



Supplementary Fig. 1. Flow diagram of subject inclusion and exclusion in the Korea National Health and Nutrition Examination Surveys (KNHANES IV and V). Of 37,753 subjects, 9,444 were finally included (4,104 men and 5,340 women). ASCVD, atherosclerotic cardiovascular disease; ACC/AHA, American College of Cardiology/American Heart Association.

Supplementary Table 1. 10-Year Atherosclerotic Cardiovascular Disease Risk Estimation

	Male			Female		
	Coefficient	Individual example value	Coefficient ×value	Coefficient	Individual example value	Coefficient ×value
Log age, yr	12.344	4.01	49.47	-29.799	4.01	-119.41
Log age, squared				4.884	16.06	78.44
Log TC, mg/dL	11.853	5.36	63.55	13.540	5.36	72.59
Log age×log TC	-2.664	21.48	-57.24	-3.114	21.48	-66.91
Log HDL-C, mg/dL	-7.990	3.91	-31.26	-13.578	3.91	-53.12
Log age×log HDL-C	1.769	15.68	27.73	3.149	15.68	49.37
Log treated SBP, mm Hg	1.97	-	-	2.019	-	-
Log age×log treated SBP				NA	NA	NA
Log untreated SBP, mm Hg	1.764	4.79	8.45	1.957	4.79	9.37
Log age×log untreated SBP				NA	NA	NA
Current smoker (1=yes, 0=no)	7.837	0	0	7.574	0	0
Log age×current smoker	-1.795	0	0	-1.665	0	0
Diabetes (1=yes, 0=no)	0.658	0	0	0.661	0	0
Individual sum			60.69			-29.67
Mean (coefficient×value)	NA	NA	61.18	NA	NA	-29.18
Baseline survival	NA	NA	0.9144	NA	NA	0.9665

TC, total cholesterol; HDL-C, high density lipoprotein cholesterol; SBP, systolic blood pressure; NA, not available.

Supplementary Table 2. Baseline Characteristics

Variable	Subjects without MAFLD (n=5,852, 62.0%)	Subjects with MAFLD (n=3,592, 38.0%)		p-value
		No significant liver fibrosis by NFS (n=2,772, 29.4%)	Significant liver fibrosis by NFS (n=820, 8.7%)	
Demographic variables				
Age, yr	46.6±15.6	49.2±13.7 [#]	64.5±9.9 ^{#,**}	<0.001
Male gender	1,984 (33.9)	1,649 (59.5) [#]	471 (57.4) [#]	<0.001
Waist circumference, cm	75.9±7.3	89.0±7.1 [#]	91.5±7.2 [#]	<0.001
Body mass index, kg/m ²	22.0±2.4	26.1±2.7 [#]	26.5±3.1 ^{#,**}	<0.001
Appendicular skeletal muscle mass, kg	17.4±4.3	21.3±5.2	20.1±4.7	<0.001
Sarcopenia*	797 (13.6)	740 (26.7) [#]	358 (42.7) ^{#,**}	<0.001
ASCVD risk score [†]	5.3±9.6	7.2±8.7 [#]	19.3±14.7 ^{#,**}	<0.001
Systolic blood pressure, mm Hg	114.9±17.0	122.6±16.3 [#]	130.7±17.0 ^{#,**}	<0.001
Diastolic blood pressure, mm Hg	73.5±10.2	79.9±11.1 [#]	79.5±10.0 [#]	<0.001
Hypertension	1,473 (25.2)	1,045 (37.7) [#]	516 (62.9) ^{#,**}	<0.001
Metabolic syndrome	677 (11.6)	1,525 (55.0) [#]	672 (82.1) ^{#,**}	<0.001
Diabetes	327 (5.6)	321 (11.6) [#]	270 (32.9) ^{#,**}	<0.001
Current smoker	962 (16.4)	842 (30.4) [#]	148 (18.0) ^{**}	<0.001
Central obesity [‡]	1,016 (17.4)	1,722 (62.1) [#]	604 (73.7) ^{#,**}	<0.001
Overweight [§]	1,922 (32.8)	2,507 (90.4) [#]	741 (90.4) [#]	<0.001
Exercise	886 (15.1)	502 (18.1) [#]	133 (16.2)	0.013
Heavy alcohol drink	705 (12.0)	642 (23.2) [#]	168 (20.5) [#]	<0.001
Laboratory variables				
Fasting blood glucose, mg/dL	93.2±17.2	101.3±23.1 [#]	115.7±31.3 ^{#,**}	<0.001
Insulin, μIU/mL [¶]	8.9±3.6	11.4±5.0 [#]	12.4±6.4 ^{#,**}	<0.001
Homeostatic model assessment of insulin resistance [¶]	2.1±1.0	2.9±1.6 [#]	3.6±2.2 [#]	<0.001
Total cholesterol, mg/dL	181.3±33.2	201.6±37.2 [#]	193.2±38.1 [#]	<0.001
Triglyceride, mg/dL [¶]	92.7±47.0	200.3±137.3 [#]	197.1±154.1 [#]	<0.001
High density lipoprotein cholesterol, mg/dL [¶]	55.7±12.6	47.3±10.6 [#]	46.7±11.6 [#]	<0.001
Low density lipoprotein cholesterol, mg/dL [¶]	111.1±30.0	122.0±34.3 [#]	115.0±33.7 ^{**}	<0.001
Serum creatinine, mg/dL	0.8±0.2	0.9±0.2 [#]	0.9±0.2 ^{#,**}	<0.001
Estimated glomerular filtration rate, mL/min/1.73 m ²	96.9±17.5	92.4±16.2 [#]	80.2±16.7 ^{#,**}	<0.001
Aspartate aminotransferase, IU/L [¶]	20.0±8.5	25.3±16.1 [#]	29.8±25.7 ^{#,**}	<0.001
Alanine aminotransferase, IU/L [¶]	16.8±10.0	30.1±26.1 [#]	25.9±17.7 [#]	<0.001
Platelet count, 10 ⁹ /L [¶]	254.2±57.6	271.0±54.4	212.7±45.5 ^{#,**}	<0.001
Gamma glutamyl-transpeptidase, IU/L [¶]	21.5±30.0	55.2±59.9 [#]	60.8±83.4 [#]	<0.001
Liver fibrosis and steatosis				
NAFLD fibrosis score	0.3±1.2	0.5±1.0 [#]	2.7±0.7 ^{#,**}	<0.001
Fibrosis-4 index	1.0±0.7	0.9±0.4 [#]	2.0±1.5 ^{#,**}	<0.001
Fatty liver index	12.4±9.0	55.3±17.8 [#]	57.7±18.5 ^{#,**}	<0.001

Data are presented as mean±SD or number (%).

MAFLD, metabolic dysfunction-associated fatty liver disease; NFS, nonalcoholic fatty liver disease fibrosis score; ASCVD, atherosclerotic cardiovascular disease; NAFLD, nonalcoholic fatty liver disease.

*Sarcopenia was defined as the lowest quintile for sex-specific sarcopenia index; [†]ASCVD risk score was calculated using the 10-year ASCVD risk score from the 2013 American College of Cardiology/American Heart Association guideline; [‡]Central obesity was defined waist circumference ≥90 cm in men, ≥80 cm in women; [§]Overweight was defined body mass index ≥23 kg/m²; ^{||}Heavy drink was defined as those whose alcohol consumption exceeded 140 g/week for men and 70 g/week for women; [¶]Log-transformed; [#]p<0.05 by *post hoc* analyses when compared without MAFLD; ^{**}p<0.05 by *post hoc* analyses when compared with MAFLD, without significant liver fibrosis.

Supplementary Table 3. Baseline Characteristics in Propensity Score Matching

Variable	Subjects without MAFLD (n=549, 33.3%)	Subjects with MAFLD (n=1,098, 38.0%)		p-value
		No significant liver fibrosis by FIB-4 (n=549, 33.3%)	Significant liver fibrosis by FIB-4 (n=549, 33.3%)	
Demographic variables				
Age, yr	60.2±8.0	60.2±8.0	60.2±8.0	>0.999
Male gender	307 (55.9)	307 (55.9)	307 (55.9)	>0.999
Waist circumference, cm	77.2±6.8	90.0±7.1 [#]	89.7±7.3 [#]	<0.001
Body mass index, kg/m ²	21.8±2.2	25.9±2.4 [#]	25.9±2.8 [#]	<0.001
Appendicular skeletal muscle mass, kg	18.4±4.6	19.9±4.8 [#]	20.1±4.6 ^{#,**}	<0.001
Sarcopenia*	84 (15.3)	216 (39.3) [#]	184 (33.5) [#]	<0.001
ASCVD risk score [†]	5.9±4.2	10.7±9.7 [#]	13.7±11.0 ^{#,**}	<0.001
Systolic blood pressure, mm Hg	112.5±12.8	123.4±15.8 [#]	130.3±17.6 ^{#,**}	<0.001
Diastolic blood pressure, mm Hg	72.1±9.3	77.6±9.8 [#]	81.0±10.5 ^{#,**}	<0.001
Hypertension	88 (16.0)	283 (51.5) [#]	395 (71.9) ^{#,**}	<0.001
Metabolic syndrome	27 (4.9)	324 (59.0) [#]	403 (73.4) ^{#,**}	<0.001
Diabetes	11 (2.0)	66 (12.0) [#]	143 (26.0) ^{#,**}	<0.001
Current smoker	51 (9.3)	73 (13.3) [#]	130 (23.7) ^{**}	<0.001
Central obesity [‡]	65 (11.8)	386 (70.3) [#]	361 (65.8) [#]	<0.001
Overweight [§]	144 (26.2)	494 (90.0) [#]	473 (86.2) [#]	<0.001
Exercise	92 (16.8)	99 (18.0)	109 (19.9)	0.184
Heavy alcohol drink	64 (11.7)	90 (16.4) [#]	136 (24.8) [#]	<0.001
Laboratory variables				
Fasting blood glucose, mg/dL	92.7±9.9	103.5±22.6 [#]	109.0±26.6 ^{#,**}	<0.001
Insulin, μIU/mL [¶]	7.9±2.7	11.0±5.1 [#]	11.5±4.9 ^{#,**}	<0.001
Homeostatic model assessment of insulin resistance [¶]	1.8±0.7	2.9±1.7 [#]	3.1±1.7 [#]	<0.001
Total cholesterol, mg/dL	180.7±32.3	201.2±36.0 [#]	196.0±39.8 [#]	<0.001
Triglyceride, mg/dL [¶]	93.0±52.4	173.0±90.9 [#]	224.6±214.9 [#]	<0.001
High density lipoprotein cholesterol, mg/dL [¶]	57.2±13.4	49.0±10.8 [#]	46.8±10.5 ^{#,**}	<0.001
Low density lipoprotein cholesterol, mg/dL [¶]	109.1±28.8	120.5±35.0	114.3±32.3 ^{**}	<0.001
Serum creatinine, mg/dL	0.8±0.2	0.9±0.2 [#]	0.9±0.2 ^{#,**}	0.038
Estimated glomerular filtration rate, mL/min/1.73 m ²	87.2±12.1	85.1±13.9 [#]	85.2±14.4 ^{#,**}	0.015
Aspartate aminotransferase, IU/L [¶]	23.9±11.3	22.4±11.3	37.3±37.9 ^{#,**}	<0.001
Alanine aminotransferase, IU/L [¶]	19.2±10.3	22.4±7.3 [#]	37.3±37.9 ^{#,**}	<0.001
Platelet count, 10 ⁹ /L [¶]	235.8±54.8	260.2±50.9	203.7±46.0 ^{#,**}	<0.001
Gamma glutamyl-transpeptidase, IU/L [¶]	26.9±44.0	46.7±42.2 [#]	75.5±96.0 ^{#,**}	<0.001
Liver fibrosis and steatosis				
NAFLD fibrosis score	1.1±1.0	0.9±0.8 [#]	2.2±1.0 ^{#,**}	<0.001
Fibrosis-4 index	1.5±0.9	1.0±0.7	1.9±1.2 ^{#,**}	<0.001
Fatty liver index	13.8±10.2	52.4±16.0 [#]	58.4±18.9 ^{#,**}	<0.001

Data are presented as mean±SD or number (%).

MAFLD, metabolic dysfunction-associated fatty liver disease; FIB-4, fibrosis-4; ASCVD, atherosclerotic cardiovascular disease; NAFLD, nonalcoholic fatty liver disease.

*Sarcopenia was defined as the lowest quintile for sex-specific sarcopenia index; [†]ASCVD risk score was calculated using the 10-year ASCVD risk score from the 2013 American College of Cardiology/American Heart Association guideline; [‡]Central obesity was defined waist circumference ≥90 cm in men, ≥80 cm in women; [§]Overweight was defined body mass index ≥23 kg/m²; ^{||}Heavy drink was defined as those whose alcohol consumption exceeded 140 g/week for men and 70 g/week for women; [¶]Log-transformed; [#]p<0.05 by *post hoc* analyses when compared without MAFLD; ^{**}p<0.05 by *post hoc* analyses when compared with MAFLD, without significant liver fibrosis.