

SUPPLEMENTAL MATERIAL

Table S1. Cardiac Predictors of Brain Structure with LV mass indexed to height (N=1829).

		WMH Beta Coefficients*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	1.47	(-0.31,3.24)	0.11
	Mean LV wall thickness (mm)	0.66	(0.08,1.25)	0.03
	LV mass index (10g per m2.7)	1.25	(0.37,2.12)	0.01
LV Systolic Function	Ejection fraction (per 5%)	-0.25	(-0.80,0.30)	0.38
	Average Peak Longitudinal Strain (%)	0.31	(-0.04,0.65)	0.08
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	-0.08	(-0.39,0.23)	0.61
	E-Em lateral ratio (cm per sec)	0.15	(-0.07,0.36)	0.18
	LA volume index (5ml per m2)	0.18	(-0.25,0.61)	0.42
		Presence of Infarct Odds Ratios*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	1.21	(0.88,1.68)	0.24
	Mean LV wall thickness (mm)	1.11	(1.01,1.23)	0.04
	LV mass index (10g per m2.7)	1.14	(0.98,1.33)	0.09
LV Systolic Function	Ejection fraction (per 5%)	0.85	(0.77,0.95)	0.00
	Average Peak Longitudinal Strain (%)	1.04	(0.98,1.10)	0.24
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.94	(0.87,1.01)	0.08
	E-Em lateral ratio (cm per sec)	1.00	(0.97,1.04)	0.82
	LA volume index (5ml per m2)	1.06	(0.97,1.16)	0.19

*Adjusted for age, sex, estimated total intracranial volume, education, hypertension, diabetes, smoking, alcohol, BMI, LDL, and history of myocardial infarction. Participants with heart failure or atrial fibrillation were excluded.

†Abbreviations: WMH- White Matter Hyperintensities, LV-Left Ventricular, LA-Left Atrial

Table S2. Cardiac Predictors of Rates of Cortical and Lacunar Infarcts with LV mass indexed to height (N=1829).

		Cortical Infarcts Rate Ratios*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	1.35	(0.83,2.21)	0.23
	Mean LV wall thickness (mm)	1.12	(0.97,1.28)	0.12
	LV mass index (10g per m ^{2.7})	1.11	(0.93,1.33)	0.25
LV Systolic Function	Ejection fraction (per 5%)	0.92	(0.78,1.08)	0.29
	Average Peak Longitudinal Strain (%)	1.00	(0.91,1.10)	0.97
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.99	(0.89,1.09)	0.77
	E-Em lateral ratio (cm per sec)	1.00	(0.94,1.05)	0.90
	LA volume index (5ml per m ²)	1.03	(0.91,1.17)	0.66
		Lacunar Infarcts Rate Ratios*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	0.96	(0.68,1.36)	0.83
	Mean LV wall thickness (mm)	1.05	(0.94,1.17)	0.40
	LV mass index (10g per m ^{2.7})	1.02	(0.86,1.20)	0.82
LV Systolic Function	Ejection fraction (per 5%)	0.89	(0.80,1.00)	0.04
	Average Peak Longitudinal Strain (%)	1.03	(0.97,1.10)	0.27
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.96	(0.90,1.03)	0.28
	E-Em lateral ratio (cm per sec)	0.99	(0.95,1.03)	0.73
	LA volume index (5ml per m ²)	1.07	(0.99,1.16)	0.09

*Adjusted for age, sex, estimated total intracranial volume, education, hypertension, diabetes, smoking, alcohol, BMI, LDL, and history of myocardial infarction. Participants with heart failure or atrial fibrillation were excluded.

†Abbreviations: LV-Left Ventricular, LA-Left Atrial

Table S3. Sensitivity Analysis considering the association of Cardiac Predictors with Brain Structure when excluding participants with history of myocardial infarction (N=1673).

		WMH Beta Coefficients*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	1.34	(-0.53,3.20)	0.16
	Mean LV wall thickness (mm)	0.69	(0.09,1.30)	0.02
	LV mass index (10g per m2)	0.64	(0.17,1.10)	0.01
LV Systolic Function	Ejection fraction (per 5%)	-0.15	(-0.71,0.42)	0.61
	Average Peak Longitudinal Strain (%)	0.29	(-0.06,0.65)	0.11
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	-0.06	(-0.37,0.25)	0.70
	E-Em lateral ratio (cm per sec)	0.14	(-0.08,0.36)	0.22
	LA volume index (5ml per m2)	0.19	(-0.25,0.63)	0.39
		Presence of Infarct Odds Ratios*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	1.18	(0.85,1.64)	0.33
	Mean LV wall thickness (mm)	1.10	(0.99,1.23)	0.08
	LV mass index (10g per m2)	1.07	(0.99,1.16)	0.10
LV Systolic Function	Ejection fraction (per 5%)	0.87	(0.78,0.96)	0.01
	Average Peak Longitudinal Strain (%)	1.03	(0.97,1.10)	0.32
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.95	(0.88,1.02)	0.13
	E-Em lateral ratio (cm per sec)	1.00	(0.96,1.04)	0.93
	LA volume index (5ml per m2)	1.05	(0.96,1.15)	0.27

*Adjusted for age, sex, estimated total intracranial volume, education, hypertension, diabetes, smoking, alcohol, BMI, LDL. Participants with heart failure, atrial fibrillation and myocardial infarction were excluded.

†Abbreviations: WMH-White Matter Hyperintensities, LV-Left Ventricular, LA-Left Atrial

Table S4. Sensitivity Analysis considering Cardiac Predictors of rates of Cortical and Lacunar Infarcts when excluding participants with history of myocardial infarction (N=1673).

		Cortical Infarcts Rate Ratios*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	1.39	(0.84,2.32)	0.20
	Mean LV wall thickness (mm)	1.12	(0.95,1.30)	0.17
	LV mass index (10g per m2)	1.08	(0.98,1.19)	0.12
LV Systolic Function	Ejection fraction (per 5%)	0.90	(0.76,1.06)	0.20
	Average Peak Longitudinal Strain (%)	0.99	(0.89,1.10)	0.85
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.99	(0.90,1.10)	0.90
	E-Em lateral ratio (cm per sec)	0.99	(0.94,1.05)	0.74
	LA volume index (5ml per m2)	1.00	(0.87,1.14)	1.00
		Lacunar Infarcts Rate Ratios*	95% CI	P-values
LV Structure	End-diastolic left ventricular diameter (cm)	0.88	(0.62,1.25)	0.47
	Mean LV wall thickness (mm)	1.05	(0.93,1.18)	0.43
	LV mass index (10g per m2)	1.00	(0.92,1.09)	0.92
LV Systolic Function	Ejection fraction (per 5%)	0.92	(0.82,1.03)	0.16
	Average Peak Longitudinal Strain (%)	1.03	(0.97,1.09)	0.38
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.98	(0.91,1.05)	0.50
	E-Em lateral ratio (cm per sec)	0.99	(0.95,1.03)	0.56
	LA volume index (5ml per m2)	1.07	(0.98,1.16)	0.13

*Adjusted for age, sex, estimated total intracranial volume, education, hypertension, diabetes, smoking, alcohol, body mass index, low density lipoprotein. Participants with heart failure, atrial fibrillation and myocardial infarction were excluded.

†Abbreviations: LV-Left Ventricular, LA-Left Atrial

Table S5. Sensitivity Analysis considering the impact of modeling approaches on the association of Cardiac Predictors with Brain Structure.

Cardiac Predictor	Model 1S: Primary Significant Predictor from each Group*		Model 2S: Significant Cardiac Predictors within Group*		Model 3S: All Cardiac Predictors*				
	Effect estimate, P-value	95% CI	Effect estimate, P-value	95% CI	Effect estimate, P-value	95% CI			
LV Structure	End-diastolic left ventricular diameter (cm)	n/a	n/a	n/a	n/a	n/a	n/a	White Matter Hyperintensities Beta Coefficients	
	Mean LV wall thickness (mm)	n/a	n/a	0.03, 0.95	n/a	0.05, 0.90	n/a		
	LV mass index (10g per m2)	0.70, 0.003	(0.23, 1.17)	0.62, 0.05	(0.01,1.23)	0.52, 0.11	(-0.11,1.15)		
LV Systolic Function	Ejection fraction (per 5%)	0.003, 0.99	(-0.52, 0.53)	n/a	n/a	n/a	n/a		
	Average Peak Longitudinal Strain (%)	n/a	n/a	0.31, 0.08	n/a	0.27, 0.09	n/a		
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	-0.088, 0.54	n/a	n/a	n/a	n/a	n/a		
	E-Em lateral ratio (cm per sec)	n/a	n/a	n/a	n/a	n/a	n/a		
	LA volume index (5ml per m2)	n/a	n/a	n/a	n/a	n/a	n/a		
LV Structure	End-diastolic left ventricular diameter (cm)	n/a	n/a	n/a	n/a	n/a	n/a		Presence of Infarcts Odds Ratios
	Mean LV wall thickness (mm)	n/a	n/a	1.04, 0.54	(0.91,1.20)	1.08, 0.33	(0.93,1.25)		
	LV mass index (10g per m2)	1.07, 0.13	(0.98, 1.16)	1.06, 0.26	(0.96,1.18)	1.03, 0.62	(0.92,1.15)		
LV Systolic Function	Ejection fraction (per 5%)	0.88, 0.02	(0.79, 0.98)	0.85, 0.001	(0.77,0.95)	0.87, 0.01	(0.78,0.97)		
	Average Peak Longitudinal Strain (%)	n/a	n/a	n/a	n/a	n/a	n/a		
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.96, 0.24	n/a	0.94, 0.08	n/a	0.96, 0.28	n/a		
	E-Em lateral ratio (cm per sec)	n/a	n/a	n/a	n/a	n/a	n/a		
	LA volume index (5ml per m2)	n/a	n/a	n/a	n/a	n/a	n/a		

*All models (1S, 2S and 3S) adjusted for age, sex, estimated total intracranial volume, education, hypertension, diabetes, smoking, alcohol, BMI, LDL, and history of myocardial infarction

Model 1S: Outcome of interest (white matter hyperintensities; infarcts) modeled as a function of three predictors: LV mass index, Ejection fraction and Lateral early diastolic myocardial velocity. These predictors represent the primary statistically significant (p -value <0.05) predictor in univariate analysis from each of the three groups: LV structure, LV systolic function and LV diastolic function.

Model 2S: Outcome of interest (white matter hyperintensities; infarcts) modeled as a function of the cardiac predictors statistically significant in univariate analysis (p -value <0.05) within each of the three group (LV structure, LV systolic function or LV diastolic function)

Model 3S: Outcome of interest (white matter hyperintensities; infarcts) modeled as a function of all cardiac predictors statistically significant in univariate analysis (p -value <0.05) regardless of the group in which the predictor was contained (LV structure, LV systolic function or LV diastolic function predictors all considered together)

Table S6. Cardiac predictors of Brain Structures by Race.

		Whites		Blacks		Interaction p-value
		WMH Beta Coefficients*	95% CI	WMH Beta Coefficients*	95% CI	
LV Structure	End-diastolic left ventricular diameter (cm)	1.25	(-0.71,3.22)	2.75	(-0.32,5.83)	0.40
	Mean LV wall thickness (mm)	0.57	(-0.06,1.20)	1.06	(0.07,2.04)	0.38
	LV mass index (per 10g/m ²)	0.58	(0.10,1.05)	0.98	(0.18,1.79)	0.38
LV Systolic Function	Ejection fraction (per 5%)	-0.31	(-0.91,0.28)	0.03	(-1.06,1.12)	0.58
	Average Peak Longitudinal Strain (%)	0.34	(-0.06,0.75)	0.15	(-0.43,0.73)	0.59
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	-0.13	(-0.49,0.22)	0.04	(-0.50,0.59)	0.58
	E-Em lateral ratio (cm per sec)	0.13	(-0.11,0.36)	0.31	(-0.18,0.79)	0.50
	LA volume index (per 5ml/m ²)	0.01	(-0.49,0.47)	0.85	(0.05,1.65)	0.07
		Presence of Infarct Odds ratio*	95% CI	Presence of Infarct Odds ratio*	95% CI	
LV Structure	End-diastolic left ventricular diameter (cm)	1.22	(0.82,1.81)	1.20	(0.78,1.86)	0.96
	Mean LV wall thickness (mm)	1.11	(0.98,1.26)	1.12	(0.97,1.29)	0.95
	LV mass index (per 10g/m ²)	1.09	(0.99,1.19)	1.07	(0.96,1.21)	0.86
LV Systolic Function	Ejection fraction (per 5%)	0.83	(0.73,0.94)	0.92	(0.78,1.09)	0.33
	Average Peak Longitudinal Strain (%)	1.04	(0.96,1.13)	1.03	(0.94,1.12)	0.82
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.97	(0.88,1.06)	0.88	(0.79,0.98)	0.17
	E-Em lateral ratio (cm per sec)	0.99	(0.95,1.04)	1.05	(0.99,1.11)	0.11
	LA volume index (per 5ml/m ²)	1.06	(0.94,1.18)	1.08	(0.95,1.22)	0.83

*Adjusted for age, sex, estimated total intracranial volume, education, hypertension, diabetes, smoking, alcohol, body mass index, low density lipoprotein, and history of myocardial infarction

†Abbreviations: WMH-White Matter Hyperintensities, LV-Left Ventricular, LA-Left Atrial

Table S7. Cardiac predictors of rates of Cortical and Lacunar Infarcts by Race .

		Whites		Blacks		Interaction p-value	
		Rate ratios*	95%CI	Rate ratios*	95%CI		
LV Structure	End-diastolic left ventricular diameter (cm)	1.63	(0.88,2.99)	0.80	(0.43,1.47)	0.10	Cortical Infarcts
	Mean LV wall thickness (mm)	1.07	(0.90,1.27)	1.21	(0.98,1.49)	0.33	
	LV mass index (10g per m2)	1.07	(0.96,1.18)	1.10	(0.96,1.27)	0.70	
LV Systolic Function	Ejection fraction (per 5%)	0.89	(0.73,1.09)	0.97	(0.75,1.26)	0.59	
	Average Peak Longitudinal Strain (%)	0.93	(0.82,1.05)	1.18	(1.03,1.35)	0.01	
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	1.05	(0.93,1.19)	0.83	(0.71,0.98)	0.02	
	E-Em lateral ratio (cm per sec)	0.98	(0.91,1.04)	1.05	(0.96,1.14)	0.17	
	LA volume index (5ml per m2)	0.97	(0.83,1.15)	1.14	(0.95,1.37)	0.23	
LV Structure	End-diastolic left ventricular diameter (cm)	0.89	(0.58,1.37)	1.16	(0.71,1.89)	0.40	
	Mean LV wall thickness (mm)	1.03	(0.90,1.18)	1.08	(0.94,1.25)	0.59	
	LV mass index (10g per m2)	1.00	(0.90,1.11)	1.07	(0.94,1.22)	0.37	
LV Systolic Function	Ejection fraction (per 5%)	0.86	(0.74,0.99)	0.97	(0.81,1.14)	0.30	
	Average Peak Longitudinal Strain (%)	1.06	(0.99,1.14)	0.98	(0.89,1.07)	0.18	
LV Diastolic Function	Lateral early diastolic myocardial velocity (cm per sec)	0.98	(0.90,1.06)	0.93	(0.84,1.04)	0.49	
	E-Em lateral ratio (cm per sec)	0.99	(0.94,1.04)	1.00	(0.94,1.07)	0.69	
	LA volume index (5ml per m2)	1.04	(0.94,1.15)	1.14	(0.99,1.30)	0.31	

*Adjusted for age, sex, estimated total intracranial volume, education, hypertension, diabetes, smoking, alcohol, body mass index, low density lipoprotein, and history of myocardial infarction

†Abbreviations: LV-Left Ventricular, LA-Left Atrial