ± 1.3
8. Lehtonen, Luutonen [64]	1986	Finland	22	100.00	≥90	23	100.00	≥90
9. Lesser et al. [65]	2001	America	44	-	87.0 ± 8.5	22	-	82.0 ± 7
10. Macesic et al. [66]	2017	Serbia	62	70.97	73.1 ± 5.8	40	50.00	68.4 ± 5.5
11. Mamo et al. [67]	2008	Australia	10	-	79.2 ± 1.8	10	-	80.5 ± 1.5
12. Moroney et al. [45]	1999	America	225	72.00	77.7 ± 6.3	764	67.54	74.1 ± 5.5
13. Panza et al. [68]	2003	Italy	49	69.39	71.6 ± 9.3	45	71.11	65.8 ± 11.6
14. Paragh et al. [69]	2002	Hungary	30	66.67	64.3 ± 11.7	40	65.00	72.3 ± 9.6
15. Reitz et al. [37]	2004	America	244	77.46	82.85 ± 7.3	2226	65.86	76.42 ± 6.3
16. Ryglewicz et al. [70]	2002	Poland	26	-	67 ± 8.4	46	-	67.5 ± 6.9
17. Scacchi et al. [71]	1998	Italy	80	71.25	83.5 ± 5.9	155	76.77	78.3 ± 7.0
18. Shafagoj et al. [72]	2018	Jordan	38	63.16	74.2 ± 5.4	33	66.67	72.4 ± 6.3
19. Solfrizzi et al. [73] *	2002	Italy	49	75.51	71.6 ± 9.3	45	71.11	65.8 ± 11.6
20. Tang et al. [74]	2019	China	143	45.45	62.89 ± 8.38	140	46.43	64.10 ± 9.49
21. Warren, Hynan, Weiner [75]	2012	America	150	70.00	79.5 ± 6.17	197	69.04	70 ± 6.33
22. Watanabe et al. [76] *	2005	Japan	106	-	79 ± 7	227	-	76 ± 10
23. Werh et al. [77]	2006	Sweden	97	90.72	77.9 ± 3.0	139	94.24	78.5 ± 3.0
24. Wolf et al. [78]	2004	Japan	25	4.00	80 ± 6	26	34.62	77 ± 5
25. Yamamoto et al. [79]	2005	Turkey	61	19.67	74.1 ± 7.4	32	38.46	74.5 ± 6.3
26. Yavuz et al. [80]	2008	Poland	132	75.00	71.8 ± 7.9	158	58.86	70.5 ± 8.8
Liu et al. [1]								
Lehtonen, Luutonen [64]*	1986	Finland	22	-	>90	23	-	>90
Kuo et al. [63]	1998	USA	64	-	81.6	36	-	78.7
27. Kalman et al. [81]	1999	USA	24	75.00	70.2	15	73.00	64.8
28. Merched et al. [82]	2000	France	98	71.4	77.56	59	52.5	75.37
Solfrizzi et al. [73]	2002	Italy	18	0.00	74.2	30	0.00	68.4
Solfrizzi et al. [73]	2002	Italy	43	100.00	70.2	33	100.00	67
29. Lesser et al. [83][1]	2009	USA	144	-	-	151	-	-
30. Sun et al. [84]	2010	China	45	64.00	59-92	44	68.00	58-87

Table 1. Characteristics of studies included in the meta-analysis

			Cases			Controls		
Study (*N* = 100)	**Year**	**Country**	***n***	**% F**	**Age**	***n***	**% F**	**Age**
31. Preseki et al. [85]	2011	Croatia	50	-	79.1	58	-	71.6
32. Parnowski, Kaluza # [86]	2013	Poland	39	66.6	80.12	44	75.00	72.95
33. R V ~	2016	India	167	0.00	69.8	984	0.00	63.1
R V ~	2016	India	137	100.00	67.8	882	100.00	62.4
34. Grossi et al. [87]	2018	Brazi	40	30.00	78(7)	40	31.00	76.5
Wu et al. [12]								
35. Agarwal et al. [88]	2015	Indian	39	69	67±9	42	52	62±8
36. Alam et al. [89]	2014	Indian	75	68	66±9	120	63	63±8
Ban et al. [57]	2009	Japanese	197	40	80±1	47	62	75±1
37. Cankurtaran et al. [90]	2005	Turks	120	34	74±8	803	37	71±6
38. Chang et al. [91]	2014	Chinese	44	/	80±9	62	NA	80±8
39. Duan, Ling, Zhou [92]	2006	Chinese	62	47	65±3	50	60	56±3
40. Han [93]	2005	Chinese	27	33	72±11	27	NA	NA
Hoshino, Kamino, Matsumoto [61]	2002	Japanese	82	28	84±3	40	33	/77±7
41. Li [94]	2014	Chinese	45	36	64±2	45	36	64±3
42. Liu, Chen [95]	2006	Chinese	31	45	69±7	40	43	69±8
43. Liu [96]	2005	Chinese	268	47	74±3	325	46	74±2
44. Raygani et al. [97]	2006	Iranians	94	44	74±10	111	37	72±11
45. Shim [98]	2010	Korean	78	40	72±9	58	36	63±7
46. Singh et al. [99]	2012	Indian	70	76	NA	75	NA	NA
47. Sun [100]	2006	Chinese	82	55	81±3	46	83	78±4
48. Vasantharekha et al. [101]	2016	Indian	304	47	69±5	1868	53	63±2
49. Wada [102]	2000	Japanese	36	29	77±5	15	13	72±6
50. Wang et al. [103]	2005	Chinese	35	35	69±8	16	44	70±7
51. Wang [104]	2006	Chinese	124	47	NA	80	50	NA
52. Wang [105]	2017	Chinese	43	44	67±10	45	36	64±6
53. Wang, Zhang [106]	2016	Chinese	39	41	68±7	40	45	71±7
Wang, Zhang [106]	2016	Chinese	34	/	74±8	40	45	71±7
54. Watanabe et al. [107]	2004	Japanese	34	76	76±9	63	NA	72±11
Watanabe et al. [76]	2005	Japanese	106	55	79±7	227	70	76±10
55. Xiao et al. [108]	2012	Chinese	104	36	78±7	104	54	77±6
56. Xiao hong et al. [109]	2010	Chinese	45	39	59 ~ 92	44	32	58 ~ 87
Yamamoto et al. [79]	2005	Japanese	61	33	80±6	32	53	77±5
57. Yang, Tian, Zhong [110]	2007	Chinese	15	45	73±8	29	56	60±7
58. Yu et al. [111]	2014	Chinese	201	33	77±6	257	47	76±7
59. Yuan et al. [112]	2006	Chinese	30	38	71±7	60	30	65±6
60. Yue et al. [113]	2009	Chinese	111	48	69±9	117	38	66±9
61. Zengi et al. [114]	2012	Turks	21	50	76±8	20	55	81±7
62. Zhao et al. [115]	2014	Chinese	48	33	69±6	37	51	71±6
63. Zheng et al. [116]	2016	Chinese	207	50	81±8	256	35	82±6
64. Zhong et al. [117]	2016	Chinese	54	55	70±8	54	54	71±7
65. Zhou [118]	2015	Chinese	40	45	68±2	40	58	68±3

Table 1. Characteristics of studies included in the meta-analysis

			Cases			Controls		
Study (*N* = 100)	**Year**	**Country**	***n***	**% F**	**Age**	***n***	**% F**	**Age**
66. Zhu [119]	2007	Chinese	31	43	69±7	40	43	69±7
Wang et al. [18]								
67. Papassotiropoulos et al. [120]	2002		32	62.00	69 ± 8	7	29.00	55 ± 10
68. Martínez-Morillo et al. [121]	2014		38	64.00	(60-94)	37	53.00	(43-80)
69. Kölsch et al. [122]	2006		75	63.40	68.4 ± 7.9	39	53.80	65.9 ± 11.4
70. Kölsch et al. a [123]	2009		118	61.90	68.5 ± 7.9	62	57.90	70.4 ± 7.1
71. Kölsch et al. b [124]	2009		149	69.10	74.1 ± 7.9	86	53.50	72.8 ± 7.6
72. Kölsch et al. [125]	2010		90	63.90	70.6 ± 8.3	57	51.60	69.3 ± 6.8
73. Qureischie et al. [126]	2008		104	68.00	72.5 ± 8.8	49	72.40	72.4 ± 7.9
74. Mateos et al. [127]	2011		21	66.70	67.3 ± 1.70	28	67.90	57.8 ± 1.27
75. Wollmer et al. [128]	2003		24	58.00	73.5 ± 5.5	22	49.40	70.1 ± 6.3
76. Wollmer et al. [129]	2003		24	-	71.7 ± 7.8	22	-	65.6
77. Shafaati et al. [130]	2007		17	41.20	(62–83)	43	65.10	(18–85)
78. Schönknecht et al. [131]	2002		17	42.90	75.4 ± 10.3	55	40.00	69.0 ± 5.8
79. Popp et al. [132]	2012		53	62.30	71.23 ± 8.29	43	51.20	67.33 ± 9.04
80. Popp et al. [133]	2013		106	64.20	71.1 ± 7.87	87	49.40	67.7 ± 9.13
81. Vanmierlo et al. [134]	2011		67	44.80	71.8 ± 7.5	29	62.70	69.0 ± 6.9
82. Leoni, Caccia [135]	2013		24	70.80	66.8 ± 8.0	28	65.80	68.6 ± 2.85
Xu et al. [13]								
83. Tan et al. [35]	2003	USA	77	-	-	1026	62.96	76.1
84. Li et al. [136]	2005	USA	152	-	-	2123	59.20	74.9
85. Solomon et al. [137]	2009	USA	469	59.91	69.90	9844	0	-
86. Mielke et al. [138]	2010	Sweden	46	-	-	648	0	-
87. Huang et al. [139]	20s14	Taiwan	612	-	-	142744	48.20	-
88. Kivipelto et al. [140]	2005	Karelia	48	-	-	1449	63.14	-
89. Reitz et al. [48]	2010	USA	101	65.34	79.70	1130	65.66	75.7
90. Kimm et al. [141]	2011	Korea	821	-	-	490445	0	51.9
Kimm et al. [141]	2011	Korea	1030	100	-	358060	100	53.6
91. Kivipelto et al. [142]	2002	Finland	48	-	-	1449	66.04	-
92. Hayden et al. [143]	2006	UK	104	73.07	81.50	3264	58.24	74
93. Notkola et al. [144]	1998	Finland	27	-	-	444	0	-
94. Rönnemaa et al. [145]	2012	Sweden	127	-	-	2268	-	49.6
95. Wang et al. [146]	2012	Taiwan	8488	-	-	1230400	51.95	-

Table 1. Characteristics of studies included in the meta-analysis

			Cases			Controls		
Study (*N* = 100)	**Year**	**Country**	***n***	**% F**	**Age**	***n***	**% F**	**Age**
96. Lieb et al. [147]	2012	USA	18	100	73.97	99	100	-
97. Dal Forno et al. [148]	2005	USA	40	-	-	576	0	66.8
Dal Forno et al. [148]	2005	USA	67	100	-	781	100	64
Singh et al. [99]	2012	India	0	-	-	0	-	-
98. Forti et al. [149]	2010	Italy	18	-	-	466	51.28	69.3
Forti et al. [149]	2010	Italy	30	-	-	238	67.64	79.8
99. Raffaitin et al. [150]	2009	France	134	-	-	7087	60.99	-
100. Muller et al. [151]	2007	USA	147	-	-	1833	67.32	76.1
Singh et al. [99]	2012	India	0	-	-	145	-	-

**K*=6 articles were duplicated in LDL-C. The number of participants were deleted for main analysis.

[1] Total *N* Cases = 144; n/LDL-C=41; n/HDL-C=41; n/TC=62; Total *N* Control = 151; n/LDL-C=48; n/HDL-C=48; n/TC=55

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Table 2. Factors included in primary meta-analysis that showed positive and negative association with AD.

Study	LDL_C		HDL_C		TC		TG	
	SMD (95% CI)	**Weight**						
Zhou et al. [33]								
Ban et al. [57]	0.80 (0.47 ~ 1.12)	4.1	-	-	-	-	-	-
Cacabelos et al. [58]	0.01 (-0.24 ~ 0.26	4.2	-	-	-	-	-	-
Caramelli et al. [59]	0.14 (-0.39 ~ 0.67)	3.6	-	-	-	-	-	-
Chen et al. [60]	1.19 (0.91 ~ 1.47)	4.2	-	-	-	-	-	-
Hoshino, Kamino, Matsumoto [61]	0.34 (-0.04 ~ 0.72)	3.9	-	-	-	-	-	-
Kouzuki et al. [62]	-0.22 (-0.77 ~ 0.34)	3.5	-	-	-	-	-	-
Kuo et al. [63]	4.45 (3.70 ~ 5.20)	3.0	-	-	-	-	-	-
Lehtonen, Luutonen [64]	0.57 (-0.03 ~ 1.17)	3.4	-	-	-	-	-	-
Lesser et al. [65]	0.32 (-0.19 ~ 0.84)	3.6	-	-	-	-	-	-
Macesic et al. [66]	1.07 (0.65 ~ 1.50)	3.8	-	-	-	-	-	-
Mamo et al. [67]	-0.16 (-1.04 ~ 0.72)	2.7	-	-	-	-	-	-
Moroney et al. [45]	-0.25 (-0.40 ~ -0.10)	4.3	-	-	-	-	-	-
Panza et al. [68]	-0.63 (-1.04 ~ -0.21)	3.9	-	-	-	-	-	-
Paragh et al. [69]	2.04 (1.46 ~ 2.63)	3.4	-	-	-	-	-	-
Reitz et al. [37]	-0.00 (-0.13 ~ 0.13)	4.4	-	-	-	-	-	-
Ryglewicz et al. [70]	0.29 (-0.20 ~ 0.77)	3.7	-	-	-	-	-	-
Scacchi et al. [71]	-0.45 (-0.73 ~ -0.18)	4.2	-	-	-	-	-	-
Shafagoj et al. [72]	-0.32 (-0.79 ~ 0.15)	3.7	-	-	-	-	-	-
Solfrizzi et al. [73]	-0.69 (-1.11 ~ -0.28)	3.9	-	-	-	-	-	-
Tang et al. [74]	0.39 (0.15 ~ 0.62)	4.2	-	-	-	-	-	-
Warren, Hynan, Weiner [75]	0.50 (0.28 ~ 0. 72)	4.3	-	-	-	-	-	-
Watanabe et al. [76]	0.17 (-0.06 ~ 0.40)	4.2	-	-	-	-	-	-

Table 2. Factors included in primary meta-analysis that showed positive and negative association with AD.

Study	**LDL_C**		**HDL_C**		**TC**		**TG**	
Werh et al. [77]	0.36 (0.10 ~ 0.62)	4.2	-	-	-	-	-	-
Wolf et al. [78]	0.20 (-0.35 ~ 0.75)	3.50	-	-	-	-	-	-
Yamamoto et al. [79]	0.08 (-0.35 ~ 0.51)	3.80	-	-	-	-	-	-
Yavuz et al. [80]	-0.02 (-0.25 ~ -0.21)	4.20	-	-	-	-	-	-
Liu et al. [1]	***OR (95% CI)***	**Weight**	***SMD (95% CI)***	**Weight**	***SMD (95% CI)***	**Weight**	***SMD (95% CI)***	**Weight**
Lehtomen, Luutonen [64]	0.58 (-0.02 ~ 1.18)	10.86	-0.02 (-0.61-0.56)	8.77	0.43 (-0.16 ~ 1.02)	7.53	0.19 (-0.40 ~ 0.77)	6.32
Kuo et al. [63]	4.49 (3.74 ~ 5.24)	10.36	-2.76 (-3.33 ~ -2.20)	8.82	0.00 (-0.65 ~ 0.65)	7.54		-
Kalman et al. [81]	-0.19 (-0.83 ~ 0.46)	10.71	0.75 (0.08 ~ 1.42)	8.54	-0.40 (-0.72 ~ -0.07)	7.44	-0.31 (-0.96 ~ 0.34)	5.77
Merched et al. [82]	-	-	-1 (-1.34 ~ -0.66)	1.29	-1.15 (-1.78 ~ -0.52)	7.89	-0.26 (-0.5 ~ 0.07)	8.95
Solfrizzi et al. [73]	-	-	-	-	-0.17 (-0.62 ~ 0.28)	7.46	-	-
Solfrizzi et al. [73]	-	-	-	-	4.83 (4.11 ~ 5.55)	7.73	-	-
Lesser et al. [83]	3.26 (2.62 ~ 3.90)	10.73	1.38 (0.92 ~ 1.85)	9.05	0.57 (0.15 ~ 1)	7.29	-	-
Sun et al. [84]	-	-	-0.29 (-0.71 ~ 0.13)	9.15	0.45 (0.07 ~ 0.84)	7.77	-	-
Preseki et al. [85]	0.43 (0.05 ~ 0.81)	11.39	0.48 (80.10 ~ 0.87)	9.21	-0.31 (-0.74 ~ 0.13)	7.82	0.54 (0.15 ~ 0.92)	8.32
Parnowski, Kaluza # [86]	0.45 (0.01 ~ 0.89)	11.27	-1.04 (-1.50 ~ -0.58)	9.06	1.23 (1.05 ~ 1.40)	7.76	0.06 (-0.50 ~ 0.62)	6.57
R V	1.30 (1.12 ~ 1.47)	11.71	-1.50 (-1.67 ~ -1.32)	9.51	1.87 (1.67 ~ 2.07)	8.01	-	-
R V	2.26 (2.05 ~ 2.46)	11.68	-1.51 (-1.70 ~ -1.32)	9.49	-0.28 (-0.72 ~ 0.16)	7.99	-	-
Grossi et al. [87]	0.25 (-0.19-0.69)	11.27	-0.16 (-0.60 ~ 0.28)	9.11	0.76 (0.13 ~ 1.40)	7.75	-0.75(-1.20 ~ -0.30)	7.61
Wu el al. [12]	***SMD (95% CI)***				***SMD (95% CI)***			-
Agarwal et al. [88]	0.13 (-0.31 ~ 0.56)	-	0.13 (-0.31 ~ 0.56)	-	0.28 (-0.16 ~ 0.72)	-	-	-
Alam et al. [89]	0.15 (-0.14 ~ 0.44)	-	-0.22 (-0.51 ~ 0.07)	-	0.12 (-0.17 ~ 0.41)	-	0.18 (-0.11 ~ 0.46)	-
Ban et al. [57]	0.80 (0.47 ~ 1.12)	-	1.26 (0.92 ~ 1.60)	-	-	-	-1.25 (-1.58 ~ -0.91)	-
Cankurtaran et al. [90]	-0.02 (-0.21 ~ 0.17)	-	0.08 (-0.11 ~ 0.27)	-	0.04 (-0.15 ~ 0.23)	-	0.03 (-0.16 ~ 0.22)	-
Chang et al. [91]	-	-	0.11 (-0.27 ~ 0.50)	-	0.15 (-0.23 ~ 0.54)	-	-0.08 (-0.46 ~ 0.31)	-

Table 2. Factors included in primary meta-analysis that showed positive and negative association with AD.

Study	LDL_C		HDL_C		TC		TG	
Duan, Ling, Zhou [92]	-	-	-	-	0.82 (0.43 ~ 1.21)	-	0.78 (0.40 ~ 1.17)	-
Han [93]	0.00 (-0.53 ~ 0.53)	-	0.00 (-0.53 ~ 0.53)	-	0.00 (-0.53 ~ 0.53)	-	0.00 (-0.53 ~ 0.53)	-
Hoshino, Kamino, Matsumoto [61]	0.34 (-0.04 ~ 0.72)	-	-0.08 (-0.46 ~ 0.30)	-		-	-	-
Li [94]	-0.01 (-0.42 ~ 0.40)	-	-0.07 (-0.48 ~ 0.34)	-	0.00 (-0.41 ~ 0.41)	-	-	-
Liu, Chen [95]	0.85 (0.36 ~ 0.69)	-	0.05 (-0.42 ~ 0.52)	-	0.79 (0.30 ~ 1.28)	-	0.91 (0.42 ~ 1.40)	-
Liu [96]	0.52 (0.36 ~ 1.34)	-	-0.09 (-0.25 ~ 0.08)	-	0.33 (0.16 ~ 0.49)	-	0.06 (-0.10 ~ 0.23)	-
Raygani et al. [97]	0.52 (0.24 ~ 0.80)	-	-0.74 (-1.02 ~ -0.45)	-	0.38 (0.10 ~ 0.65)	-	0.17 (-0.11 ~ 0.45)	-
Shim [98]	-0.29 (-0.64 ~ 0.05)	-	0.16 (-0.18 ~ 0.50)	-	-0.28 (-0.62 ~ 0.06)	-	-	-
Singh et al. [99]	0.95 (0.61 ~ 1.30)	-	-0.54 (-0.87 ~ -0.21)	-	1.38 (1.02 ~ 1.74)	-	0.00 (-0.33 ~ 0.32)	-
Sun [100]	-0.29 (-0.65 ~ 0.07)	-	0.03 (-0.33 ~ 0.39)	-	-0.11 (-0.47 ~ 0.26)	-	0.14 (-0.22 ~ 0.50)	-
Vasantharekha et al. [101]	1.72 (1.59 ~ 1.85)	-	-1.48 (-1.61 ~ -1.36)	-	1.50 (1.37 ~ 1.63)	-	0.17 (0.05 ~ 0.29)	-
Wada [102]	-0.14 (-0.74 ~ 0.47)	-	0.25 (-0.36 ~ 0.85)	-	-0.37 (-0.98 ~ 0.24)	-	-0.58 (-1.19 ~ 0.04)	-
Wang et al. [103]	0.54 (-0.06 ~ 1.14)	-	0.14 (-0.45 ~ 0.73)	-	0.61 (0.01 ~ 1.22)	-	0.82 (0.21 ~ 1.43)	-
Wang [104]	1.62 (1.29 ~ 1.94)	-	-0.23 (-0.51 ~ 0.06)	-	-0.20 (-0.49 ~ 0.08)	-	1.36 (1.05 ~ 1.67)	-
Wang et al. [105]	-	-	-0.94 (-1.38 ~ -0.50)	-	-	-	-	-
Wang, Zhang [106]	0.00 (-0.44 ~ 0.44)	-	0.00 (-0.44 ~ 0.44)	-	0.00 (-0.44 ~ 0.44)	-	-	-
Wang, Zhang [106]	0.25 (-0.21 ~ 0.71)	-	0.00 (-0.46 ~ 0.46)	-	0.15 (-0.31 ~ 0.61)	-	-	-
Watanabe et al. [107]	0.03 (-0.39 ~ 0.45)	-	0.00 (-0.42 ~ 0.42)	-	-0.27 (-0.69 ~ 0.15)	-	-0.34 (-0.76 ~ 0.09)	-
Watanabe et al. [76]	0.17 (-0.06 ~ 0.40)	-	0.32 (0.09 ~ 0.55)	-	-0.08 (-0.31 ~ 0.16)	-	-0.27 (-0.50 ~ -0.04)	-
Xiao et al. [108]	0.08 (-0.19 ~ 0.35)	-	-0.36 (-0.63 ~ 0.08)	-	0.39 (0.12 ~ 0.67)	-	0.06 (-0.21 ~ 0.33)	-
Xiao hong et al., [109]	-	-	-0.73 (-1.16 ~ -0.30)	-	0.57 (0.15 ~ 1.00)	-	-	-
Yamamoto et al. [79]	0.08 (-0.35 ~ 0.51)	-	0.06 (-0.37 ~ 0.49)	-	-0.07 (-0.50 ~ 0.35)	-	-0.22 (-0.65 ~ 0.21)	-
Yang, Tian, Zhong [110]	-0.40 (-1.03 ~ 0.23)	-	0.55 (-0.09 ~ 1.18)	-	-0.08 (-0.71 ~ 0.54)	-	-0.19 (-0.81 ~ 0.44)	-
Yu et al. [111]	0.13 (-0.06 ~ 0.31)	-	-0.02 (-0.20 ~ 0.17)	-	0.30 (0.12 ~ 0.49)	-	-0.10 (-0.29 ~ 0.08)	-
Yuan et al. [112]	-1.06 (-1.53 ~ -0.60)	-	-0.06 (-0.50 ~ 0.38)	-	0.81 (0.35 ~ 1.26)	-	0.66 (0.22 ~ 1.11)	-

Table 2. Factors included in primary meta-analysis that showed positive and negative association with AD.

Study	LDL_C		HDL_C		TC		TG	
Yue et al. [113]	0.14 (-0.12 ~ 0.40)	-	-0.11 (-0.37 ~ 0.15)	-	0.31 (0.05 ~ 0.57)	-	0.46 (0.19 ~ 0.72)	-
Zengi et al. [114]	-0.57 (-1.19 ~ 0.06)	-	-0.26 (-0.88 ~ 0.35)	-	-0.87 (-1.51 ~ -0.23)	-	-1.48 (-2.17 ~ -0.79)	-
Zhao et al. [115]	0.05 (-0.38 ~ 0.48)	-	-0.96 (-1.42 ~ -0.51)	-	-0.26 (-0.69 ~ 0.18)	-	0.85 (0.40 ~ 1.30)	-
Zheng et al. [116]	0.08 (-0.10 ~ 0.27)	-	-0.21 (-0.39 ~ -0.03)	-	0.16 (-0.02 ~ 0.35)	-	0.33 (0.15 ~ 0.52)	-
Zhong et al. [117]	0.58 (0.19 ~ 1.30)	-		-		-	0.79 (0.40 ~ 1.18)	-
Zhou [118]	0.84 (0.39 ~ 1.30)	-	0.10 (-0.34 ~ 0.54)	-	0.78 (0.32 ~ 1.23)	-	-	-
Zhu [119]	0.85 (0.36 ~ 1.34)	-	0.05 (-0.42 ~ 0.52)	-	0.79 (0.30 ~ 1.28)	-	0.91 (0.42 ~ 1.40)	-
Wang et al. [18]					***SMD (95% CI)***			-
Papassotiropoulos et al. [120]	-	-	-	-	0.68 (-0.15 ~ 1.52)	-	-	-
Martínez-Morillo et al. [121]	-	-	-	-	0.06 (-0.40 ~ 0.51)	-	-	-
Kölsch et al. [122]	-	-	-	-	-2.78 (-3.31 ~ -2.25)	-	-	-
Kölsch et al. a [123]	-	-	-	-	-0.91 (-1.23 ~ -0.58)	-	-	-
Kölsch et al. b [124]	-	-	-	-	-0.62 (-0.89 ~ -0.35)	-	-	-
Kölsch et al. [125]	-	-	-	-	-0.45 (-0.78 ~ -0.11)	-	-	-
Qureischie et al. [126]	-	-	-	-	-1.28 (-1.65 ~ -0.91)	-	-	-
Mateos et al. [127]	-	-	-	-	0.40 (-0.17 ~ 0.97)	-	-	-
Wollmer et al. [128]	-	-	-	-	-0.72 (-1.31 ~ -0.12)	-	-	-
Wollmer et al. [129]	-	-	-	-	-0.67 (-1.26 ~ -0.07)	-	-	-
Shafaati et al. [130]	-	-	-	-	2.68 (1.93 ~ 3.43)	-	-	-
Schönknecht et al. [131]	-	-	-	-	0.44 (-0.11 ~ 0.99)	-	-	-
Popp et al. [132]	-	-	-	-	-0.37 (-0.77 ~ 0.04)	-	-	-
Popp et al. [133]	-	-	-	-	-0.42 (-0.71 ~ -0.13)	-	-	-
Vanmierlo et al. [134]	-	-	-	-	-0.30 (-0.74 ~ 0.14)	-	-	-
Leoni, Caccia [135]	-	-	-	-	1.10 (0.52 ~ 1.69)	-	-	-
Xu et al. [13]			***RR (95% CI)***	**Weight**	***RR (95% CI)***	**Weight**		-

Table 2. Factors included in primary meta-analysis that showed positive and negative association with AD.

Study	LDL_C		HDL_C		TC		TG	
Tan et al. [35]	-	-	-	-	0.97 (0.90 ~ 1.05)	16.01	-	-
Li et al. [136]	-	-	1.23 (0.71 ~ 2.15)	3.68	1.00 (0.61 ~ 1.62)	5.4	-	-
Solomon et al. [137]	-	-	-	-	1.58 (1.22 ~ 2.06)	6.83	-	-
Mielke et al. [138]	-	-	-	-	2.82 (0.94 ~ 8.43)	0.14	-	-
Huang et al. [139]	-	-	-	-	1.06 (0.75 ~ 1.51)	7.65	-	-
Kivipelto et al. [140]	-	-	-	-	2.12 (1.05 ~ 4.30)	0.74	-	-
Reitz et al. [48]	-	-	-	-	0.80 (0.40 ~ 1.50)	4.79	-	-
Kimm et al. [141]	-	-	-	-	1.20 (1.00 ~ 1.50)	11.06	-	-
Kimm et al. [141]	-	-	-	-	1.10 (0.90 ~ 1.30)	12.6	-	-
Kivipelto et al. [142]	-	-	-	-	2.80 (1.20 ~ 6.70)	0.26	-	-
Hayden et al. [143]	-	-	-	-	0.47 (0.19 ~ 0.98)	7.33	-	-
Notkola et al. [144]	-	-	-	-	3.10 (1.20 ~ 8.50)	0.15	-	-
Ronnemaa et al. [145]	-	-	-	-	1.00 (0.90 ~ 1.20)	14.13	-	-
Wang et al. [146]	-	-	-	-	0.69 (0.66 ~ 1.32)	10.80	-	-
Lieb et al. [147]	-	-	1.60 (0.50 ~ 5.50)	0.3	0.80 (0.20 ~ 2.50)	1.41	-	-
Dal Forno et al. [148]	-	-	-	-	0.59 (0.23 ~ 1.53)	3.74	-	-
Dal Forno et al. [148]	-	-	-	-	0.35 (0.14 ~ 0.89)	7.76	-	-
Singh et al. [99]	-	-	-	-	1.15 (1.01 ~ 1.32)	15.70	-	-
Forti et al. [149]	-	-	0.56 (0.12 ~ 2.71)	1.14	-	-	-	-
Forti et al. [149]	-	-	0.83 (0.27 ~ 2.49)	1.55	-	-	-	-
Raffaitin et al. [150]	-	-	0.80 (0.27 ~ 2.49)	6.91	-	-	-	-
Muller et al. [151]	-	-	1.00 (0.70 ~ 1.40)	15.56	-	-	-	-
Singh et al. [99]	-	-	1.02 (0.86 ~ 1.19)	1	1.15 (1.01 ~ 1.32)	9.79	-	-
Total effect sizes	**68**		**53**		**81**		**34**	

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