Differences in arterial stiffness and atherosclerosis between vegetarian and omnivorous diets. A systematic review and meta-analysis.

ESI Table 1. Search strategy for the MEDLINE database.

Adults **OR** Adult population **OR** Adult subjects	**AND**	Vegetarian **OR** Vegetarian diet	**AND**	Omnivorous **OR** Omnivorous diet	**AND**	Arterial stiffness **OR** PWv **OR** Pulse wave velocity **OR** Atherosclerosis **OR** IMT **OR** Intima media thickness

ESI Table 2. Quality assessment with the tool for observational cohort and cross-sectional studies of the National Heart, Lung and Blood Institute for carotid to femoral pulse wave velocity.

Reference	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality
Sanders, 2014[25]	N	N	NR	NR	N	NA	NA	N	N	N	Y	NA	NA	N	LOW
Acosta-Navarro et al, 2017[26]	Y	Y	N	Y	N	NA	NA	N	N	N	Y	NA	NA	Y	FAIR
Cinegaglia et al, 2020[28]	Y	Y	N	Y	N	NA	NA	N	N	N	Y	NA	NA	Y	FAIR
Antoniazzi et al, 2022[30]	Y	Y	N	Y	N	NA	NA	N	Y	N	Y	NA	NA	N	FAIR
Mayra and Johnston, 2022[31]	Y	Y	NR	Y	N	NA	NA	N	Y	N	Y	NA	NA	N	FAIR
Ramos González et al, 2022[32]	Y	Y	NR	Y	N	NA	NA	N	Y	N	Y	NA	NA	N	FAIR

1. Was the research question or objective in this paper clearly stated?; 2. Was the study population clearly specified and defined?; 3. Was the participation rate of eligible persons at least 50%?; 4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?; 5. Was a sample size justification, power description, or variance and effect estimates provided?; 6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?; 7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?; 8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?; 9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?; 10. Was the exposure(s) assessed more than once over time?; 11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?; 12. Were the outcome assessors blinded to the exposure status of participants?; 13. Was loss to follow-up after baseline 20% or less?; 14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?; N: no; NA: not applicable; NR: not reported; Y: yes.

ESI Table 3. Quality assessment with the tool for observational cohort and cross-sectional studies of the National Heart, Lung and Blood Institute for carotid intima media thickness.
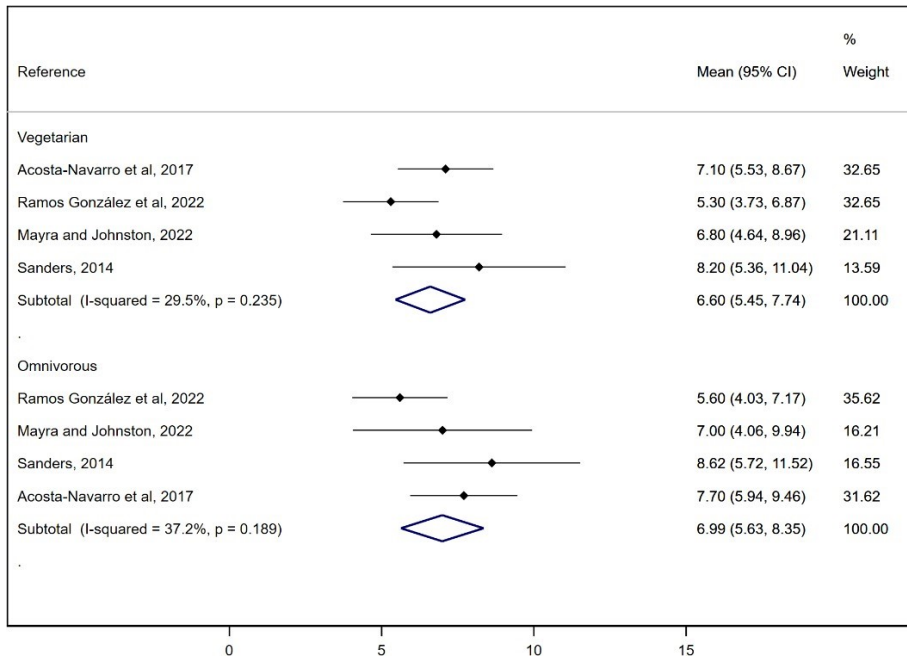
Reference	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Quality
Su et al, 2006[23]	N	Y	N	Y	N	NA	NA	N	N	N	Y	NA	NA	Y	FAIR
Yang et al, 2012[24]	Y	Y	NR	Y	N	NA	NA	N	Y	N	Y	NA	NA	N	FAIR
Acosta-Navarro et al, 2017[26]	Y	Y	N	Y	N	NA	NA	N	N	N	Y	NA	NA	Y	FAIR
Cinegaglia et al, 2019[27]	Y	Y	N	Y	N	NA	NA	N	N	N	Y	NA	NA	N	FAIR
Cinegaglia et al, 2020[28]	Y	Y	N	Y	N	NA	NA	N	N	N	Y	NA	NA	Y	FAIR
Page et al, 2021[29]	Y	Y	NR	Y	N	NA	NA	N	Y	N	Y	NA	NA	N	FAIR
Antoniazzi et al, 2022[30]	Y	Y	N	Y	N	NA	NA	N	Y	N	Y	NA	NA	N	FAIR

1. Was the research question or objective in this paper clearly stated?; 2. Was the study population clearly specified and defined?; 3. Was the participation rate of eligible persons at least 50%?; 4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? Were inclusion and exclusion criteria for being in the study prespecified and applied uniformly to all participants?; 5. Was a sample size justification, power description, or variance and effect estimates provided?; 6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?; 7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?; 8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?; 9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?; 10. Was the exposure(s) assessed more than once over time?; 11. Were the outcome measures (dependent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?; 12. Were the outcome assessors blinded to the exposure status of participants?; 13. Was loss to follow-up after baseline 20% or less?; 14. Were key potential confounding variables measured and adjusted statistically for their impact on the relationship between exposure(s) and outcome(s)?; N: no; NA: not applicable; NR: not reported; Y: yes.

ESI Table 4. Meta-regression according to mean age, percentage of female and body mass index for carotid to femoral pulse wave velocity (cf-PWv) and carotid intima media thickness (c-IMT).

	Coefficient	95% CIs	P value
c-IMT			
Vegetarian diet			
Mean age	6.615	-8.844, 22.074	0.207
Percentage of female	2.785	-4.815, 10.386	0.256
Body mass index	-167.619	-590.567, 255.329	0.230
Total cholesterol	6.047	-106.371, 118.467	0.618
Low density lipoprotein	2.686	-224.357, 229.729	0.905
High density lipoprotein	15.300	-182.389, 212.989	0.505
Triglycerides	-1.129	-30.972, 28.713	0.715
Omnivorous diet			
Mean age	6.773	-10.182, 23.728	0.228
Percentage of female	2.023	-5.155, 9.202	0.349
Body mass index	18.416	-195.217, 232.049	0.1746
Total cholesterol	8.007	-118.386, 134.401	0.569
Low density lipoprotein	5.898	-234.924, 246.721	0.808
High density lipoprotein	6.908	-110.537, 124.352	0.591
Triglycerides	-0.086	-21.972, 21.798	0.968
Vegetarian vs Omnivorous diets			
Mean age	-0.448	-6.141, 7.037	0.798
Percentage of female	0.549	-0.960, 2.059	0.258
Body mass index	-32-607	-99.538, 34.324	0.171
Total cholesterol	1.962	-40.142, 44.067	0.660
Low density lipoprotein	-2.162	-108.644, 104.320	0.839
High density lipoprotein	3.899	-27.771, 35.570	0.362
Triglycerides	-0.703	-7.928, 6.521	0.433
cf-PWv			
Vegetarian diet			
Mean age	0.102	-0.132, 0.336	0.202
Percentage of female	-0.019	-0.069, 0.031	0.242
Body mass index	1.207	-2.221, 4.634	0.269
Total cholesterol	0.106	-0.710, 0.921	0.347
Low density lipoprotein	0.079	-0.525, 0.684	0.345
High density lipoprotein	-0.155	-1.507, 1.197	0.3383
Triglycerides	0.076	-0.565, 0.718	0.372
Omnivores diet			
Mean age	0.114	-0.121, 0.348	0.172
Percentage of female	-0.029	-0.071, 0.013	0.130
Body mass index	0.575	-0.692, 1.843	0.190
Total cholesterol	0.064	-0.409, 0.536	0.336
Low density lipoprotein	0.063	-0.391, 0.517	0.329
High density lipoprotein	-0.099	-1.125, 0.926	0.435
Triglycerides	0.029	-0.199, 0.259	0.351
Vegetarian vs Omnivorous diets			
Mean age	-0.012	-0.064, 0.041	0.447
Percentage of female	0.003	-0.010, 0.017	0.420
Body mass index	-0.097	-0.519, 0.325	0.426
Total cholesterol	-0.010	-0.158, 0.138	0.549
Low density lipoprotein	-0.010	-0.135, 0.116	0.510
High density lipoprotein	0.026	-0.239, 0.291	0.433
Triglycerides	-0.007	-0.086, 0.071	0.442

ESI Figure 1. Comparisons of mean carotid to femoral pulse wave velocity (cf-PWv) between vegetarian and omnivorous diets.

Reference	Mean (95% CI)	% Weight
Vegetarian		
Acosta-Navarro et al, 2017	7.10 (5.53, 8.67)	32.65
Ramos González et al, 2022	5.30 (3.73, 6.87)	32.65
Mayra and Johnston, 2022	6.80 (4.64, 8.96)	21.11
Sanders, 2014	8.20 (5.36, 11.04)	13.59
Subtotal (I-squared = 29.5%, p = 0.235)	6.60 (5.45, 7.74)	100.00
Omnivorous		
Ramos González et al, 2022	5.60 (4.03, 7.17)	35.62
Mayra and Johnston, 2022	7.00 (4.06, 9.94)	16.21
Sanders, 2014	8.62 (5.72, 11.52)	16.55
Acosta-Navarro et al, 2017	7.70 (5.94, 9.46)	31.62
Subtotal (I-squared = 37.2%, p = 0.189)	6.99 (5.63, 8.35)	100.00

ESI Figure 2. Comparisons of mean carotid intima media thickness (c-IMT) between vegetarian and omnivorous diets.

Reference	Mean (95% CI)	% Weight
Vegetarian		
Page et al, 2021	490.00 (411.60, 568.40)	60.64
Acosta-Navarro et al, 2017	593.00 (408.76, 777.24)	21.84
Su et al, 2006	789.00 (449.93, 1128.07)	7.62
Yang et al, 2012	588.00 (294.01, 881.99)	9.89
Subtotal (I-squared = 20.8%, p = 0.286)	544.98 (447.57, 642.39)	100.00
Omnivorous		
Acosta-Navarro et al, 2017	661.00 (410.12, 911.88)	14.38
Yang et al, 2012	622.00 (447.56, 796.44)	29.40
Page et al, 2021	510.00 (372.80, 647.20)	46.87
Su et al, 2006	772.00 (460.37, 1083.63)	9.36
Subtotal (I-squared = 1.7%, p = 0.384)	589.15 (493.49, 684.81)	100.00