

Supplemental materials for:

Streit S, Poortvliet RK, den Elzen WP, Blom JW, Gussekloo J. Systolic blood pressure and cognitive decline in older adults with hypertension. *Ann Fam Med*. 2019;17(2):100-107.

Supplemental Table 1. Baseline characteristics of participants with and without blood pressure measurements 1 year prior to study inclusion ($n = 1,494$).

Domains	Overall ($n = 1,494$)	Blood pressure measurements 1 year before study inclusion		P-value ^a
		Yes ($n = 1,266$)	No ($n = 228$)	
<i>Sociodemographic data</i>				
Female, n (%)	1,018 (68)	874 (69)	144 (63)	0.074
Age, years (SD)	82.3 (5)	82.4 (5)	81.4 (5)	0.006
Primary school only, n (%)	768 (52)	656 (52)	112 (49)	0.43
Low income ^b , n (%)	225 (15)	197 (16)	28 (12)	0.20
Residential home, n (%)	124 (8)	101 (8)	23 (10)	0.29
<i>Comorbidities, n (%)</i>				
Cardiovascular disease (CVD) ^c	554 (37)	506 (40)	48 (21)	<0.001
Under antihypertensive therapy	1,168 (78)	1,057 (84)	111 (49)	<0.001
Diabetes mellitus	309 (20)	274 (22)	35 (15)	0.030
Depression	209 (14)	182 (15)	27 (12)	0.30
Cancer	186 (13)	159 (13)	27 (12)	0.76
<i>Baseline function, median (IQR)^d</i>				
MMSE ^e score	28 (26-29)	28 (26-29)	28 (27-29)	0.019
GARS ^f score	30 (24-39)	31 (24-39)	27 (21-34)	<0.001
EQ-5D-3L ^g index values	0.78 (0.60-0.84)	0.77 (0.57-0.84)	0.81 (0.67-0.89)	<0.001
Complex health problems ^h	764 (51)	674 (53)	90 (39)	<0.001

^a P-value from chi-square test for categorical data; t-test for normally-distributed continuous data, Wilcoxon ranksum test for not normally-distributed continuous data

^b defined as state pension only (about EUR 750 monthly)

^c CVD included myocardial infarction, angina pectoris, intermittent claudication, other ischemic heart disease, stroke, TIA, and heart failure

^d IQR = inter quartile range

^e Mini-Mental State Examination (MMSE) on a scale of 0-30 points (higher scores indicate better cognitive function)

^f Groningen Activities Restriction Scale (GARS); the score ranges from 18 to 72 (higher scores indicate greater disability)

^g Quality of life (EQ-5D-3L index values; full health has a value of 1, dead a value of 0)

^h Defined as patients having problems in three or more of four domains (functional, somatic, mental, and social)

Supplemental Table 2. Baseline characteristics of participants by systolic blood pressure (SBP) categories at baseline (n = 1,266)

	SBP categories at baseline			P-value ^a
	<130 mmHg (n=237)	130-150 mmHg (n=613)	>150 mmHg (n=416)	
<i>Sociodemographic data</i>				
Female, n (%)	137 (58)	425 (69)	312 (75)	<0.001
Age, years (SD)	83.0 (5.1)	81.9 (5.0)	83.0 (5.0)	0.46
Primary school only, n (%)	120 (51)	322 (53)	214 (52)	0.86
Low income ^b , n (%)	36 (15)	106 (17)	55 (13)	0.19
Residential home, n (%)	32 (14)	43 (7)	26 (6)	0.002
<i>Antihypertensive therapy, n (%)</i>				
Any antihypertensive therapy	197 (83)	493 (80)	367 (88)	0.004
Type of treatment				
Beta-blockers	110 (46)	272 (44)	211 (51)	0.13
Diuretics	126 (53)	300 (49)	229 (55)	0.14
ACE/AT2-inhibitors	121 (51)	279 (46)	247 (59)	<0.001
Calcium-channel-blockers	61 (26)	154 (25)	135 (33)	0.028
Others	4 (2)	14 (2)	16 (4)	0.18
Combinations	26 (11)	69 (11)	64 (15)	0.11
<i>Comorbidities, n (%)</i>				
Cardiovascular disease (CVD) ^c	115 (49)	246 (40)	150 (36)	0.008
Diabetes mellitus	52 (23.2)	132 (22)	90 (22)	0.99
Depression	36 (15)	85 (14)	61 (15)	0.87
Cancer	31 (13)	76 (13)	52 (13)	0.96
Complex health problems ^d	139 (59)	322 (53)	213 (51)	0.15
<i>Baseline function, mean (SD)</i>				
MMSE ^e score	26.7 (3.5)	27.1 (3.1)	27.5 (2.8)	0.002
GARS ^f score	36.1 (12.5)	32.5 (11.9)	31.8 (10.0)	<0.001
EQ-5D-3L ^g index values	0.7 (0.3)	0.7 (0.3)	0.7 (0.3)	0.74

^a P-value from chi-square test for categorical data; p-for-trend test from crude regression models for continuous data

^b defined as state pension only (about EUR 750 monthly)

^c CVD included myocardial infarction, angina pectoris, intermittent claudication, other ischemic heart disease, stroke, TIA, and heart failure

^d Defined as patients having problems in three or more of four domains (functional, somatic, mental, and social)

^e Mini-Mental State Examination (MMSE) on a scale of 0-30 points (higher scores indicate better cognitive function)

^f Groningen Activities Restriction Scale (GARS); the score ranges from 18 to 72 (higher scores indicate greater disability)

^g Quality of life (EQ-5D-3L index values; full health has a value of 1, dead a value of 0)

Supplemental Table 3. Subgroup analysis restricted to patients without history of cardiovascular disease (n=755). Associations of baseline systolic blood pressure (SBP) and antihypertensive treatment with change in cognitive/daily function and quality of life after one-year follow-up. Multivariable mixed-effects regression model adjusted for age, sex, baseline MMSE/GARS/EQ-5D-3L and accounting for clustering within general practitioners.

	Antihypertensive treatment							
	Yes (n=554)				No (n=201)			
	n	Change (95% CI)	P-value	Ptrend	n	Change (95% CI)	P-value	Ptrend
Cognitive function								
<130 mmHg	83	<i>Ref.</i>	-	0.031	39	<i>Ref.</i>	-	0.07
130-150 mmHg	249	0.79 (0.15, 1.57)	0.046	-	113	1.07 (-0.03, 2.17)	0.06	-
>150 mmHg	214	0.98 (0.18, 1.77)	0.017	-	47	1.22 (-0.03, 2.52)	0.06	-
Daily function								
<130 mmHg	81	<i>Ref.</i>	-	0.76	39	<i>Ref.</i>	-	0.72
130-150 mmHg	248	-0.27 (-1.79, 1.25)	0.73	-	108	-1.69 (-4.61, 1.22)	0.26	-
>150 mmHg	214	-0.29 (-1.86, 1.28)	0.72	-	47	-0.73 (-4.08, 2.62)	0.67	-
Quality of life								
<130 mmHg	82	<i>Ref.</i>	-	0.08	38	<i>Ref.</i>	-	0.14
130-150 mmHg	250	0.02 (-0.04, 0.08)	0.49	-	112	-0.07 (-0.15, 0.01)	0.09	-
>150 mmHg	216	0.05 (-0.01, 0.11)	0.11	-	48	-0.08 (-0.17, 0.02)	0.11	-

Reading example: Patients under antihypertensive treatment and a baseline SBP of >150mmHg had 0.98 (95% CI 0.18 to 1.77) less cognitive decline compared to patients under antihypertensive therapy with a baseline SBP of <130mmHg.

Supplemental Table 4. Subgroup analysis restricted to patients without complex health problems (n=591). Associations of baseline systolic blood pressure (SBP) and antihypertensive treatment with change in cognitive/daily function and quality of life after one-year follow-up (n=1,266). Multivariable mixed-effects regression model adjusted for sex, age, baseline MMSE/GARS/EQ-5D-3L and accounting for clustering within family physicians.

	Antihypertensive treatment							
	Yes (n=486)				No (n=105)			
	n	Change (95% CI)	P-value	Ptrend	n	Change (95% CI)	P-value	Ptrend
Cognitive function								
<130 mmHg	77	<i>Ref.</i>	-	0.35	19	<i>Ref.</i>	-	0.15
130-150 mmHg	227	0.20 (-0.59, 0.99)	0.63	-	58	0.23 (-0.80, 1.25)	0.67	-
>150 mmHg	173	0.38 (-0.44, 1.20)	0.37	-	26	0.80 (-0.35, 1.96)	0.17	-
Daily function								
<130 mmHg	76	<i>Ref.</i>	-	0.56	19	<i>Ref.</i>	-	0.84
130-150 mmHg	226	-0.03 (-1.54, 1.60)	0.97	-	57	-2.07 (-5.92, 1.78)	0.29	-
>150 mmHg	171	-0.38 (-2.02, 1.25)	0.65	-	26	-0.77 (-5.06, 3.51)	0.72	-
Quality of life								
<130 mmHg	76	<i>Ref.</i>	-	0.35	19	<i>Ref.</i>	-	0.44
130-150 mmHg	227	0.03 (-0.03, 0.08)	0.36	-	58	0.02 (-0.08, 0.12)	0.7868	-
>150 mmHg	174	0.03 (-0.03, 0.09)	0.29	-	27	-0.04 (-0.15, 0.08)	0.52	-

Reading example: Patients under antihypertensive treatment and a baseline SBP of >150mmHg had 0.38 (95% CI -0.44 to 1.20) less cognitive decline compared to patients under antihypertensive therapy with a baseline SBP of <130mmHg.