Supplementary Material

Determinants of vascular structure and function in at-risk children born to mothers managed for pre-eclampsia (FINNCARE-study)

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1 Supplementary Figures and Tables

Supplementary Table 1. Univariate linear regression results for children's arterial adventitia thickness

		Brachial artery AT				Radial artery AT				Femoral artery AT			
		B (95% CI)	Standardized β	R^2	*p*	B (95% CI)	Standardized β	R^2	*p*	B (95% CI)	Standardized β	R^2	*p*
Sex (0 = female, 1 = male)	**Sex**	0.04 (-6.04-6.11)	0.001	0.000	0.991	0.21 (-4.18-4.61)	0.006	0.000	0.924	1.41 (-8.17-10.99)	0.018	0.000	0.772
Age (years)	**Age**	0.76 (-1.98-3.50)	0.034	0.001	0.585	2.31 (0.35-4.27)	0.142	0.020	0.021	1.09 (-3.23-5.41)	0.031	0.001	0.620
Body height (cm)	**Anthropometrics**	0.36 (0.05-0.68)	0.140	0.020	0.023	0.27 (0.04-0.50)	0.144	0.021	0.019	0.51 (0.02-1.01)	0.124	0.015	0.043
Height z-score		3.84 (0.96-6.72)	0.160	0.026	**0.009**	1.13 (-0.97-3.23)	0.065	0.004	0.291	5.65 (1.10-10.20)	0.149	0.022	0.015
Body weight (kg)		0.27 (0-0.53)	0.120	0.014	0.052	0.12 (-0.08-0.31)	0.073	0.005	0.239	0.51 (0.09-0.93)	0.146	0.021	0.017
Weight z-score (height)		0.86 (-2.03-3.75)	0.036	0.001	0.558	-0.47 (-2.56-1.62)	-0.027	0.001	0.658	5.59 (1.08-10.10)	0.149	0.022	0.015
Weight z-score (age)		3.01 (0.09-5.94)	0.124	0.015	0.044	0.39 (-1.74-2.52)	0.022	0.000	0.718	7.53 (2.96-12.10)	0.196	0.038	**0.001**
Body surface area (m^2)		15.00 (0.75-29.24)	0.127	0.016	0.039	7.68 (-2.66-18.02)	0.090	0.008	0.145	28.72 (6.31-51.13)	0.153	0.024	0.012
Lean body mass (kg)		0.52 (0.08-0.97)	0.141	0.020	0.022	0.36 (0.04-0.69)	0.136	0.018	0.027	0.79 (0.09-1.50)	0.136	0.018	0.027
Skeletal muscle mass (kg)		0.87 (0.12-1.62)	0.139	0.019	0.024	0.60 (0.06-1.14)	0.133	0.018	0.031	1.31 (0.12-2.50)	0.133	0.018	0.031
Head circumference (cm)		1.94 (0.19-3.70)	0.136	0.019	0.030	0.44 (-0.86-1.74)	0.042	0.002	0.502	3.60 (0.85-6.36)	0.160	0.026	0.011
Thoracic circumference (cm)		0.50 (0.06-0.94)	0.139	0.019	0.026	0.16 (-0.17-0.49)	0.060	0.004	0.344	0.99 (0.30-1.69)	0.175	0.030	**0.005**
Hip circumference (cm)		0.28 (-0.06-0.62)	0.099	0.010	0.108	0.08 (-0.17-0.33)	0.040	0.002	0.521	0.87 (0.34-1.40)	0.195	0.038	**0.001**
Brachial circumference (cm)		0.92 (-0.02-1.85)	0.120	0.014	0.056	0.18 (-0.51-0.88)	0.033	0.001	0.603	1.67 (0.19-3.15)	0.138	0.019	0.027
Antebrachial circumference (cm)		1.93 (0.52-3.33)	0.167	0.028	**0.007**	0.27 (-0.78-1.31)	0.032	0.001	0.614	2.86 (0.64-5.09)	0.157	0.025	0.012
Arm length (cm)		1.01 (0.19-1.83)	0.151	0.023	0.016	0.68 (0.08-1.29)	0.138	0.019	0.028	1.80 (0.51-3.10)	0.169	0.029	**0.007**
Thigh circumference (cm)		0.48 (-0.04-1.00)	0.113	0.013	0.070	0.15 (-0.23-0.54)	0.049	0.002	0.433	0.90 (0.08-1.73)	0.134	0.018	0.032
Calf circumference (cm)		0.92 (0.01-1.83)	0.125	0.016	0.047	0.49 (-0.18-1.16)	0.090	0.008	0.152	2.16 (0.74-3.59)	0.184	0.034	**0.003**
Leg length (cm)		0.26 (-0.19-0.71)	0.072	0.005	0.250	0.30 (-0.03-0.62)	0.112	0.013	0.075	0.55 (-0.16-1.25)	0.096	0.009	0.127
Waist-hip ratio (no unit)	**Adiposity**	6.45 (-47.45-60.35)	0.015	0.000	0.814	-1.40 (-40.44-37.63)	-0.004	0.000	0.944	34.58 (-50.46-119.61)	0.049	0.002	0.424
BMI (kg/m^2)		0.51 (-0.40-1.41)	0.068	0.005	0.272	0.04 (-0.62-0.69)	0.007	0.000	0.908	1.57 (0.15-2.99)	0.132	0.018	0.031
BMI z-score		1.71 (-1.18-4.60)	0.072	0.005	0.245	-0.06 (-2.16-2.04)	-0.003	0.000	0.955	6.75 (2.25-11.26)	0.179	0.032	**0.003**
Fat mass (kg)		0.23 (-0.26-0.72)	0.056	0.003	0.362	-0.06 (-0.42-0.29)	-0.021	0.000	0.735	0.75 (-0.02-1.52)	0.118	0.014	0.055
Fat percentage (%)		0.04 (-0.31-0.39)	0.014	0.000	0.823	-0.13 (-0.38-0.12)	-0.063	0.004	0.309	0.66 (0.11-1.21)	0.145	0.021	0.018
24 hours SBP (mmHg)	**Ambulatory BP**	0.22 (-0.17-0.61)	0.077	0.006	0.271	0.41 (0.12-0.69)	0.193	0.037	**0.005**	0.40 (-0.22-1.02)	0.089	0.008	0.202
24 hours DBP (mmHg)		0.05 (-0.53-0.64)	0.013	0.000	0.855	0.29 (-0.14-0.72)	0.092	0.009	0.187	0.25 (-0.67-1.17)	0.037	0.001	0.592
24 hours PP (mmHg)		0.30 (-0.16-0.76)	0.090	0.008	0.196	0.38 (0.04-0.72)	0.154	0.024	0.027	0.41 (-0.32-1.13)	0.077	0.006	0.269
Daytime SBP (mmHg)		0.30 (-0.09-0.68)	0.100	0.010	0.134	0.41 (0.14-0.68)	0.196	0.039	**0.003**	0.32 (-0.26-0.90)	0.073	0.005	0.278
Daytime DBP (mmHg)		0.17 (-0.37-0.71)	0.042	0.002	0.529	0.42 (0.04-0.80)	0.146	0.021	0.029	0.26 (-0.55-1.06)	0.041	0.002	0.536
Daytime PP (mmHg)		0.30 (-0.19-0.78)	0.081	0.006	0.230	0.30 (-0.04-0.64)	0.117	0.014	0.080	0.30 (-0.43-1.02)	0.054	0.003	0.417
Nighttime SBP (mmHg)		0.08 (-0.23-0.38)	0.034	0.001	0.612	0.34 (0.11-0.56)	0.196	0.038	**0.003**	0.34 (-0.15-0.82)	0.091	0.008	0.177
Nighttime DBP (mmHg)		-0.30 (-0.74-0.13)	-0.094	0.009	0.164	0.19 (-0.13-0.51)	0.079	0.006	0.241	0.23 (-0.46-0.92)	0.045	0.002	0.508
Nighttime PP (mmHg)		0.28 (-0.09-0.65)	0.100	0.010	0.137	0.35 (0.08-0.63)	0.170	0.029	0.011	0.36 (-0.23-0.95)	0.080	0.006	0.235
Carotid-femoral PWV (m/s)	**PWV**	3.14 (-0.83-7.11)	0.099	0.010	0.120	0.22 (-2.77-3.21)	0.009	0.000	0.886	1.05 (-5.19-7.29)	0.021	0.000	0.740
Carotid-radial PWV (m/s)		-0.88 (-3.51-1.75)	-0.042	0.002	0.510	1.08 (-0.88-3.05)	0.069	0.005	0.279	-2.16 (-6.27-1.96)	-0.065	0.004	0.303
Central SBP (mmHg)		0.39 (0.14-0.65)	0.187	0.035	**0.003**	0.36 (0.17-0.55)	0.227	0.051	**<0.001**	0.48 (0.07-0.89)	0.144	0.021	0.022
Central DBP (mmHg)		0.19 (-0.31-0.69)	0.048	0.002	0.452	0.16 (-0.22-0.53)	0.051	0.003	0.418	0.73 (-0.05-1.52)	0.116	0.013	0.066
Central PP (mmHg)		0.37 (0.10-0.64)	0.169	0.029	**0.007**	0.34 (0.14-0.54)	0.209	0.043	**<0.001**	0.30 (-0.13-0.73)	0.087	0.008	0.168

B indicates unstandardized beta; 95% CI, 95% confidence interval; R2, nonadjusted R Square. The unstandardized coefficients (and 95% CIs) have been multiplied by 1000, showing the change in micrometers.
Significant *p* values (<0.01) bolded. AT indicates adventitia thickness; SBP, systolic blood pressure; DBP, diastolic blood pressure; PP, pulse pressure; PWV, pulse wave velocity; BMI, body mass index.

Supplementary Table 2. Univariate linear regression results for children's arterial lumen diameters

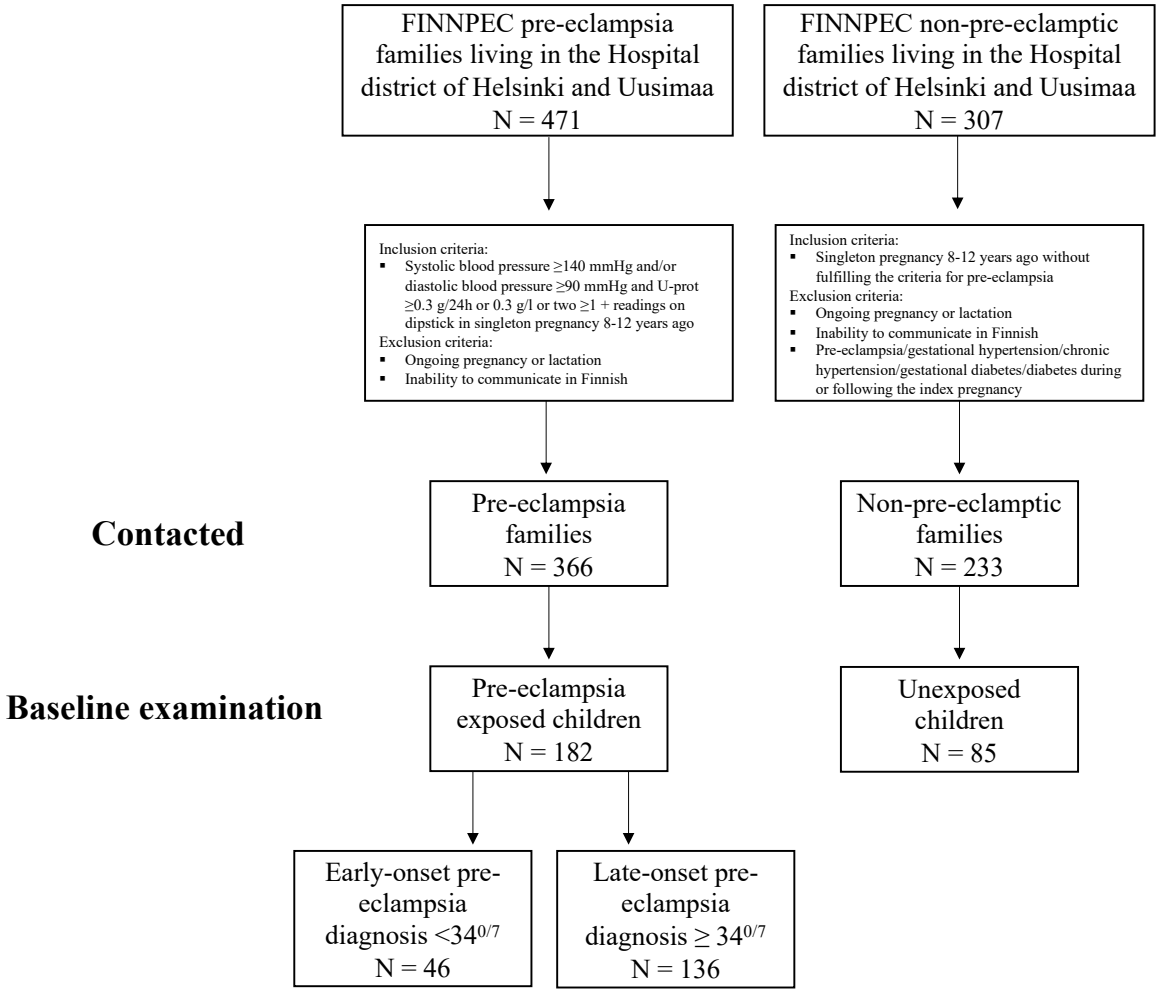
		Common carotid artery lumen diameter				Brachial artery lumen diameter				Radial artery lumen diameter				Femoral artery lumen diameter			
		B (95% CI)	Standardized β	R^2	*p*	B (95% CI)	Standardized β	R^2	*p*	B (95% CI)	Standardized β	R^2	*p*	B (95% CI)	Standardized β	R^2	*p*
Sex (0 = female, 1 = male)	**Sex**	0.18 (0.07-0.29)	0.193	0.037	**0.002**	0.24 (0.16-0.0.32)	0.341	0.116	**<0.001**	0.11 (0.05-0.17)	0.234	0.055	**<0.001**	0.44 (0.29-0.59)	0.335	0.112	**<0.001**
Age (years)	**Age**	-0.01 (-0.06-0.04)	-0.021	0.000	0.728	0.12 (0.08-0.15)	0.371	0.138	**<0.001**	0.07 (0.04-0.09)	0.314	0.099	**<0.001**	0.23 (0.17-0.30)	0.394	0.155	**<0.001**
Body height (cm)		0.01 (0-0.01)	0.126	0.016	0.040	0.02 (0.02-0.02)	0.542	0.294	**<0.001**	0.01 (0.01-0.01)	0.381	0.145	**<0.001**	0.04 (0.03-0.05)	0.552	0.305	**<0.001**
Height z-score		0.09 (0.03-0.14)	0.196	0.038	**0.001**	0.14 (0.10-0.17)	0.399	0.159	**<0.001**	0.05 (0.02-0.08)	0.220	0.048	**<0.001**	0.24 (0.17-0.31)	0.387	0.150	**<0.001**
Body weight (kg)		0.01 (0-0.01)	0.217	0.047	**<0.001**	0.02 (0.01-0.02)	0.498	0.248	**<0.001**	0.01 (0.01-0.01)	0.396	0.157	**<0.001**	0.03 (0.02-0.03)	0.422	0.178	**<0.001**
Weight z-score (height)		0.10 (0.05-0.15)	0.220	0.048	**<0.001**	0.08 (0.04-0.12)	0.236	0.056	**<0.001**	0.05 (0.03-0.08)	0.229	0.053	**<0.001**	0.09 (0.02-0.01)	0.141	0.020	0.021
Weight z-score (age)		0.13 (0.07-0.18)	0.280	0.078	**<0.001**	0.14 (0.10-0.18)	0.415	0.172	**<0.001**	0.07 (0.04-0.10)	0.305	0.093	**<0.001**	0.22 (0.15-0.29)	0.346	0.120	**<0.001**
Body surface area (m^2)		0.47 (0.21-0.73)	0.213	0.045	**<0.001**	0.88 (0.71-1.06)	0.529	0.280	**<0.001**	0.46 (0.34-0.58)	0.411	0.169	**<0.001**	1.46 (1.13-1.79)	0.471	0.222	**<0.001**
Lean body mass (kg)		0.01 (0-0.02)	0.179	0.032	**0.003**	0.03 (0.03-0.04)	0.597	0.356	**<0.001**	0.02 (0.01-0.02)	0.433	0.188	**<0.001**	0.06 (0.05-0.07)	0.573	0.328	**<0.001**
Skeletal muscle mass (kg)		0.02 (0.01-0.03)	0.176	0.031	**0.004**	0.05 (0.04-0.06)	0.598	0.358	**<0.001**	0.03 (0.02-0.03)	0.435	0.189	**<0.001**	0.09 (0.08-0.11)	0.574	0.330	**<0.001**
Head circumference (cm)	**Anthropometrics**	0.11 (0.08-0.14)	0.417	0.174	**<0.001**	0.08 (0.06-0.10)	0.390	0.152	**<0.001**	0.04 (0.03-0.06)	0.312	0.097	**<0.001**	0.16 (0.12-0.20)	0.424	0.180	**<0.001**
Thoracic circumference (cm)		0.02 (0.01-0.03)	0.312	0.098	**<0.001**	0.02 (0.02-0.03)	0.444	0.197	**<0.001**	0.01 (0.01-0.02)	0.377	0.142	**<0.001**	0.03 (0.02-0.04)	0.329	0.108	**<0.001**
Hip circumference (cm)		0.01 (0-0.02)	0.198	0.039	**0.001**	0.02 (0.01-0.02)	0.428	0.183	**<0.001**	0.01 (0.01-0.01)	0.349	0.122	**<0.001**	0.03 (0.02-0.04)	0.389	0.151	**<0.001**
Brachial circumference (cm)		0.04 (0.02-0.05)	0.249	0.062	**<0.001**	0.04 (0.03-0.05)	0.353	0.125	**<0.001**	0.02 (0.02-0.03)	0.316	0.100	**<0.001**	0.06 (0.03-0.08)	0.271	0.074	**<0.001**
Antebrachial circumference (cm)		0.07 (0.04-0.09)	0.316	0.100	**<0.001**	0.06 (0.04-0.08)	0.371	0.138	**<0.001**	0.04 (0.02-0.05)	0.319	0.102	**<0.001**	0.10 (0.06-0.13)	0.321	0.103	**<0.001**
Arm length (cm)		0.02 (0.01-0.04)	0.190	0.036	**0.002**	0.05 (0.04-0.06)	0.490	0.240	**<0.001**	0.02 (0.02-0.03)	0.368	0.135	**<0.001**	0.08 (0.06-0.10)	0.467	0.218	**<0.001**
Thigh circumference (cm)		0.02 (0.01-0.03)	0.213	0.045	**<0.001**	0.02 (0.01-0.03)	0.348	0.121	**<0.001**	0.01 (0.01-0.02)	0.309	0.095	**<0.001**	0.03 (0.02-0.05)	0.300	0.090	**<0.001**
Calf circumference (cm)		0.04 (0.02-0.05)	0.256	0.065	**<0.001**	0.05 (0.03-0.06)	0.426	0.182	**<0.001**	0.03 (0.02-0.03)	0.348	0.121	**<0.001**	0.07 (0.05-0.10)	0.378	0.143	**<0.001**
Leg length (cm)		0 (0-0.01)	0.064	0.004	0.309	0.02 (0.02-0.03)	0.456	0.208	**<0.001**	0.01 (0.01-0.01)	0.280	0.078	**<0.001**	0.04 (0.03-0.05)	0.393	0.154	**<0.001**
Waist-hip ratio (no unit)		1.18 (0.19-2.16)	0.143	0.021	0.019	1.19 (0.44-1.94)	0.190	0.036	**0.002**	0.71 (0.20-1.21)	0.168	0.028	**0.006**	1.53 (0.13-2.93)	0.131	0.017	0.032
BMI (kg/m^2)		0.03 (0.02-0.05)	0.231	0.053	**<0.001**	0.04 (0.03-0.05)	0.349	0.122	**<0.001**	0.02 (0.01-0.03)	0.308	0.095	**<0.001**	0.05 (0.03-0.07)	0.246	0.060	**<0.001**
BMI z-score	**Adiposity**	0.11 (0.06-0.16)	0.255	0.065	**<0.001**	0.11 (0.07-0.15)	0.318	0.101	**<0.001**	0.06 (0.04-0.09)	0.275	0.076	**<0.001**	0.15 (0.07-0.22)	0.234	0.055	**<0.001**
Fat mass (kg)		0.01 (0.01-0.02)	0.190	0.036	**0.002**	0.02 (0.01-0.02)	0.258	0.066	**<0.001**	0.01 (0.01-0.01)	0.243	0.059	**<0.001**	0.02 (0-0.03)	0.145	0.021	0.018
Fat percentage (%)		0.01 (0-0.02)	0.169	0.029	**0.006**	0.01 (0-0.01)	0.124	0.015	0.044	0 (0-0.01)	0.154	0.024	0.012	0 (-0.01-0.01)	0.025	0.001	0.682
24 hours SBP (mmHg)		0 (-0.01-0)	-0.074	0.005	0.290	0 (0-0.01)	0.082	0.007	0.242	0 (-0.01-0)	-0.033	0.001	0.636	0 (-0.01-0.01)	0.042	0.002	0.547
24 hours DBP (mmHg)		0 (-0.01-0.01)	-0.020	0.000	0.775	-0.01 (-0.02-0)	-0.129	0.017	0.064	-0.01 (-0.01-0)	-0.115	0.013	0.099	-0.01 (-0.03-0.01)	-0.083	0.007	0.232
24 hours PP (mmHg)		-0.01 (-0.01-0)	-0.085	0.007	0.226	0.01 (0-0.02)	0.194	0.037	**0.005**	0 (0-0.01)	0.046	0.002	0.512	0.01 (0-0.02)	0.108	0.012	0.120
Daytime SBP (mmHg)		0 (-0.01-0)	-0.083	0.007	0.217	0 (0-0.01)	0.065	0.004	0.335	0 (-0.01-0)	-0.062	0.004	0.355	0 (-0.01-0.01)	0.042	0.002	0.533
Daytime DBP (mmHg)	**Ambulatory BP**	0 (-0.01-0.01)	0.013	0.000	0.850	-0.01 (-0.01-0)	-0.084	0.007	0.211	0 (-0.01-0)	-0.100	0.010	0.134	0 (-0.02-0.01)	-0.039	0.002	0.562
Daytime PP (mmHg)		-0.01 (-0.02-0)	-0.114	0.013	0.088	0.01 (0-0.02)	0.155	0.024	0.020	0 (0-0.01)	0.015	0.000	0.821	0.01 (-0.01-0.02)	0.084	0.007	0.210
Nighttime SBP (mmHg)		0 (-0.01-0.01)	-0.019	0.000	0.781	0 (0-0.01)	0.064	0.004	0.345	0 (0-0)	0.055	0.003	0.415	0 (-0.01-0.01)	0.032	0.001	0.637
Nighttime DBP (mmHg)		0 (-0.01-0.01)	-0.044	0.002	0.516	-0.01 (-0.01-0)	-0.162	0.026	0.016	0 (-0.01-0)	-0.054	0.003	0.419	-0.01 (-0.02-0)	-0.109	0.012	0.106
Nighttime PP (mmHg)		0 (-0.01-0.01)	-0.032	0.001	0.632	0.01 (0-0.01)	0.197	0.039	**0.003**	0 (0-0.01)	0.099	0.010	0.142	0.01 (0-0.02)	0.125	0.016	0.064

B indicates unstandardized beta; 95% CI, 95% confidence interval; R2, nonadjusted R Square. Significant *p* values (<0.01) bolded. SBP indicates systolic blood pressure; DBP, diastolic blood pressure; PP, pulse pressure; BMI, body mass index.

Supplementary Table 3. Multiple linear regression models for children's arterial lumen diameters							
Vascular dimension		**Predictor**	**Unstandardized β (95% CI)**	**Standardized β**	***p* value**	**Adjusted R2**	**Model *p* value**
Brachial artery							
Lumen diameter	**Model 1**	Constant	1.83 (1.66-2.00)			0.431	**<0.001**
		Pre-eclampsia exposed (0 = no, 1 = yes)	-0.06 (-0.13-0.01)	-0.082	0.082		
		Child sex (0 = female, 1 = male)	0.19 (0.12-0.26)	0.268	**<0.001**		
		Child lean body mass at follow-up (kg)	0.03 (0.03-0.04)	0.573	**<0.001**		
	Model 2	Constant	0.68 (0.20-1.17)			0.312	**<0.001**
		Pre-eclampsia exposed (0 = no, 1 = yes)	-0.03 (-0.11-0.05)	-0.039	0.452		
		Child sex (0 = female, 1 = male)	0.20 (0.12-0.27)	0.281	**<0.001**		
		Child arm length at follow-up (cm)	0.04 (0.03-0.05)	0.452	**<0.001**		
Radial artery							
Lumen diameter	**Model 1**	Constant	1.13 (1.00-1.26)			0.211	**<0.001**
		Pre-eclampsia exposed (0 = no, 1 = yes)	0 (-0.06-0.05)	-0.008	0.887		
		Child sex (0 = female, 1 = male)	0.09 (0.03-0.14)	0.181	**0.001**		
		Child lean body mass at follow-up (kg)	0.01 (0.01-0.02)	0.414	**<0.001**		
	Model 2	Constant	0.52 (0.16-0.89)			0.160	**<0.001**
		Pre-eclampsia exposed (0 = no, 1 = yes)	0.01 (-0.05-0.07)	0.015	0.797		
		Child sex (0 = female, 1 = male)	0.09 (0.03-0.14)	0.187	**0.001**		
		Child arm length at follow-up (cm)	0.02 (0.02-0.03)	0.341	**<0.001**		
Femoral artery							
Lumen diameter	**Model 1**	Constant	3.70 (3.38-4.02)			0.394	**<0.001**
		Pre-eclampsia exposed (0 = no, 1 = yes)	-0.02 (-0.16-0.11)	-0.017	0.719		
		Child sex (0 = female, 1 = male)	0.35 (0.23-0.48)	0.270	**<0.001**		
		Child lean body mass at follow-up (kg)	0.05 (0.04-0.06)	0.545	**<0.001**		
	Model 2	Constant	2.21 (1.39-3.03)			0.284	**<0.001**
		Pre-eclampsia exposed (0 = no, 1 = yes)	0.04 (-0.11-0.18)	0.025	0.638		
		Child sex (0 = female, 1 = male)	0.48 (0.35-0.62)	0.373	**<0.001**		
		Child leg length at follow-up (cm)	0.04 (0.03-0.05)	0.409	**<0.001**		

Significant results are bolded (*p* value <0.05). CI indicates confidence interval; BMI, body mass index.

1.1 Supplementary Figures



Supplementary Figure 1. Flowchart of the FINNCARE study.