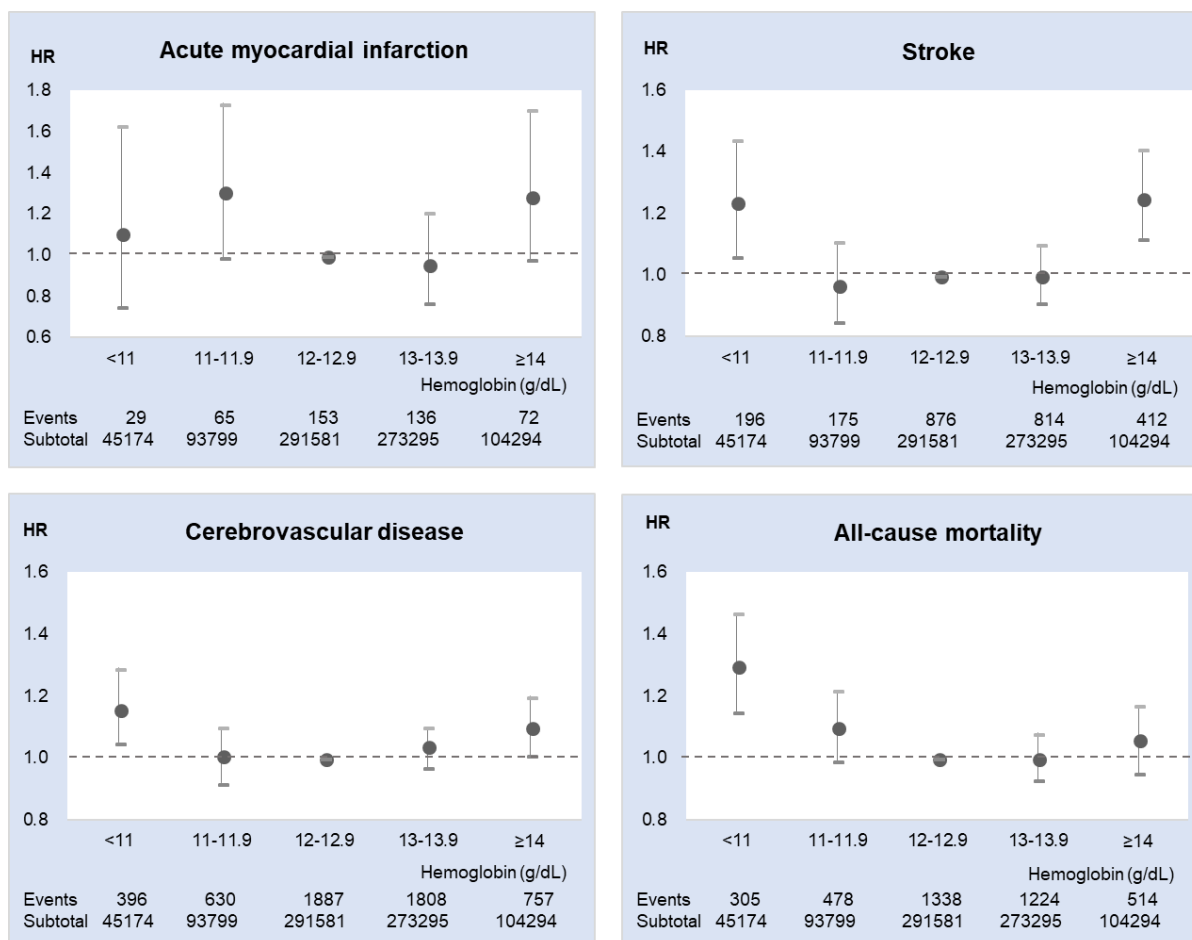


Supplemental Material

Figure S1. Association of hemoglobin concentration (as a categorical variable) with cardiovascular risks and all-cause mortality after 10-year follow-up among young women.



HR, Hazard ratio

Hazard ratio analyzed by Cox proportional hazards regression analysis adjusted for age, socioeconomic status, physical activity, smoking, alcohol, body mass index, blood pressure, fasting plasma glucose, total cholesterol, and Charlson comorbidity index (95% confidence interval).

Table S1. Subgroup analysis of association between hemoglobin concentration and cardiovascular risks and all-cause mortality stratified by body mass index and the Charlson comorbidity index status.

Hb concentration (g/dL)	<11.0	11-11.9	12-12.9	13-13.9	≥14.0
Risk of acute myocardial infarction					
BMI (kg/m ²): <18.5 (N)	4,407	10,381	35,668	35,857	14,941
Events (n)	5	5	11	11	8
Adjusted HR	3.18	1.50	1.00	1.05	1.84
95% CI	1.10-9.22	0.52-4.31	reference	0.45-2.42	0.73-4.59
BMI: 18.5-22.9 (N)	23,087	50,412	155,934	141,501	51,102
Events (n)	12	26	68	55	22
Adjusted HR	1.05	1.16	1.00	0.91	1.01
95% CI	0.57-1.95	0.74-1.82	reference	0.64-1.31	0.62-1.64
BMI: ≥23.0 (N)	17,680	33,006	99,979	95,937	38,251
Events (n)	12	34	74	70	42
Adjusted HR	0.84	1.38	1.00	0.98	1.41
95% CI	0.46-1.54	0.92-2.07	reference	0.71-1.36	0.96-2.06
CCI=0 (N)	21,039	42,994	135,661	128,946	49,417
Events (n)	13	20	58	46	25
Adjusted HR	1.26	1.07	1.00	0.84	1.16
95% CI	0.69-2.31	0.64-1.77	reference	0.57-1.24	0.72-1.86
CCI≥1 (N)	24,135	50,805	155,920	144,349	54,877
Events (n)	16	45	95	90	47
Adjusted HR	0.95	1.41	1.00	1.02	1.35
95% CI	0.56-1.62	0.99-2.02	reference	0.77-1.37	0.95-1.92
Risk of stroke					
BMI (kg/m ²): <18.5 (N)	4,407	10,381	35,668	35,857	14,941
Events (n)	11	20	60	60	23
Adjusted HR	1.25	1.10	1.00	1.01	0.95
95% CI	0.65-2.37	0.66-1.83	reference	0.71-1.44	0.59-1.54
BMI: 18.5-22.9 (N)	23,087	50,412	155,934	141,501	51,102
Events (n)	78	132	389	327	145
Adjusted HR	1.15	1.02	1.00	0.93	1.11
95% CI	0.90-1.46	0.84-1.24	reference	0.80-1.08	0.91-1.34
BMI: ≥23.0 (N)	17,680	33,006	99,979	95,937	38,251
Events (n)	107	123	427	427	244
Adjusted HR	1.26	0.87	1.00	1.00	1.47
95% CI	1.02-1.56	0.71-1.07	reference	0.88-1.15	1.14-1.57
CCI=0 (N)	21,039	42,994	135,661	128,946	49,417
Events (n)	79	111	306	285	154
Adjusted HR	1.38	1.12	1.00	0.96	1.29
95% CI	1.08-1.77	0.90-1.40	reference	0.82-1.13	1.06-1.57
CCI≥1 (N)	24,135	50,805	155,920	144,349	54,877
Events (n)	117	164	570	529	258
Adjusted HR	1.13	0.86	1.00	0.97	1.17
95% CI	0.93-1.38	0.73-1.03	reference	0.87-1.10	1.01-1.35
Risk of cerebrovascular disease					
BMI (kg/m ²): <18.5 (N)	4,407	10,381	35,668	35,857	14,941
Events (n)	23	47	123	126	48
Adjusted HR	1.30	1.25	1.00	1.03	0.98
95% CI	0.84-2.01	0.90-1.74	reference	0.80-1.32	0.70-1.37
BMI: 18.5-22.9 (N)	23,087	50,412	155,934	141,501	51,102
Events (n)	151	294	840	740	277
Adjusted HR	1.05	1.04	1.00	0.99	1.02
95% CI	0.89-1.25	0.91-1.19	reference	0.89-1.09	0.90-1.17
BMI: ≥23.0 (N)	17,680	33,006	99,979	95,937	38,251
Events (n)	222	289	924	942	432
Adjusted HR	1.20	0.94	1.00	1.07	1.17

95% CI	1.04-1.39	0.83-1.07	reference	0.98-1.17	1.04-1.31
CCI=0 (N)	21,039	42,994	135,661	128,946	49,417
Events (n)	148	204	643	609	248
Adjusted HR	1.25	0.98	1.00	0.99	1.05
95% CI	1.05-1.49	0.84-1.15	reference	0.89-1.11	0.91-1.21
CCI≥1 (N)	24,135	50,805	155,920	144,349	54,877
Events (n)	248	426	1,244	1,199	509
Adjusted HR	1.12	1.02	1.00	1.05	1.11
95% CI	0.98-1.28	0.92-1.14	reference	0.97-1.14	0.99-1.23
All-cause mortality					
BMI (kg/m ²): <18.5 (N)	4,407	10,381	35,668	35,857	14,941
Events (n)	28	50	145	134	55
Adjusted HR	1.30	1.21	1.00	0.97	0.97
95% CI	0.87-1.95	0.89-1.65	reference	0.77-1.23	0.72-1.32
BMI: 18.5-22.9 (N)	23,087	50,412	155,934	141,501	51,102
Events (n)	147	228	647	583	214
Adjusted HR	1.40	1.08	1.00	1.01	1.04
95% CI	1.17-1.67	0.93-1.25	reference	0.90-1.13	0.89-1.21
BMI: ≥23.0 (N)	17,680	33,006	99,979	95,937	38,251
Events (n)	130	200	546	527	245
Adjusted HR	1.25	1.11	1.00	1.01	1.11
95% CI	1.03-1.51	0.94-1.30	reference	0.90-1.14	0.95-1.29
CCI=0 (N)	21,039	42,994	135,661	128,946	49,417
Events (n)	121	191	546	524	206
Adjusted HR	1.25	1.11	1.00	1.00	1.00
95% CI	1.03-1.52	0.94-1.30	reference	0.89-1.13	0.85-1.17
CCI≥1 (N)	24,135	50,805	155,920	144,349	54,877
Events (n)	184	287	792	720	308
Adjusted HR	1.34	1.10	1.00	1.01	1.09
95% CI	1.14-1.56	0.96-1.25	reference	0.91-1.11	0.95-1.24

HR, hazard ratio; CI, confidence interval; BMI, body mass index; CCI, Charlson Comorbidity index.

Hazard ratio calculated by Cox proportional hazards regression analysis adjusted for age, socioeconomic status, physical activity, smoking status, alcohol habit, body mass index, blood pressure, fasting serum glucose, total cholesterol

Table S2. Sensitivity analysis of association between hemoglobin concentration and cardiovascular risks and all-cause mortality excluding women with cancer.

Hb concentration (g/dL)	<11.0	11.0-11.9	12.0-12.9	13.0-13.9	≥14.0
Patients without cancer, N	44,040	91,876	286,110	268,503	102,504
Risk of AMI, n	27	65	147	130	72
Adjusted HR	1.09	1.34	1.00	0.96	1.31
95% CI	0.73-1.63	0.99-1.79	reference	0.76-1.22	0.99-1.75
Risk of stroke, n	189	268	837	793	399
Adjusted HR	1.25	0.99	1.00	1.02	1.22
95% CI	1.07-1.46	0.86-1.13	reference	0.92-1.12	1.09-1.38
Risk of CeVD, n	378	612	1,811	1,762	729
Adjusted HR	1.15	1.02	1.00	1.05	1.08
95% CI	1.02-1.28	0.93-1.12	reference	0.98-1.12	0.99-1.18
All-cause mortality, n	20	433	1,223	1,150	481
Adjusted HR	1.30	1.10	1.00	1.01	1.07
95% CI	1.14-1.48	0.99-1.23	reference	0.93-1.10	0.97-1.19

Hb, hemoglobin; AMI, acute myocardial infarction; CeVD, cerebrovascular disease.

Table S3. Sensitivity analysis of association between hemoglobin concentration and cardiovascular risks and all-cause mortality excluding women with chronic kidney disease.

Hb concentration (g/dL)	<11.0	11.0-11.9	12.0-12.9	13.0-13.9	≥14.0
Patients without CKD, N	45,023	93,617	291,114	272,934	104,128
Risk of AMI, n	29	65	153	134	72
Adjusted HR	1.11	1.32	1.00	0.95	1.29
95% CI	0.76-1.64	0.99-1.75	reference	0.76-1.19	0.98-1.71
Risk of stroke, n	195	274	874	812	411
Adjusted HR	1.24	0.97	1.00	1.00	1.21
95% CI	1.06-1.44	0.85-1.11	reference	0.91-1.10	1.08-1.36
Risk of CeVD, n	395	628	1,882	1,805	755
Adjusted HR	1.17	1.01	1.00	1.04	1.08
95% CI	1.05-1.30	0.92-1.10	reference	0.97-1.11	0.99-1.17
All-cause mortality, n	301	472	1,334	1,243	514
Adjusted HR	1.29	1.09	1.00	1.01	1.06
95% CI	1.14-1.46	0.99-1.21	reference	0.93-1.09	0.96-1.17

Hb, hemoglobin; CKD, chronic kidney disease; AMI, acute myocardial infarction; CeVD, cerebrovascular disease.