

SUPPLEMENTAL MATERIAL

Table S1. Distributions of Ischemic Stroke Severity or Subtype by Composite BMI Category (18.5-<25 or ≥25)

	Interaction by composite BMI p-value	BMI 18.5-<25 n (%)	BMI ≥25 n (%)
Stroke severity	0.215		
None, no deficit		41 (21.5)	95 (21.0)
Mild		69 (36.1)	177 (39.2)
Moderate		43 (22.5)	109 (24.1)
Severe		37 (19.4)	65 (14.4)
Fatal		1 (0.5)	6 (1.3)
Stroke subtype	0.719		
Cardioembolic		63 (31.2)	119 (25.0)
Lacunar (ABI)		23 (11.4)	64 (13.5)
ABI (non-lacunar)		116 (57.4)	292 (61.5)

Abbreviations: BMI=body mass index. ABI=atherothrombotic brain infarction.

Table S2. Causes of 10-Year Mortality for Ischemic Stroke Cases, All Stroke Cases, and Controls, by BMI Category

	Cause of death		
	CVD	Cancer	Other
Ischemic stroke cases, n	228	49	105
Proportion of ischemic stroke cases (%)	59.7	12.8	27.5
BMI category*, n (%)			
Normal weight	74 (32.5)	14 (28.6)	42 (40.0)
Overweight	96 (42.1)	21 (42.5)	37 (35.2)
Obese	58 (25.4)	14 (28.6)	26 (24.8)
All stroke cases, n	337	58	129
Proportion of all stroke cases (%)	64.3	11.1	24.6
BMI category (%)			
Normal weight	111 (32.9)	16 (27.6)	51 (39.5)
Overweight	147 (43.6)	27 (46.6)	49 (38.0)
Obese	79 (23.4)	15 (25.9)	29 (22.5)
Controls, n	362	234	383
Proportion of controls (%)	37.0	23.9	39.1
BMI category (%)			
Normal weight	109 (30.1)	63 (26.9)	144 (37.6)
Overweight	163 (45.0)	109 (46.6)	161 (42.0)
Obese	90 (24.9)	62 (26.5)	78 (20.4)

Abbreviations: CVD=cardiovascular disease. BMI=body mass index.

*Normal weight=BMI 18.5-<25. Overweight=BMI 25-<30. Obese=BMI \geq 30.

Table S3. Mortality by BMI or BMI Category among All Stroke Cases and Controls, Model 1*

	Case-control interaction	All stroke cases			Controls		
		439/664 (66.1)			824/1919 (42.9)		
Mortality (%)	p-value	10-yr cumulative hazard (95% CI)	10-yr HR (95% CI)	p-value	10-yr cumulative hazard (95% CI)	10-yr HR (95% CI)	p-value
LBMI	0.307	n/a	0.61 (0.32,1.17)	0.136	n/a	0.87 (0.53,1.41)	0.565
BMI category [†]	0.279						
Normal weight		1.36 (1.14,1.61)	1.0		0.53 (0.46,0.67)	1.0	
Overweight		1.03 (0.88,1.20)	0.76 (0.61,0.95)	0.015	0.46 (0.41,0.52)	0.88 (0.75,1.04)	0.123
Obese		1.14 (0.94,1.39)	0.84 (0.65,1.09)	0.189	0.55 (0.47,0.64)	1.04 (0.86,1.26)	0.669
Composite BMI	0.130						
18.5-<25		1.36 (1.14,1.62)	1.0		0.53 (0.47,0.60)	1.0	
≥25		1.07 (0.94,1.21)	0.79 (0.64,0.97)	0.022	0.49 (0.45,0.54)	0.93 (0.80,1.08)	0.342
BMI subcategory [†]	0.294						
Normal weight		1.36 (1.14,1.62)	1.0		0.61 (0.49,0.75)	1.0	
Low overweight		1.04 (0.85,1.27)	0.76 (0.59,0.99)	0.038	0.51 (0.41,0.62)	0.95 (0.79,1.13)	0.531
High overweight		1.01 (0.80,1.28)	0.74 (0.56,0.99)	0.043	0.41 (0.34,0.49)	0.78 (0.63,0.96)	0.022
Low obesity		0.94 (0.70,1.25)	0.69 (0.50,0.96)	0.027	0.50 (0.43,0.57)	0.96 (0.76,1.21)	0.738
High Obesity		1.41 (1.08,1.85)	1.04 (0.76,1.42)	0.824	0.53 (0.46,0.60)	1.15 (0.90,1.47)	0.264

Abbreviations: BMI=body mass index. HR=hazard ratio. CI=confidence interval. LBMI=natural log-transformed body mass index.

*Adjusted for age, sex, time between exam and event date, education, marital status, and smoking.

[†]Normal weight=BMI 18.5-<25. Overweight=BMI 25-<30. Obese=BMI ≥30. Low overweight=BMI 25-<27.5. High overweight=BMI 27.5-<30. Low obesity=BMI 30-<32.5. High obesity=BMI ≥32.5.

Table S4. Mortality by BMI or BMI Category among Ischemic Stroke Cases and Controls, Model 2*

Mortality (%)	Ischemic stroke cases		Controls	
	304/484 (62.8)		580/1396 (41.5)	
	HR (95% CI)	p-value	HR (95% CI)	p-value
LBMI	0.89 (0.40,1.97)	0.769	0.75 (0.41,1.34)	0.326
BMI category [†]				
Normal weight	1.0		1.0	
Overweight	0.77 (0.58,1.01)	0.057	0.93 (0.77,1.14)	0.491
Obese	0.91 (0.66,1.25)	0.545	1.02 (0.81,1.28)	0.896
Composite BMI				
18.5-<25	1.0		1.0	
≥25	0.81 (0.63,1.05)	0.106	0.96 (0.80,1.15)	0.653
BMI subcategory				
Normal weight	1.0		1.0	
Low overweight	0.77 (0.57,1.05)	0.093	1.03 (0.83,1.28)	0.093
High overweight	0.76 (0.53,1.08)	0.120	0.79 (0.61,1.02)	0.069
Low obesity	0.66 (0.43,0.99)	0.047	0.93 (0.70,1.23)	0.619
High obesity	1.27 (0.87,1.85)	0.222	1.13 (0.84,1.52)	0.432

Abbreviations: BMI=body mass index. HR=Hazard Ratio. CI=confidence interval. LBMI=natural log-transformed body mass index.

*Adjusted for age, sex, time between exam and event date, education, marital status, smoking, systolic blood pressure, diabetes mellitus, atrial fibrillation, heart failure, coronary heart disease, prevalent cancer, and dementia.

[†]Normal weight=BMI 18.5-<25. Overweight=BMI 25-<30. Obese=BMI ≥30. Low overweight=BMI 25-<27.5. High overweight=BMI 27.5-<30. Low obesity=BMI 30-<32.5. High obesity=BMI ≥32.5.

Table S5. Mortality by BMI or BMI Category among Ischemic Stroke Cases and Controls, Excluding Participants with Weight Loss from the Normal Weight Group*

Mortality (%)	Case-control interaction	Ischemic stroke cases			Controls		
		241/343 (70.3)			440/972 (45.3)		
	p-value	10-yr cumulative hazard (95% CI)	10-yr HR (95% CI)	p-value	10-yr cumulative hazard (95% CI)	10-yr HR (95% CI)	p-value
LBMI	0.731	n/a	0.71 (0.29,1.73)	0.451	n/a	0.80 (0.42,1.53)	0.502
BMI category [†]	0.579						
Stable normal weight		1.53 (1.20,1.95)	1.0		0.56 (0.47,0.67)	1.0	
Overweight		1.11 (0.90,1.37)	0.72 (0.53,0.99)	0.041	0.55 (0.48,0.64)	0.99 (0.79,1.24)	0.923
Obese		1.27 (0.96,1.66)	0.83 (0.58,1.19)	0.308	0.58 (0.47,0.72)	1.04 (0.79,1.37)	0.771
Composite BMI	0.350						
18.5-<25		1.53 (1.20,1.95)	1.0		0.56 (0.47,0.67)	1.0	
≥25		1.16 (0.98,1.38)	0.76 (0.57,1.01)	0.058	0.56 (0.50,0.64)	1.01 (0.82,1.24)	0.965
BMI subcategory [†]	0.101						
Stable normal weight		1.52 (1.20,1.95)	1.0		0.56 (0.47,0.67)	1.0	
Low overweight		1.02 (0.78,1.34)	0.67 (0.47,0.95)	0.025	0.63 (0.52,0.75)	1.12 (0.88,1.43)	0.356
High overweight		1.23 (0.91,1.65)	0.81 (0.55,1.18)	0.261	0.44 (0.34,0.57)	0.79 (0.59,1.07)	0.123
Low obesity		0.92 (0.59,1.42)	0.60 (0.37,0.99)	0.044	0.48 (0.34,0.66)	0.85 (0.59,1.23)	0.398
High Obesity		1.64 (1.16,2.32)	1.08 (0.71,1.63)	0.731	0.69 (0.52,0.90)	1.23 (0.89,1.70)	0.213

Abbreviations: BMI=body mass index. HR=hazard ratio. CI=confidence interval. LBMI=natural log-transformed body mass index.

*Sensitivity analysis adjusted for age, sex, time between exam and event date, education, marital status, and smoking.

[†]Stable normal weight=BMI 18.5-<25 on two exams within 5-10 years. Overweight=BMI 25-<30. Obese=BMI ≥30. Low overweight=BMI 25-<27.5. High overweight=BMI 27.5-<30. Low obesity=BMI 30-<32.5. High obesity=BMI ≥32.5.

Table S6. Mortality by BMI or BMI Category among All Stroke Cases and Controls, Excluding Participants with Weight Loss from the Normal Weight Group*

Mortality (%)	Case-control interaction	All stroke cases			Controls		
		316/458 (69.0)			591/1304 (45.3)		
	p-value	10-yr cumulative hazard (95% CI)	10-yr HR (95% CI)	p-value	10-yr cumulative hazard (95% CI)	10-yr HR (95% CI)	p-value
LBMI	0.701	n/a	0.65 (0.30,1.41)	0.271	n/a	0.97 (0.55,1.72)	0.919
BMI category [†]	0.611						
Stable normal weight		1.39 (1.11,1.73)	1.0		0.54 (0.46,0.64)	1.0	
Overweight		1.09 (0.91,1.31)	0.79 (0.60,1.04)	0.091	0.55 (0.49,0.63)	1.02 (0.84,1.24)	0.871
Obese		1.21 (0.96,1.53)	0.87 (0.64,1.20)	0.405	0.58 (0.49,0.69)	1.06 (0.84,1.35)	0.601
Composite BMI	0.351						
18.5-<25		1.39 (1.11,1.74)	1.0		0.55 (0.46,0.64)	1.0	
≥25		1.13 (0.98,1.31)	0.82 (0.63,1.06)	0.124	0.56 (0.51,0.63)	1.03 (0.86,1.24)	0.745
BMI subcategory	0.718						
Stable normal weight		1.39 (1.11,1.74)	1.0		0.55 (0.46,0.64)	1.0	
Low overweight		1.10 (0.88,1.37)	0.79 (0.58,1.07)	0.130	0.59 (0.50,0.68)	1.07 (0.87,1.33)	0.511
High overweight		1.08 (0.83,1.41)	0.78 (0.55,1.10)	0.152	0.50 (0.41,0.61)	0.92 (0.71,1.18)	0.501
Low obesity		1.09 (0.80,1.50)	0.79 (0.53,1.16)	0.219	0.53 (0.42,0.67)	0.97 (0.74,1.29)	0.852
High obesity		1.38 (0.99,1.91)	0.99 (0.67,1.46)	0.957	0.65 (0.51,0.85)	1.20 (0.89,1.62)	0.239

Abbreviations: BMI=body mass index. HR=hazard ratio. CI=confidence interval. LBMI=natural log-transformed body mass index.

*Sensitivity analysis adjusted for age, sex, time between exam and event date, education, marital status, and smoking.

[†]Stable normal weight=BMI 18.5-<25 on two exams within 5-10 years. Overweight=BMI 25-<30. Obese=BMI ≥30. Low overweight=BMI 25-<27.5. High overweight=BMI 27.5-<30. Low obesity=BMI 30-<32.5. High obesity=BMI ≥32.5.

Table S7. One Year Mortality by BMI or BMI Category among Ischemic Stroke Cases and Controls*

Mortality (%)	Ischemic stroke cases		Controls	
	125/579 (21.5)		61/1649 (3.7)	
	HR (95% CI)	p-value	HR (95% CI)	p-value
LBMI	1.09 (0.35-3.44)	0.884	0.45 (0.080,2.53)	0.363
BMI category [†]				
Normal weight	1.0		1.0	
Overweight	0.78 (0.51,1.21)	0.270	0.99 (0.55,1.75)	0.960
Obese	0.99 (0.62,1.60)	0.981	0.80 (0.38,1.69)	0.558
Composite BMI				
18.5-<25	1.0		1.0	
≥25	0.86 (0.58,1.27)	0.446	0.93 (0.54,1.60)	0.785
BMI subcategory				
Normal weight	1.0		1.0	
Low overweight	0.79 (0.48,1.30)	0.359	1.06 (0.57,1.99)	0.845
High overweight	0.77 (0.45,1.34)	0.359	0.85 (0.38,1.87)	0.675
Low obesity	0.83 (0.45,1.52)	0.548	0.81 (0.33,2.04)	0.661
High obesity	1.19 (0.67,2.10)	0.556	0.78 (0.29,2.10)	0.623

Abbreviations: BMI=body mass index. HR=hazard ratio. CI=confidence interval. LBMI=natural log-transformed body mass index.

*Adjusted for age, sex, time between exam and event date, education, marital status, and smoking.

[†]Normal weight=BMI 18.5-<25. Overweight=BMI 25-<30. Obese=BMI ≥30. Low overweight=BMI 25-<27.5. High overweight=BMI 27.5-<30. Low obesity=BMI 30-<32.5. High obesity=BMI ≥32.5

Figure S1. Selection of study participants; Abbreviations: FHS=Framingham Heart Study. BMI=body mass index.

