

**Association between recovery/occurrence of metabolic syndrome and rapid estimated glomerular filtration rate decline in middle-aged and older populations: evidence from the China Health and Retirement Longitudinal Study**

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**Table S1. Baseline characteristics of participants included and excluded in the study**

Characteristics	participants included			P-value
	in baseline (n=7116)	group 1 (n=2974)	group 2 (n=4142)	
Age (years)	58 (52~65)	58 (52~64)	58 (51~66)	0.98
Male [ <i>n</i> (%)]	3332 (46.8)	1458 (49.0)	1874 (45.2)	0.002
Married with spouse [ <i>n</i> (%)]	5977 (84.0)	2974 (81.7)	3548 (87.5)	<0.001
Education				0.07
Illiterate [ <i>n</i> (%)]	2106 (29.6)	900 (30.3)	1206 (29.1)	
Middle school and below [ <i>n</i> (%)]	2853 (40.1)	1146 (38.5)	1770 (41.2)	
High school and above [ <i>n</i> (%)]	2157 (30.3)	928 (31.2)	1229 (29.7)	
Household per capita income (yuan)	6748 (2417~14298)	6461 (2337~13487)	7276 (2500~15600)	0.02
Drink [ <i>n</i> (%)]	2461 (34.6)	1054 (35.4)	1470 (32.2)	0.20
Smoke [ <i>n</i> (%)]	2775 (39.0)	1208 (40.6)	1567 (37.8)	0.02
Blood urea nitrogen (mg/dl)	15.1 (12.52~17.90)	15.0 (12.5~17.8)	15.1 (12.8~18.0)	0.16
Fasting glucose (mg/dl)	102.4 (94.5~111.6)	102.4 (94.9~111.2)	102.1 (94.1~112.5)	0.72
Creatinine (mg/dl)	0.76 (0.64~0.86)	0.75 (0.64~0.85)	0.76 (0.66~0.88)	<0.001
Total cholesterol (mg/dl)	190.2 (168.2~215.3)	190.6 (168.6~215.7)	189.8 (167.4~214.9)	0.36
Triglyceride (mg/dl)	104.4 (74.34~147.8)	105.3 (74.34~148.7)	104.4 (73.46~147.8)	0.77
HDL cholesterol (mg/dl)	49.5 (41.0~59.9)	49.1 (41.0~59.5)	49.9 (41.4~60.3)	0.02
hs-CRP (mg/l)	1.03 (0.54~2.04)	1.02 (0.54~1.97)	1.04 (0.55~2.17)	0.62
GHbA1c (%)	5.1 (4.9~5.4)	5.1 (4.9~5.4)	5.1 (4.9~5.4)	0.65
Uric acid (mg/dl)	4.3 (3.6~5.1)	4.2 (3.5~5.0)	4.4 (3.6~5.1)	<0.001
Hemoglobin (mg/dl)	14.2 (13.1~15.5)	14.2 (13.1~15.5)	14.2 (13.1~15.5)	0.75
Height (cm)	157.9 (152.0~164.1)	157.7 (152.0~163.8)	157.9 (152~164.5)	0.74
Weight (kg)	57.7 (51.0~65.4)	58.0 (51.3~65.5)	57.5 (50.3~65.2)	0.01
Waist (cm)	84.3 (77.6~91.4)	84.4 (78.0~92.0)	84.0 (77.0~91.0)	0.08
Body mass index (kg/m <sup>2</sup> )	23.1 (20.8~25.6)	23.2 (21.0~25.7)	22.9 (20.6~25.5)	0.01
Hand grip strength (kg)	29.3 (23.5~36.5)	29.1 (23.0~36.5)	29.3 (23.8~36.5)	0.59
Systolic blood pressure (mmHg)	127.3 (114.7~141.3)	127.0 (114.3~141.0)	127.7 (115.3~142.0)	0.32
Diastolic blood pressure (mmHg)	74.7 (67.3~83.0)	74.7 (67.0~82.7)	75.0 (67.3~83.0)	0.34
Mean arterial pressure (mmHg)	92.6 (83.7~102.0)	92.2 (83.4~101.7)	92.6 (84.0~102.6)	0.28
eGFR (ml/min/1.73m <sup>2</sup> )	95.2 (85.5~102.7)	95.9 (86.4~102.9)	94.0 (84.3~102.3)	<0.001
Depression symptom [ <i>n</i> (%)]	3172 (44.6)	1268 (42.6)	1904 (46.0)	0.005
Metabolic syndrome [ <i>n</i> (%)]	2228 (31.3)	907 (30.5)	1321 (31.9)	0.21
Metabolic syndrome components				
Elevated blood pressure [ <i>n</i> (%)]	3622 (50.9)	1523 (51.2)	2099 (50.7)	0.66
Elevated blood glucose [ <i>n</i> (%)]	4179 (58.7)	1723 (57.9)	2456 (59.3)	0.25
Dyslipidemia [ <i>n</i> (%)]	2673 (37.6)	1078 (36.2)	1595 (38.5)	0.052
Central obesity [ <i>n</i> (%)]	2862 (40.2)	1136 (38.2)	1726 (41.7)	0.003

Data are *n* (%) or median (interquartile range); HDL: high density lipoprotein; hs-CRP: high-sensitivity C-reactive protein; eGFR: estimated glomerular filtration rate; MetS: metabolic syndrome. Group 1: participants included in the baseline and excluded after follow-up; Group 2: participants included in the study.

**Table S2. Univariate analysis of variables between eGFR decline group and non-rapid eGFR**

<b>decline group</b>			
<b>Characteristics</b>	<b>Coef.</b>	<b>95% Conf.</b>	<b>P-value</b>
Sex (female as ref)	0.200	0.038~0.362	0.02
Age (years)	0.011	0.002~0.021	0.02
Married status [ <i>n</i> (%)]			
Other married status	ref	ref	
Married with spouse	0.013	-0.218~0.245	0.91
Education			
Illiterate	ref	ref	
Middle school and below	0.160	--0.037~0.359	0.11
High school and above	0.097	-0.118~0.311	0.34
Household per capita income (per 10000 yuan)	0.005	-0.053~0.062	0.88
Drink [ <i>n</i> (%)]			
Smoke [ <i>n</i> (%)]	0.022	-0.145~0.188	0.80
Blood urea nitrogen (mg/dl)	0.019	-0.001~0.038	0.06
Fasting glucose (mg/dl)	-0.002	-0.005~0.001	0.28
Creatinine (mg/dl)	-1.818	-2.368~-1.268	<0.001
Total cholesterol (mg/dl)	-0.001	-0.004~0.001	0.21
Triglyceride (mg/dl)	-0.0004	-0.0014~0.0050	0.39
HDL cholesterol (mg/dl)	0.007	-0.005~0.006	0.80
hs-CRP (mg/l)	0.004	-0.013~0.020	0.66
GHbA1c (%)	-0.051	-0.167~0.066	0.40
Uric acid (mg/dl)	0.003	-0.066~0.072	0.93
Hemoglobin (mg/dl)	-0.102	-0.144~0.060	<0.001
eGFR (ml/min/1.73m <sup>2</sup> )	0.023	0.017~0.030	<0.001
eGFR group			
60~89 ml/min/1.73m <sup>2</sup> [ <i>n</i> (%)]	ref	ref	
90~ ml/min/1.73m <sup>2</sup> [ <i>n</i> (%)]	0.203	0.026~0.379	0.02
Grip strength (kg)	0.004	-0.005~0.012	0.38
Grip strength group			
T1 [ <i>n</i> (%)]	ref	ref	
T2 [ <i>n</i> (%)]	0.311	0.112~0.511	<0.01
T3 [ <i>n</i> (%)]	0.148	-0.056~0.353	0.16
Height (cm)	0.003	-0.007~0.013	0.58
Weight (kg)	-0.008	-0.015~0.000	0.048
Body mass index (kg/m <sup>2</sup> )	-0.032	-0.056~0.009	0.01
Waist circumference (cm)	-0.012	-0.018~0.005	<0.001
Systolic blood pressure (mmHg)	0.002	-0.002~0.006	0.33

Diastolic blood pressure (mmHg)	-0.001	-0.008~0.005	0.76
Mean arterial pressure (mmHg)	0.001	-0.005~0.007	0.75
Depression symptom [ <i>n</i> (%)]	-0.054	-0.216~0.109	0.52
Self-report hypertension [ <i>n</i> (%)]	0.047	-0.148~0.243	0.63
Self-report dyslipidemia [ <i>n</i> (%)]	0.019	-0.276~0.315	0.90
Self-report diabetes or HBG [ <i>n</i> (%)]	-0.196	-0.065~0.213	0.35
Self-report arthritis or rheumatism [ <i>n</i> (%)]	-0.032	-0.204~0.140	0.71
Antihypertensive therapy [ <i>n</i> (%)]	0.062	-0.155~0.280	0.57
Lipid-lowering therapy [ <i>n</i> (%)]	0.183	-0.186~0.552	0.33
Hypoglycemic therapy [ <i>n</i> (%)]	-0.169	-0.663~0.326	0.50
Therapy for arthritis or rheumatism [ <i>n</i> (%)]	0.072	-0.148~0.291	0.52
Metabolic syndrome [ <i>n</i> (%)]	-0.158	-0.334~0.019	0.08
MetS scores	-0.138	-0.279~0.003	0.055
Metabolic syndrome components			
Central obesity [ <i>n</i> (%)]	-0.229	-0.395~0.062	0.01
Elevated blood pressure [ <i>n</i> (%)]	0.052	-0.109~0.214	0.53
Dyslipidemia [ <i>n</i> (%)]	0.030	-0.135~0.196	0.72
Elevated blood glucose [ <i>n</i> (%)]	-0.268	-0.431~0.105	0.001

Data are *n* (%) or median (interquartile range); HDL: high density lipoprotein; hs-CRP: high-sensitivity C-reactive protein; eGFR:

estimated glomerular filtration rate; MetS: metabolic syndrome.

grip strength is divided into T1, T2 and T3 groups by one-third percentile.