SUPPLEMENTAL MATERIAL

Systolic blood pressure at age 40 and 30-year stroke risk in men and women

Walle-Hansen et al.

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Table S1: Study population characteristics among women and men by systolic blood pressure at age 40 years, n=2 608.

	Systolic blood pressure at age 40 years (mm Hg)				
	<120	120-129	130-139	≥140	P value
Women					
N	551 (42%)	410 (31%)	228 (17%)	124 (10%)	<0.001
Age, years, mean ± SD	40.0 ± 0.3	40.0 ± 0.3	40.0 ± 0.2	40.0 ± 0.3	0.959
Body mass index, kg/m², mean ± SD	22.9 ± 2.7	23.6 ± 3.3	24.5 ± 4.1	25.2 ± 4.7	<0.001
Obesity	10 (2%)	23 (6%)	23 (10%)	19 (15%)	<0.001
Systolic blood pressure, mm Hg, mean ± SD	112.1 ± 5.7	124.4 ± 2.9	134.0 ± 2.8	148.8 ± 8.8	<0.001
Diastolic blood pressure, mm Hg, mean ± SD	70.2 ± 6.1	76.1 ± 6.0	81.6 ± 6.4	89.9 ± 9.3	<0.001
Non-caucasian	9 (2%)	4 (1%)	3 (1%)	0 (0%)	0.469
Higher education[a]	226 (41%)	163 (40%)	86 (38%)	43 (35%)	0.588
Physical activity					0.536
Sedentary activity	112 (20%)	64 (16%)	48 (21%)	24 (19%)	-
Walking or cycling at least 4 h/week	372 (68%)	282 (69%)	151 (66%)	88 (71%)	-
Recreational sports at least 4 h/week	62 (11%)	59 (14%)	28 (12%)	11 (9%)	-
Hard training several times per week	5 (1%)	5 (1%)	1 (1%)	1 (1%)	-
Smoking[b]					0.297
Never	211 (38%)	176 (43%)	100 (44%)	55 (44%)	-
Current or previous	340 (62%)	234 (57%)	127 (56%)	69 (56%)	-
Cardiovascular comorbidity					
Myocardial infarction or angina	0 (0.0%)	2 (0.5%)	0 (0.0%)	0 (0.0%)	0.220
Hypertension[c]	1 (0.2%)	2 (0.5%)	0 (0.0%)	10 (8.1%)	<0.001
Diabetes[d]	1 (0.2%)	2 (0.5%)	0 (0.0%)	1 (0.8%)	0.485
Biomarkers, mean ± SD					
Cholesterol, mmol/L	5.2 ± 0.9	5.2 ± 0.9	5.5 ± 1.0	5.5 ± 0.9	<0.001
Triglycerides, mmol/L	1.2 ± 0.6	1.2 ± 0.7	1.4 ± 0.8	1.4 ± 0.8	<0.001
Men					
N	160 (12%)	382 (30%)	389 (30%)	364 (28%)	<0.001
Age, years, mean ± SD	40.1 ± 0.4	40.1 ± 0.3	40.1 ± 0.3	40.0 ± 0.3	0.458
Body mass index, kg/m²[e], mean ± SD	24.0 ± 3.0	25.1 ± 2.9	25.5 ± 2.6	26.0 ± 2.9	<0.001
Obesity	7 (4%)	23 (6%)	22 (6%)	29 (8%)	0.383
Systolic blood pressure, mm Hg, mean ± SD	115.2 ± 4.0	125.2 ± 2.8	134.6 ± 2.8	148.9 ± 8.0	<0.001
Diastolic blood pressure, mm Hg, mean ± SD	71.6 ± 6.1	76.1 ± 6.5	81.4 ± 6.8	88.5 ± 8.6	<0.001
Non-caucasian	4 (3%)	5 (1%)	5 (1%)	6 (2%)	0.730
Higher education[f]	94 (59%)	194 (51%)	188 (48%)	166 (46%)	0.041
Physical activity					0.451
Sedentary activity	31 (19%)	66 (17%)	74 (19%)	65 (18%)	-
Walking or cycling at least 4 h/week	92 (57%)	203 (53%)	187 (48%)	201 (55%)	-
Recreational sports at least 4 h/week	33 (21%)	100 (26%)	112 (29%)	90 (25%)	-
Hard training several times per week	4 (3%)	13 (3%)	16 (4%)	8 (2%)	-
Smoking[g]					0.632
Never	65 (42%)	135 (36%)	151 (39%)	138 (38%)	-
Current or previous	90 (58%)	238 (64%)	233 (61%)	221 (62%)	-
Cardiovascular comorbidity					
Myocardial infarction or angina	3 (1.9%)	2 (0.5%)	3 (0.8%)	3 (0.8%)	0.473
Hypertension[h]	2 (1.3%)	3 (0.8%)	2 (0.5%)	16 (4.4%)	<0.001
Diabetes[i]	0 (0.0%)	0 (0.0%)	0 (0.0%)	3 (0.8%)	0.052
Biomarkers, mean ± SD					
Cholesterol, mmol/L	5.4 ± 1.0	5.6 ± 1.0	5.7 ± 1.0	5.9 ± 1.1	<0.001
Triglycerides, mmol/L	1.9 ± 1.2	2.0 ± 1.2	2.1 ± 1.4	2.4 ± 1.9	<0.001

SD: standard deviation, Obesity: body mass index ≥ 30 kg/m^2, higher education: at least 4 years of college or university training. [a]3 missing values, [b]1 missing value, [c]1 missing value, [d]1 missing value, [e]1 missing value, [f]5 missing values, [g]24 missing values, [h]2 missing values, [i]1 missing value.

Table S2: Characteristics at the first visit of the ACE 1950 Study (2012-2015, at ages 62-65 years) by systolic blood pressure at age 40 years, n=2 608.

	Systolic blood pressure at age 40 years (mm Hg)				
	<120	120-129	130-139	≥140	P value
Age, years, mean ± SD	63.9 ± 0.7	63.9 ± 0.6	63.9 ± 0.7	63.9 ± 0.6	0.761
Body mass index, kg/m^2	25.9 ± 4.2	26.9 ± 4.3	27.6 ± 4.5	28.0 ± 4.3	<0.001
Systolic blood pressure, mm Hg, mean ± SD	130.3 ± 17.8	137.4 ± 17.7	140.4 ± 16.5	146.3 ± 17.7	<0.001
Diastolic blood pressure, mm Hg, mean ± SD	72.6 ± 9.4	76.6 ± 9.6	78.8 ± 9.3	80.9 ± 9.6	<0.001
Physically active at least 30[a] min/day	609 (87%)	664 (84%)	503 (83%)	415 (86%)	0.194
Smoking[b]					0.132
Never	235 (33%)	261 (33%)	214 (35%)	169 (35%)	-
Daily or occasional	154 (22%)	130 (17%)	121 (20%)	77 (16%)	-
Previous	315 (45%)	396 (50%)	277 (45%)	239 (49%)	-
Cardiovascular comorbidity					
Hypertension	259 (36%)	471 (60%)	437 (71%)	428 (88%)	<0.001
Cardiac disease	48 (7%)	82 (10%)	69 (11%)	98 (20%)	<0.001
Diabetes[c]	24 (3%)	54 (7%)	64 (10%)	63 (13%)	<0.001
Obesity	102 (14%)	161 (20%)	161 (26%)	143 (29%)	<0.001
Cholesterol, mmol/L[d], mean ± SD	5.6 ± 1.1	5.5 ± 1.0	5.3 ± 1.1	5.2 ± 1.1	<0.001

SD: standard deviation, hypertension: sitting blood pressure ≥ 140/90 mm Hg or use of antihypertensive medication, Diabetes: history of diabetes or increased levels of HbA1c or fasting blood glucose, or use of antidiabetic medication, Obesity: body mass index ≥ 30 kg/m^2, Cardiac disease: history of coronary heart disease, angina, atrial fibrillation or heart failure. [a]34 missing values, [b]19 missing values, [c]1missing value, [d]1 missing value.

Table S3: Characteristics at the first visit of the ACE 1950 Study (2012-2015, at ages 62-65 years) among participants without versus with participation in the Age 40 Program, n=3 706.

	Without participation in Age 40 Program n = 973	With participation in Age 40 Program n = 2733	P value
Age, years, mean ± SD	63.9 ± 0.7	63.9 ± 0.6	0.435
Female sex	430 (44%)	1377 (50%)	0.001
Non-Caucasian	40 (4%)	42 (2%)	<0.001
Higher education[a]	498 (51%)	1215 (45%)	<0.001
Smoking, current or previous[b]	632 (66%)	1796 (66%)	0.748
Medical history			
Hypertension[c]	633 (65%)	1664 (61%)	0.022
Diabetes[d]	100 (10%)	217 (8%)	0.025
Stroke	45 (5%)	95 (3%)	0.107
Obesity	241 (25%)	598 (22%)	0.065
Cholesterol, mmol/L[e], mean ± SD	5.4 ± 1.2	5.4 ± 1.1	0.425
Functional status			
Admitted to hospital during the last 12 months[f]	111 (11%)	338 (12%)	0.432
At least 30 min of physical activity daily[g]	792 (83%)	2299 (85%)	0.127

SD: standard deviation, Higher education: at least 4 years of college or university training, Hypertension: sitting blood pressure ≥ 140/90 mm Hg or use of antihypertensive medication, Diabetes: history of diabetes or increased levels of HbA1c or fasting blood glucose, or use of antidiabetic medication, Obesity: body mass index ≥ 30 kg/m^2. [a]11 missing values, [b]30 missing values, [c]1 missing value, [d]2 missing values, [e]3 missing values, [f]7 missing values, [g]54 missing values.

Table S4: Incident stroke by systolic blood pressure at age 40 years among women and men, n=2 608.

	Systolic blood pressure at age 40 years (mm Hg)				
	<120	**120-129**	**130-139**	**≥140**	**Total**
N	711 (27%)	792 (30%)	617 (24%)	488 (19%)	2608 (100%)
Incident stroke					
Men	8 (10%)	20 (24%)	21 (25%)	34 (41%)	83 (100%)
Women	9 (28%)	8 (25%)	6 (19%)	9 (28%)	32 (100%)
Total	17 (15%)	28 (24%)	27 (24%)	43 (37%)	115 (100%)

Table S5: Hazard ratios of incident stroke in men and women by systolic blood pressure categories and at age 40 years, n=2 608.

		Crude		Adjusted*	
	N (%)	HR (95% CI)	p-value	HR (95% CI)	p-value
Men					
SBP, mm Hg					
< 120	160 (12%)	1 (reference)	-	1 (reference)	-
120 – 129	382 (30%)	1.19 (0.50 to 2.81)	0.692	1.51 (0.56 to 4.06)	0.412
130 – 139	389 (30%)	1.23 (0.52 to 2.90)	0.632	1.64 (0.62 to 4.37)	0.321
≥ 140	364 (28%)	2.17 (0.96 to 4.90)	0.061	2.66 (1.03 to 6.89)	0.043
Women					
SBP, mm Hg					
< 120	551 (42%)	1 (reference)	-	1 (reference)	-
120 – 129	410 (31%)	1.20 (0.46 to 3.11)	0.710	1.21 (0.46 to 3.14)	0.701
130 – 139	228 (17%)	1.62 (0.58 to 4.55)	0.360	1.57 (0.55 to 4.48)	0.401
≥ 140	124 (10%)	4.64 (1.84 to 11.68)	0.001	4.32 (1.66 to 11.26)	0.003

SBP: Systolic blood pressure, HR: Hazard ratio, 95% CI: 95% confidence interval. *Adjusted for age, smoking, total cholesterol, physical activity, obesity, education.

Table S6: Hazard ratios of incident stroke by age, sex, smoking, cholesterol, physical activity, obesity, and education, n=2 608.

	N (%)	HR (95% CI)	p-value
Age at the Age 40 Program, years	-	0.98 (0.49 to 1.99)	0.963
Sex			
Male	1295 (50%)	1 (ref)	-
Female	1313 (50%)	0.54 (0.34 to 0.85)	0.008
Smoking			
Never	1031 (40%)	1 (ref)	-
Current or previous	1552 (60%)	1.64 (1.07 to 2.52)	0.025
Cholesterol, mmol/L	-	1.11 (0.92 to 1.33)	0.286
Physical activity			
Sedentary activity	484 (19%)	1 (ref)	-
Walking or cycling at least 4 h/week	1576 (60%)	0.88 (0.55 to 1.42)	0.604
Recreational sports at least 4 h/week	495 (19%)	0.65 (0.35 to 1.21)	0.178
Hard training several times per week	53 (2%)	0.71 (0.17 to 3.05)	0.649
Obesity			
Non-obese	2452 (94%)	1 (ref)	-
Obese	156 (6%)	0.98 (0.47 to 2.04)	0.955
Education			
Less than 7 years of formal education	16 (1%)	1 (ref)	-
Primary and lower secondary school	449 (17%)	0.75 (0.10 to 5.65)	0.784
Upper secondary school, vocational programme	622 (24%)	0.74 (0.10 to 5.43)	0.765
Upper secondary school, general studies programme	353 (14%)	0.57 (0.07 to 4.43)	0.592
College or university, less than 4 years	609 (23%)	0.86 (0.12 to 6.33)	0.884
College or university, at least 4 years	551 (21%)	0.59 (0.08 to 4.46)	0.609

SBP: Systolic blood pressure, HR: Hazard ratio, 95% CI: 95% confidence interval, Obesity: body mass index ≥ 30 kg/m^2.