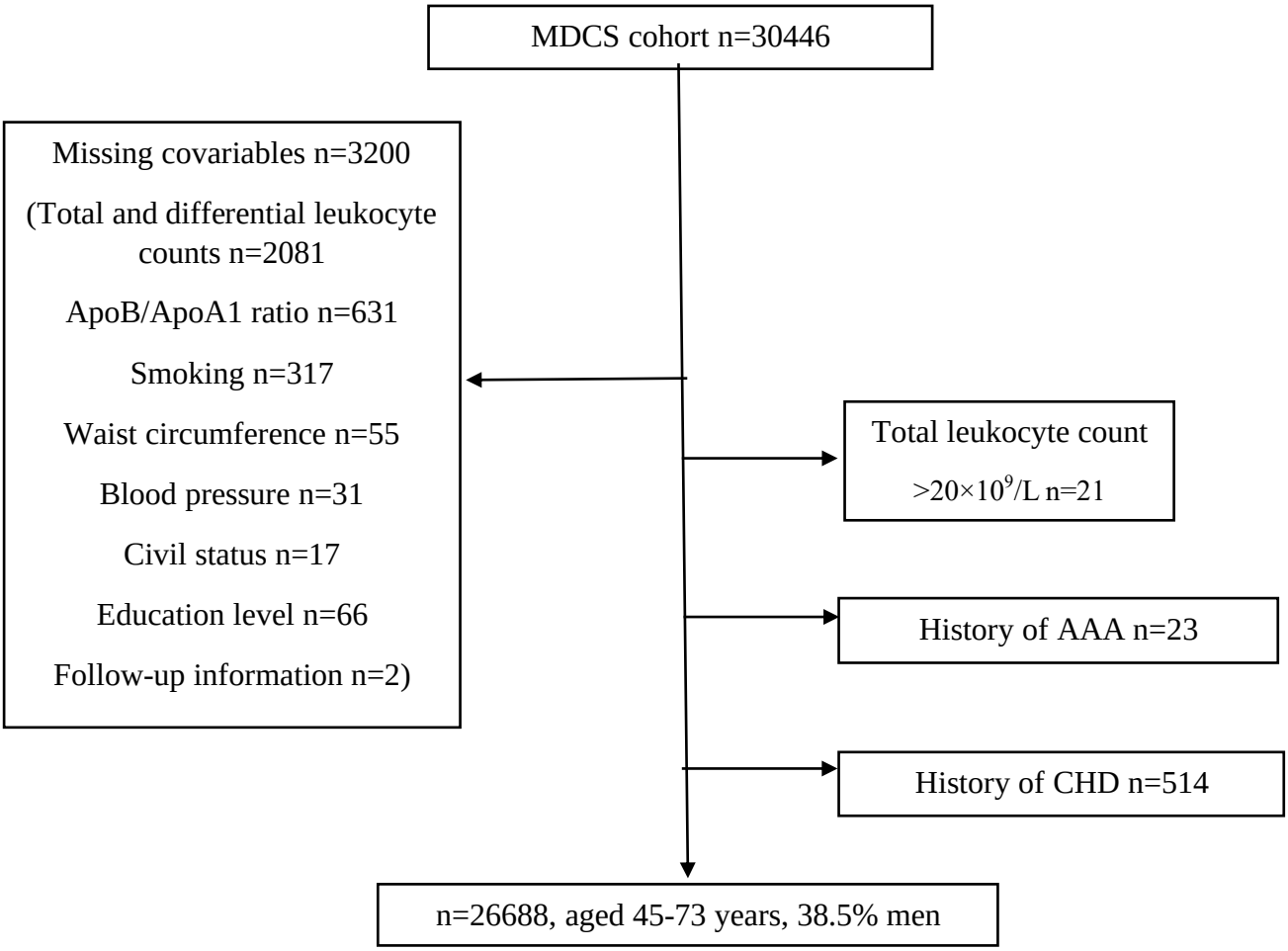
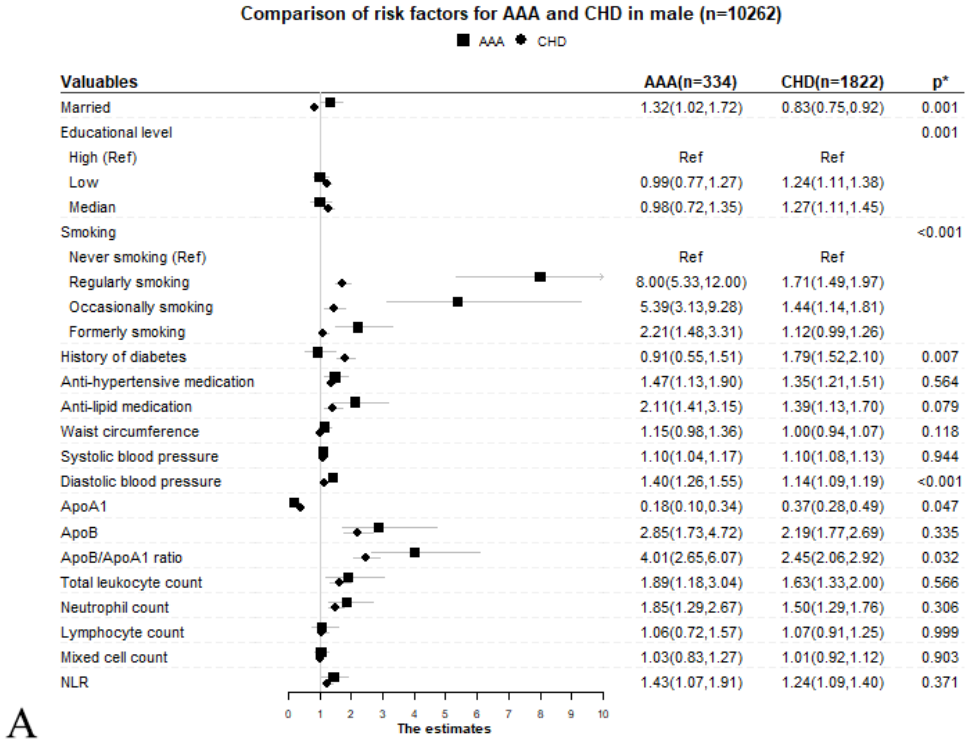
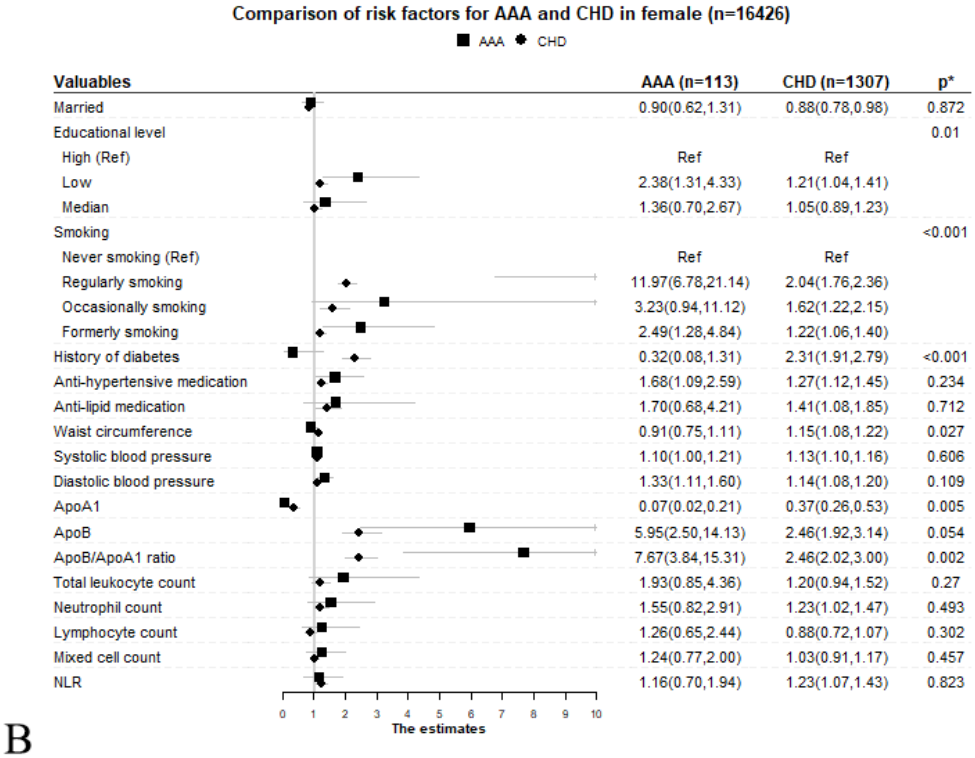


Supplementary Figure 1. Individuals included in this research.

Abbreviations: MDCS, Malmö Diet and Cancer study; ApoA1, apolipoproteins A1; ApoB, apolipoproteins B; AAA, abdominal aortic aneurysm; CHD, coronary heart disease.



A



B

Supplementary Figure 2. Comparisons of different risk factors for AAA and CHD in male (A) and female (B) subjects.

The model was adjusted for age, sex, marriage status, education, smoking, diabetes, waist, systolic blood pressure, anti-hypertensive medication, ApoB/ApoA1 ratio, anti-lipid medication, and white blood cell count. ApoA1 and ApoB not adjusted for ApoB/ApoA1 ratio. Diastolic blood pressure not adjusted for systolic blood pressure. Differentiated leucocyte not adjusted for white blood cell count.

*p-value for equal associations. A significant p-value indicates that the risk factor has different associations with AAA and CHD, respectively. The Lunn-McNeil method and log likelihood test were used to calculate the p-values (see methods for details).

Abbreviations: AAA, abdominal aortic aneurysm; CHD, coronary heart disease; ApoA1, apolipoproteins A1; ApoB, apolipoproteins B; NLR, neutrophil to lymphocyte ratio.

Supplementary Table 1. Validation of patients with AAA and ruptured AAA (rAAA).

Characteristics	**AAA** (n=80)	**rAAA** (n=18)	p
Confirmed diagnosis, (%)	76/80 (95%)	17/18 (94.4)	1.000
Median (IQR) age; years	76 (71 – 80)	84 (78 – 85)	<0.001
Male sex, (%)	58/76 (76.3)	12/17 (70.6)	0.620
Median maximal AAA diameter (IQR); mm	50 (40 – 64)	78 (56 – 98)	<0.001
Operated at the time of diagnosis, (%)	5/76 (6.6)	10/17 (58.8)	
EVAR	5	8	<0.001
Open repair	0	2	
Mortality within 30 days of diagnosis, (%)	0/76 (0)	11/17 (64.7)	<0.001
Initial mode of diagnosis, (%)			
Imaging due to AAA-related symptoms	2	16	
Accidental finding at any imaging	56	0	
Palpation	12	0	
Autopsy	0	1	
Organized ultrasound screening for AAA	2	0	
Non-organized ultrasound screening for AAA	4	0	

In our study population, 447 individuals developed AAA. Among them, 212 (47.4%) were from the inpatient register, 211(47.2%) from hospital-based outpatient care and 24 (5.4%) from the cause-of-death register. Among the 134 individuals with severe AAA, 88(65.7%) from the inpatient

register, 26(19.4%) from hospital-based outpatient care and 20 (14.9%) from the cause-of-death register. Corresponding number in the 313 non-severe AAA population were 124 (39.6%), 185 (59.1%) and 4 (1.1%), respectively. There were 70 (15.7%) ruptured AAA patients in this study. Among them, 43 (61.4%) were from the inpatient register, 7 (10%) from hospital-based outpatient care and 20 (28.6%) from the cause-of-death register; the distribution in 373 non-ruptured AAA were 165 (44.2%), 204 (54.7%) and 4 (1.1%), respectively.

Abbreviations: AAA, abdominal aortic aneurysm; rAAA; ruptured abdominal aortic aneurysm, EVAR; Endovascular aneurysm repair, IQR; interquartile range.

Supplementary Table 2. Incidence rates (per 1000 person years) for AAA and CHD in categories of selected risk factors.

n=26688	AAA	CHD
Exposures	**Number of cases (per 1000 person-years)**	**Number of cases (per 1000 person-years)**
All	447 (0.85)	3129 (6.08)
Men	334 (1.72)	1822 (9.79)
Women	113 (0.34)	1307 (3.98)
Smokers	271 (1.90)	1072 (7.77)
Diabetes	18 (0.95)	302 (17.2)
SBP ≥160 mmHg	131 (1.33)	1033 (11.02)
DBP ≥100 mmHg	93 (1.86)	501 (9.56)
High ApoA1	47 (0.12)	523 (3.84)
High ApoB/ApoA1 ratio	235 (1.86)	1263 (10.52)

High ApoA1 and high ApoB/ApoA1 were defined as at the 4^{th} quartile of ApoA1 (>174 mg/L) and 4^{th} quartile of ApoB/ApoA1 ratio (>0.834) in this study, respectively. The incident rate was present as per 1000 person-years.

Abbreviations: AAA, abdominal aortic aneurysm; CHD, coronary heart disease; SBP, systolic blood pressure; DBP, diastolic blood pressure; ApoA1, apolipoproteins A1; ApoB, apolipoproteins B.

Supplementary Table 3. Comparison of risk factors for AAA and CHD (excluding those who developed both AAA and CHD).

MDCS (n=26579)		**AAA (n=338)**			**CHD (n=3020)**			p-value for equal associations*
		Incident	**HR (95%CI)**	p	**Incident**	**HR (95%CI)**	p	
Married	Model 1	338	0.91(0.72,1.16)	0.448	3020	0.78(0.73,0.85)	<0.001	0.227
	Model 2	338	1.1(0.86,1.39)	0.457	3020	0.83(0.77,0.9)	<0.001	**0.030**
Educational level	Model 1	338			3020			0.266
High			ref			ref		
Low			1.67(1.28,2.18)	<0.001		1.48(1.36,1.62)	<0.001	
Median			1.26(0.91,1.74)	0.159		1.29(1.16,1.43)	<0.001	
	Model 2	338			3020			0.411
High			ref			ref		
Low			1.27(0.98,1.66)	0.075		1.26(1.15,1.38)	<0.001	
Median			1.06(0.77,1.47)	0.724		1.18(1.06,1.31)	0.002	
Smoking	Model 1	338			3020			<0.001
No, never			ref			ref		
Yes, regularly			9.95(7.01,14.13)	<0.001		1.97(1.79,2.16)	<0.001	
Yes, occasionally			5.54(3.25,9.45)	<0.001		1.53(1.28,1.84)	<0.001	
Yes, formerly			2.44(1.68,3.55)	<0.001		1.17(1.07,1.28)	.001	

	Model 2	338			3020			**<0.001**
No, never			ref			ref		
Yes, regularly			8.52(5.89,12.35)	<0.001		1.77(1.6,1.96)	<0.001	
Yes, occasionally			5.35(3.13,9.15)	<0.001		1.49(1.24,1.78)	<0.001	
Yes, formerly			2.34(1.61,3.41)	<0.001		1.13(1.03,1.24)	0.008	
History of diabetes	Model 1	338	0.74(0.41,1.35)	0.328	3020	2.54(2.25,2.87)	<0.001	<0.001
	Model 2	338	0.61(0.33,1.12)	0.112	3020	2.03(1.8,2.3)	<0.001	**<0.001**
Anti-hypertensive medication	Model 1	338	1.6(1.25,2.04)	<0.001	3020	1.67(1.54,1.81)	<0.001	0.726
	Model 2	338	1.5(1.16,1.95)	0.002	3020	1.3(1.2,1.42)	<0.001	0.312
Anti-lipid medication	Model 1	338	2.21(1.44,3.38)	<0.001	3020	1.68(1.42,1.98)	<0.001	0.249
	Model 2	338	1.9(1.23,2.92)	0.004	3020	1.39(1.18,1.65)	<0.001	0.207
Waist circumference	Model 1	338	1.19(1.04,1.36)	0.010	3020	1.28(1.23,1.34)	<0.001	0.309
	Model 2	338	1.05(0.91,1.21)	0.512	3020	1.09(1.04,1.14)	<0.001	0.609
Systolic blood pressure	Model 1	338	1.08(1.02,1.15)	0.005	3020	1.15(1.13,1.17)	<0.001	0.058
	Model 2	338	1.07(1.01,1.13)	0.027	3020	1.11(1.09,1.14)	<0.001	0.182
Diastolic blood pressure	Model 1	338	1.34(1.21,1.49)	<0.001	3020	1.19(1.15,1.24)	<0.001	0.035
	Model 2	338	1.34(1.21,1.49)	<0.001	3020	1.13(1.09,1.17)	<0.001	**0.002**
ApoA1	Model 1	338	0.11(0.06,0.2)	<0.001	3020	0.26(0.21,0.32)	<0.001	0.010
	Model 2	338	0.18(0.1,0.34)	<0.001	3020	0.39(0.31,0.49)	<0.001	**0.024**

ApoB	Model 1	338	5.25(3.24,8.52)	<0.001	3020	3.26(2.78,3.82)	<0.001	0.065
	Model 2	338	3.14(1.91,5.17)	<0.001	3020	2.28(1.94,2.67)	<0.001	0.224
ApoB/ApoA1 ratio	Model 1	338	6.74(4.54,10.01)	<0.001	3020	3.4(2.99,3.86)	<0.001	0.001
	Model 2	338	4.11(2.73,6.17)	<0.001	3020	2.4(2.1,2.74)	<0.001	**<0.001**
Total leukocyte count	Model 1	338	7.19(4.75,10.9)	<0.001	3020	2.66(2.31,3.08)	<0.001	<0.001
	Model 2	338	1.68(1.05,2.69)	0.030	3020	1.4(1.19,1.64)	<0.001	0.462
Neutrophil count	Model 1	338	4.42(3.18,6.16)	<0.001	3020	2.05(1.83,2.29)	<0.001	<0.001
	Model 2	338	1.67(1.16,2.4)	0.006	3020	1.36(1.2,1.53)	<0.001	0.290
Lymphocyte count	Model 1	338	2.63(1.87,3.7)	<0.001	3020	1.56(1.39,1.76)	<0.001	0.006
	Model 2	338	1.01(0.69,1.48)	0.948	3020	0.97(0.86,1.1)	0.646	0.836
Mixed cell count	Model 1	338	1.61(1.22,2.13)	0.001	3020	1.23(1.13,1.34)	<0.001	0.065
	Model 2	338	1.07(0.85,1.34)	0.592	3020	1.02(0.94,1.1)	0.606	0.729
NLR	Model 1	338	1.52(1.15,2.01)	0.003	3020	1.24(1.13,1.36)	<0.001	0.174
	Model 2	338	1.38(1.03,1.84)	0.029	3020	1.23(1.12,1.36)	<0.001	0.470

Model 1: adjusted for age and sex

Model 2: adjusted for age, sex, marriage status, education, smoking, diabetes, waist, systolic blood pressure, anti-hypertensive medication, ApoB/ApoA1 ratio, anti-lipid medication, and white blood cell count. ApoA1 and ApoB not adjusted for ApoB/ApoA1 ratio. Diastolic blood pressure not adjusted for systolic blood pressure. Differentiated leucocyte not adjusted for white blood cell count.

Diastolic blood pressure and systolic blood pressures were grouped by 10mmHg intervals; Waist circumference was grouped by quartile.

* A significant p-value indicates that the risk factor has different associations with AAA and CHD, respectively. The Lunn-McNeil method and log likelihood test were used to calculate the p-values (see methods for details).

Abbreviations: MDCS, Malmö Diet and Cancer study; AAA, abdominal aortic aneurysm; CHD, coronary heart disease; ApoA1, apolipoproteins A1; ApoB, apolipoproteins B; NLR, neutrophil to lymphocyte ratio.

Supplementary table 4. Comparison of risk factors for sAAA and non-sAAA.

MDCS (n=26688)		sAAA			Non-sAAA			p-value for equal associations *
		Incident	**HR (95%CI)**	p	**Incident**	**HR (95%CI)**	p	
Married	Model 1	134	1.09(0.73,1.61)	0.675	313	0.92(0.72,1.18)	0.519	0.483
	Model 2	134	1.32(0.89,1.95)	0.175	313	1.1(0.86,1.41)	0.455	0.448
Educational level	Model 1	134			313			0.772
High			ref			ref		
Low			1.65(1.09,2.49)	0.018		1.54(1.17,2.01)	0.002	
Median			1.26(0.76,2.11)	0.371		1.18(0.85,1.65)	0.318	
	Model 2	134			313			0.818
High			ref			ref		
Low			1.2(0.79,1.82)	0.395		1.14(0.87,1.49)	0.360	
Median			1.01(0.61,1.69)	0.966		0.98(0.7,1.36)	0.883	
Smoking	Model 1	134			313			0.280
No, never			ref			ref		
Yes, regularly			11.97(6.48,22.13)	<.001		10.14(7.05,14.58)	<.001	
Yes, occasionally			7.69(3.3,17.89)	<.001		4.5(2.49,8.14)	<.001	
Yes, formerly			2.66(1.38,5.12)	0.004		2.42(1.64,3.57)	<.001	

	Model 2	134			313			0.312
No, never			ref			ref		
Yes, regularly			9.51(4.99,18.12)	<.001		8.71(5.93,12.8)	<.001	
Yes, occasionally			7.1(3.04,16.62)	<.001		4.39(2.42,7.97)	<.001	
Yes, formerly			2.43(1.26,4.7)	0.008		2.33(1.57,3.44)	<.001	
History of diabetes	Model 1	134	1.17(0.55,2.51)	0.689	313	0.82(0.45,1.5)	0.514	0.479
	Model 2	134	0.91(0.42,1.97)	0.808	313	0.66(0.36,1.21)	0.180	0.529
Anti-hypertensive medication	Model 1	134	1.9(1.3,2.77)	0.001	313	1.64(1.27,2.12)	<.001	0.540
	Model 2	134	1.59(1.06,2.37)	0.025	313	1.48(1.14,1.94)	0.004	0.790
Anti-lipid medication	Model 1	134	3.42(1.96,5.98)	<.001	313	1.85(1.14,2.98)	0.012	0.105
	Model 2	134	2.72(1.54,4.83)	0.001	313	1.59(0.98,2.58)	0.062	0.163
Waist circumference	Model 1	134	1.28(1.02,1.59)	0.032	313	1.22(1.06,1.4)	0.005	0.739
	Model 2	134	1.11(0.88,1.4)	0.389	313	1.04(0.9,1.2)	0.601	0.652
Systolic blood pressure	Model 1	134	1.12(1.02,1.22)	0.014	313	1.13(1.07,1.2)	<.001	0.821
	Model 2	134	1.08(0.99,1.19)	0.086	313	1.11(1.05,1.18)	0.001	0.668
Diastolic blood pressure	Model 1	134	1.5(1.28,1.76)	<.001	313	1.36(1.22,1.51)	<.001	0.325
	Model 2	134	1.47(1.25,1.73)	<.001	313	1.35(1.21,1.5)	<.001	0.384
ApoA1	Model 1	134	0.15(0.06,0.4)	<.001	313	0.08(0.04,0.14)	<.001	0.224
	Model 2	134	0.3(0.11,0.83)	0.021	313	0.12(0.07,0.22)	<.001	0.127

ApoB	Model 1	134	6.69(3.09,14.49)	<.001	313	6.13(3.71,10.14)	<.001	0.854
	Model 2	134	3.56(1.61,7.88)	0.002	313	3.53(2.11,5.93)	<.001	0.975
ApoB/ApoA1 ratio	Model 1	134	6.99(3.73,13.1)	<.001	313	8.94(5.92,13.5)	<.001	0.519
	Model 2	134	3.62(1.91,6.88)	<.001	313	5.4(3.53,8.28)	<.001	0.309
Total leukocyte count	Model 1	134	11.09(5.83,21.1)	<.001	313	7.57(4.92,11.63)	<.001	0.333
	Model 2	134	2.52(1.2,5.3)	0.015	313	1.59(0.97,2.58)	0.065	0.308
Neutrophil count	Model 1	134	5.33(3.18,8.95)	<.001	313	4.66(3.31,6.56)	<.001	0.673
	Model 2	134	1.86(1.05,3.3)	0.034	313	1.64(1.13,2.39)	0.010	0.725
Lymphocyte count	Model 1	134	4.07(2.46,6.75)	<.001	313	2.67(1.87,3.82)	<.001	0.186
	Model 2	134	1.66(0.91,3.02)	0.102	313	0.94(0.63,1.4)	0.766	0.127
Mixed cell count	Model 1	134	2.12(1.34,3.35)	0.001	313	1.42(1.07,1.89)	0.015	0.145
	Model 2	134	1.26(0.83,1.9)	0.282	313	0.98(0.79,1.21)	0.860	0.284
NLR	Model 1	134	1.28(0.82,2)	0.275	313	1.58(1.18,2.1)	0.002	0.440
	Model 2	134	1.11(0.7,1.77)	0.647	313	1.43(1.06,1.93)	0.021	0.381

Model 1: adjusted for age and sex

Model 2: adjusted for age, sex, marriage status, education, smoking, diabetes, waist, systolic blood pressure, anti-hypertensive medication, ApoB/ApoA1 ratio, anti-lipid medication and white blood cell count. ApoA1 and ApoB not adjusted for ApoB/ApoA1 ratio. Diastolic blood pressure not adjusted for systolic blood pressure. Differentiated leucocyte not adjusted for white blood cell count.

Diastolic blood pressure and systolic blood pressures were grouped by 10 mmHg intervals; Waist circumference was grouped by quartile.

* A significant p-value indicates that the risk factor has different associations with sAAA and non-sAAA, respectively. The Lunn-McNeil method and log likelihood test were used to calculate the p-values (see methods for details).

Abbreviations: MDCS, Malmö Diet and Cancer study; sAAA, severe AAA; ApoA1, apolipoproteins A1; ApoB, apolipoproteins B; NLR, neutrophil to lymphocyte ratio. Severe AAA was defined as a (1) AAA as underlying or primary cause of death, or (2) surgery for AAA within 60 days after first diagnosis, or (3) ruptured AAA.