

Appendix 1 to Onete V, Henry RM, Sep SJ, et al. Arterial stiffness is associated with depression in middle-aged men — the Maastricht Study. *J Psychiatry Neurosci* 2017.

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Supplemental Table 1: Baseline characteristics of participants with available and missing data on covariates

	Available Data (n = 2646)	Missing Data (n = 111)	Missing	p-value
Demographics				
Age, years	59.7 ± 8.1	61.4 ± 8.2	0	0.034
Female sex, %	48.4	57.7	0	0.056
Education level, low/medium/high, %	32.4/29.1/38.5	30.0/31.4/38.6	57	0.812
Cardio-metabolic risk factors				
BMI, kg/m ²	27.0 ± 4.3	27.2 ± 4.9	2	0.572
Waist-to-hip ratio	0.94 ± 0.09	0.94 ± 0.11	1	0.734
Glucose metabolism status, NGM/IGM/DM2, %	58/15/27	49//10/41	0	0.009
Total cholesterol, mmol/L	5.24 ± 1.16	5.11 ± 1.21	0	0.249
HDL cholesterol, mmol/L	1.52 ± 0.48	1.44 ± 0.44	0	0.092
LDL cholesterol, mmol/L	3.10 ± 1.04	3.06 ± 1.01	0	0.653
Total to HDL cholesterol ratio	3.71 ± 1.19	3.77 ± 1.15	0	0.589
Systolic blood pressure, mmHg	127 ± 14	129 ± 16	1	0.130
Diastolic blood pressure, mmHg	76 ± 7	76 ± 7	0	0.579
Mean arterial pressure, mmHg	97 ± 10	98 ± 12	0	0.138
Heart rate, beats per minute	63 ± 9	63 ± 8	0	0.392
Hypertension, %	38.5	44.4	3	0.215
Prior CVD, %	16.4	9.1	89	0.358
eGFR, mL/min per 1.73 m ²	88.4 ± 14.7	85.8 ± 17.5	0	0.063
Life style factors				
Smoking, never/former/current, %	33.6/52.8/13.6	37.7/47.5/14.8	50	0.732
Alcohol use, none/low/high, %	18.0/55.0/27.0	17.9/60.7/21.4	55	0.545
Medication use				
Glucose lowering drugs, %	21.8	36.1	3	<0.001
Anti-hypertensive drugs, %	38.5	44.4	3	0.215
Lipid modifying drugs, %	36.2	39.8	3	0.450
Antidepressive drugs, %	7.0	11.1	3	0.100
Stiffness related indices				
Carotid to femoral PWV, m/s	8.98 ± 2.13	9.67 ± 2.87	0	0.014
Pulse pressure, mmHg	51 ± 10	53 ± 11	1	0.090
Major depressive disorder, %	3.6	6.3	0	0.130

Results are presented as % (n), mean ± standard deviation or median [interquartile range].

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Supplemental Table 2: The association between cfPWV and a major depressive disorder stratified by age and sex in the full population, after the exclusion of participants with early onset depression, after the exclusion of participants with anti-depression medication, and after the exclusion of participants with type 2 diabetes

Full population				
	Age ≤ 60 years		Age > 60 years	
	Men (n = 612, 27 cases)	Women (n = 746, 35 cases)	Men (n = 800, 21 cases)	Women (n = 599, 18 cases)
Model 4	2.36 [1.45 – 3.84]	1.57 [0.93 – 2.66]	1.03 [0.63 – 1.68]	0.64 [0.32 – 1.31]
Participants with early onset depression excluded				
	Men (n = 517, 18 cases)	Women (n = 585, 24 cases)	Men (n = 729, 15 cases)	Women (n = 519, 14 cases)
Model 4	1.79 [0.89 – 3.63]	1.51 [0.79 – 2.91]	1.20 [0.68 – 2.11]	0.81 [0.38 – 1.71]
Participants with anti-depressive medication excluded				
	Men (n = 572, 17 cases)	Women (n = 674, 28 cases)	Men (n = 768, 15 cases)	Women (n = 544, 15 cases)
Model 4	2.39 [1.35 – 4.23]	1.50 [0.81 – 2.78]	1.17 [0.69 – 1.96]	0.67 [0.31 – 1.45]
Participants with type 2 diabetes excluded				
	Men (n = 427, 9 cases)	Women (n = 620, 25 cases)	Men (n = 458, 7 cases)	Women (n = 436, 6 cases)
Model 4*	2.48 [1.06 – 5.78]	1.54 [0.82– 2.88]	0.96 [0.33 – 2.83]	0.33 [0.08 – 1.44]

Results are expressed as OR [95% CI] per standard deviation higher cfPWV. Model 4: adjusted for age, type 2 diabetes, mean arterial pressure, heart rate, bmi, lipid medication, smoking, alcohol use prior CVD and hypertension. *Model 4 was not adjusted for type 2 diabetes.

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Supplemental Table 3: The association between cfPWV and depressive symptoms stratified by age and sex in the full population, after the exclusion of participants with early onset depression, after the exclusion of participants with anti-depression medication, and after the removal of participants with type 2 diabetes

Full population (as in article)				
	Age ≤ 60 years		Age > 60 years	
	Men (n = 582)	Women (n = 722)	Men (n = 761)	Women (n = 579)
Model 4	1.28 [1.09 - 1.52]	1.11 [0.99 - 1.23]	0.96 [0.84 - 1.08]	1.00 [0.90 - 1.12]
Participants with early onset depression excluded				
	Men (n = 480)	Women (n = 546)	Men (n = 660)	Women (n = 482)
Model 4	1.30 [1.07 - 1.57]	1.10 [0.97 - 1.27]	0.96 [0.84 - 1.09]	1.02 [0.91 - 1.14]
Participants with anti-depressive medication excluded				
	Men (n = 528)	Women (n = 632)	Men (n = 693)	Women (n = 503)
Model 4	1.20 [1.01 - 1.42]	1.13 [0.997 - 1.26]	-0.05 [0.95 - 1.08]	1.01 [0.91 - 1.12]
Participants with type 2 diabetes excluded				
	Men (n = 344)	Women (n = 465)	Men (n = 388)	Women (n = 357)
Model 4*	1.27 [1.03 - 1.57]	1.12 [0.99 - 1.28]	0.94 [0.79 - 1.12]	1.02 [0.90 - 1.15]

Results are expressed as rate ratio [95% CI] per standard deviation higher cfPWV. Model 4: adjusted for age, type 2 diabetes, mean arterial pressure, heart rate, bmi, lipid medication, smoking, alcohol use prior CVD and hypertension. *Model 4 was not adjusted for type 2 diabetes.

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Supplemental Table 4: the association between cfPWV and major depressive disorder stratified by age and sex in the fully adjusted model as well as after additional adjustments for anti-depressive medication, education level, and moderate to vigorous physical activity

	Age ≤ 60 years		Age > 60 years	
	Men (n = 612, 27 cases)	Women (n = 746, 35 cases)	Men (n = 800, 21 cases)	Women (n = 599, 18 cases)
Model 4	2.36 [1.45 – 3.84]	1.57 [0.93 – 2.66]	1.03 [0.63 – 1.68]	0.64 [0.32 – 1.31]
Model 4 + anti-depressive medication	2.21 [1.35 – 3.62]	1.54 [0.91 – 2.61]	0.94 [0.57 – 1.57]	0.64 [0.31 – 1.29]
Model 4 + educational level	2.25 [1.37 – 3.69]	1.57 [0.91 – 2.71]	1.01 [0.62 – 1.65]	0.62 [0.31 – 1.27]
Model 4 + moderate to vigorous physical activity*	2.69 [1.4 – 4.99]	1.53 [0.85 – 2.75]	1.05 [0.62 – 1.78]	0.74 [0.26 – 2.07]

* 429 participants (48 cases), mostly in the women ≤ 60 years and > 60 years categories had missing values and dropped out of the analyses.

Results are expressed as OR [95% CI] per standard deviation higher cfPWV. Model 4: adjusted for age, type 2 diabetes, mean arterial pressure, heart rate, bmi, lipid medication, smoking, alcohol use prior CVD and hypertension

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Supplemental Table 5: the association between cfPWV and depressive symptoms stratified by age and sex in the fully adjusted model as well as after additional adjustments for anti-depressive medication, education level, and moderate to vigorous physical activity

	Age ≤ 60 years		Age > 60 years	
	Men (n = 582)	Women (n = 722)	Men (n = 761)	Women (n = 579)
Model 4	1.28 [1.09 - 1.52]	1.11 [0.99 - 1.23]	0.96 [0.84 - 1.08]	1.00 [0.90 - 1.12]
Model 4 + anti-depressive medication	1.23 [1.05 - 1.45]	1.10 [0.99 - 1.23]	0.95 [0.84 - 1.07]	1.00 [0.91 - 1.10]
Model 4 + educational level	1.27 [1.08 - 1.49]	1.08 [0.97 - 1.22]	0.96 [0.85 - 1.08]	1.01 [0.91 - 1.12]
Model 4 + moderate to vigorous physical activity*	1.28 [1.09 - 1.51]	1.08 [0.97 - 1.22]	0.95 [0.84 - 1.08]	1.02 [0.92 - 1.13]

*153 participants, equally distributed among the groups, had missing values on covariates and dropped out of the analyses

Results are expressed as rate ratio [95% CI] per standard deviation higher cfPWV. Model 4: adjusted for age, type 2 diabetes, mean arterial pressure, heart rate, bmi, lipid medication, smoking, alcohol use prior CVD and hypertension

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Supplemental Table 6: Association between cfPWV and minor and major depressive disorder stratified by age and sex

	Age ≤ 60 years		Age > 60 years	
	Men (n = 612, 43 cases)	Women (n = 746, 46 cases)	Men (n = 800, 31 cases)	Women (n = 599, 31 cases)
Model 1	1.99 [1.40 – 2.83]	1.35 [0.95 – 1.92]	1.31 [0.99 – 1.71]	0.95 [0.68 – 1.32]
Model 2	1.83 [1.26 – 2.65]	1.17 [0.80 – 1.70]	1.25 [0.93 – 1.68]	0.81 [0.57 – 1.17]
Model 3	1.91 [1.28 – 2.84]	1.16 [0.76 – 1.77]	1.16 [0.84 – 1.60]	0.86 [0.58 – 1.28]
Model 4*	1.84 [1.22 – 2.77]	1.28 [0.80 – 2.05]	0.99 [0.64 – 1.52]	0.95 [0.61 – 1.47]

Results are expressed as OR [95% CI]; per standard deviation increase in cfPWV the OR for major and minor depressive disorder was 1.99 [1.40 – 2.83] in men below 60 years of age. Model 1 crude; Model 2: adjusted for age, type 2 diabetes; Model 3: additionally adjusted for mean arterial pressure; Model 4: additionally adjusted for heart rate, bmi, lipid medication, smoking and alcohol use, hypertension and prior CVD.

* 119 participants (15 cases) equally distributed among the groups had missing values on covariates and dropped out of the analyses

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Supplemental Table 7: The association of aortic stiffness and a major depressive disorder in the full population and according to the following age cut-offs: 55, 60 and 65 years

	Total population (n = 2757, 101 cases)	Age ≤ 55 (n = 785, 35 cases)	Age > 55 (n = 1972, 66 cases)	Age ≤ 60 (n = 1358, 62 cases)	Age > 60 (n = 1399, 39 cases)	Age ≤ 65 (n = 2014, 79 cases)	Age > 65 (n = 743, 22 cases)
Model 1	1.23 [1.03 - 1.46]	1.84 [1.23 - 2.73]	1.21 [0.99 - 1.49]	1.84 [1.40 - 2.41]	1.11 [0.85 - 1.46]	1.50 [1.21 - 1.85]	0.95 [0.65 - 1.39]
Model 2	1.24 [1.01 - 1.51]	1.57 [1.02 - 2.41]	1.18 [0.94 - 1.48]	1.68 [1.26 - 2.25]	0.98 [0.72 - 1.31]	1.52 [1.20 - 1.92]	0.80 [0.53 - 1.21]
Model 3	1.23 [0.99 - 1.53]	1.38 [0.84 - 2.27]	1.23 [0.96 - 1.57]	1.68 [1.22 - 2.32]	0.99 [0.72 - 1.37]	1.50 [1.15 - 1.94]	0.85 [0.55 - 1.32]
Model 4*	1.20 [0.94 - 1.53]	1.60 [0.92 - 2.78]	1.14 [0.85 - 1.51]	1.79 [1.27 - 2.53]	0.83 [0.57 - 1.23]	1.33 [0.98 - 1.80]	1.04 [0.64 - 1.69]

Results are expressed as OR [95% CI]. Per standard deviation higher cfPWV the OR for major depressive disorder was 1.23 [1.03-1.46] in the total population. Model 1: crude; Model 2: adjusted for age, type 2 diabetes; Model 3: additionally adjusted for mean arterial pressure; Model 4: additionally adjusted for heart rate, bmi, lipid medication, smoking, alcohol use prior CVD and hypertension; * 111 participants (7 cases) equally distributed among the groups had missing values on covariates and dropped out of the analyses