Supplemental Material

Diverse associations of plasma selenium concentrations, SELENOP gene polymorphism with metabolic syndrome and its components

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Supplementary Table S1-S3

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Table S1 Subgroup analyses of plasma selenium concentrations with risk of MetS and its components stratified by sex [a]

Group (n)	Quartiles of plasma selenium concentrations (μg/L)				*P* value for interaction [b]
	Q1, <82.36	Q2, 82.37-92.60	Q3, 92.67-103.5	Q4, ≥103.53	
MetS					0.158
Male (1636)	0.83 (0.60-1.15)	0.76 (0.56-1.05)	0.66 (0.48-0.91)	1	
Female (922)	0.73 (0.49-1.10)	0.85 (0.56-1.29)	0.70 (0.45-1.07)	1	
Central obesity					0.404
Male (1610)	1.11 (0.77-1.61)	1.06 (0.74-1.52)	0.77 (0.54-1.10)	1	
Female (917)	0.79 (0.48-1.29)	0.68 (0.41-1.13)	0.50 (0.30-0.86)	1	
Hypertriglyceridemia					0.709
Male (1631)	0.75 (0.56-1.01)	0.68 (0.51-0.91)	0.65 (0.49-0.86)	1	
Female (918)	0.81 (0.55-1.20)	0.93 (0.62-1.38)	0.92 (0.61-1.39)	1	
Low HDL-C					0.003
Male (1632)	1.87 (1.34-2.62)	1.21 (0.85-1.71)	0.96 (0.67-1.37)	1	
Female (919)	0.85 (0.58-1.25)	0.74 (0.50-1.11)	0.73 (0.48-1.10)	1	
High blood pressure					0.308
Male (1448)	1.08 (0.78-1.51)	0.91 (0.66-1.25)	0.89 (0.65-1.22)	1	
Female (797)	1.24 (0.80-1.90)	1.33 (0.85-2.07)	0.69 (0.44-1.09)	1	
Hyperglycemia					0.525
Male (1633)	0.53 (0.40-0.72)	0.80 (0.59-1.08)	0.91 (0.67-1.24)	1	
Female (917)	0.62 (0.43-0.91)	0.84 (0.57-1.24)	0.97 (0.65-1.43)	1	

[a] Odds ratios (95% confidence intervals) were estimated by binary logistic regression after adjustment for sex, age (years), body mass index (kg/m^2), smoking (current, former, and never), drinking (current, former, and never), vigorous activity (at least once/week or no) and education level (none or elementary school, middle school, and high school or college). HDL-C, high-density lipoprotein cholesterol; MetS, metabolic syndrome.

[b] Interaction tests with multiplicative terms were performed to determine whether risks differed between the subgroups.

Table S2 Characteristics of MetS cases and controls genotyped of the rs7579 polymorphism [a]

Characteristics	Non-MetS (n=644)	MetS (n=551)	*P* value
Male, n (%)	466 (72.4)	384 (69.7)	0.310
Age (years)	51.20 (11.08)	49.98 (10.67)	0.053
BMI (kg/m^2)	22.71 (2.57)	25.98 (2.93)	<0.001
SBP (mmHg)	129.41 (16.57)	138.63 (19.08)	<0.001
DBP (mmHg)	78.92 (10.25)	85.85 (11.66)	<0.001
Waist circumference (cm)	81.89 (7.32)	91.35 (7.68)	<0.001
Triglycerides (mmol/L)	1.09 (0.77-1.42)	1.90 (1.44-2.61)	<0.001
Total cholesterol (mmol/L)	4.42 (3.91-5.00)	4.90 (4.25-5.57)	<0.001
HDL-C (mmol/L)	1.35 (1.18-1.53)	1.23 (0.97-1.38)	0.948
LDL-C (mmol/L)	2.45 (1.79-2.99)	2.42 (1.75-3.10)	<0.001
Fasting plasma glucose (mmol/L)	5.68 (0.92)	6.35 (1.48)	<0.001
Fasting plasma insulin (mU/L)	6.63 (4.78-9.45)	10.57 (7.60-14.66)	<0.001
HOMA-IR	1.64 (1.11-2.47)	2.87 (2.01-4.04)	<0.001
HOMA-β	62.44 (46.81-91.77)	82.89 (57.15-122.00)	<0.001
Current smoker, n (%)	264 (41.0)	210 (38.1)	0.310
Current drinker, n (%)	226 (35.1)	186 (33.8)	0.628
Vigorous activity (at least once/week), n (%)	237 (36.8)	176 (31.9)	0.078
Educational level, n (%)			0.617
None or elementary school	133 (20.7)	103 (18.7)	
Middle school	291 (45.2)	248 (45.0)	
High school or college	220 (34.2)	200 (36.3)	
Selenium (µg/L)	92.46 (82.18-104.31)	95.72 (85.55-108.89)	0.001
SELENOP rs7579			0.416
Allele G	962 (74.7)	806 (73.1)	
Allele A	326 (25.3)	296 (26.9)	

[a] Data are presented as n (%) for categorical data, means (standard deviations) for parametrically distributed data, or medians (interquartile ranges)

for nonparametrically distributed data. BMI, body mass index; DBP, diastolic blood pressure; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol; MetS, metabolic syndrome; SBP, systolic blood pressure.

Table S3 Subgroup analyses of rs7579 polymorphism with risk of MetS and its components stratified by sex [a]

Group (n)	rs7579 genotypes				P value for interaction [b]
	GG genotype	GA genotype	AA genotype	GA+AA genotype	
MetS					0.091
Male (850)	1	1.75 (1.23-2.50)	1.25 (0.69-2.28)	1.64 (1.18-2.29)	
Female (345)	1	0.85 (0.50-1.45)	0.80 (0.33-1.95)	0.84 (0.51-1.38)	
Central obesity					0.406
Male (831)	1	1.52 (1.01-2.29)	1.12 (0.56-2.25)	1.44 (0.98-2.11)	
Female (343)	1	1.04 (0.56-1.92)	0.87 (0.33-2.31)	1.00 (0.56-1.77)	
Hypertriglyceridemia					0.656
Male (847)	1	1.16 (0.84-1.60)	1.22 (0.71-2.10)	1.17 (0.86-1.58)	
Female (343)	1	0.99 (0.56-1.76)	1.71 (0.69-4.25)	1.12 (0.66-1.89)	
Low HDL-C					0.168
Male (847)	1	1.42 (0.98-2.06)	1.40 (0.76-2.61)	1.42 (1.00-2.01)	
Female (344)	1	0.86 (0.52-1.44)	1.23 (0.52-2.93)	0.93 (0.57-1.50)	
High blood pressure					0.412
Male (735)	1	0.86 (0.62-1.19)	1.47 (0.81-2.66)	0.94 (0.69-1.29)	
Female (278)	1	1.65 (0.93-2.94)	1.06 (0.38-3.00)	1.53 (0.89-2.64)	
Hyperglycemia					0.533
Male (847)	1	1.21 (0.87-1.70)	0.87 (0.50-1.52)	1.14 (0.83-1.56)	
Female (343)	1	1.20 (0.74-1.94)	0.51 (0.22-1.20)	1.02 (0.65-1.59)	

[a] Odds ratios (95% confidence intervals) were estimated by binary logistic regression after adjustment for sex, age (years), body mass index (kg/m^2), smoking (current, former, and never), drinking (current, former, and never), vigorous activity (at least once/week or no) and education level (none or elementary school, middle school, and high school or college). HDL-C, high-density lipoprotein cholesterol; MetS, metabolic syndrome.

[b] Interaction tests with multiplicative terms were performed to determine whether risks differed between the subgroups.

Supplementary Figure S1


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                    │ A case-control study based on the│
                    │ baseline data of the Tongji-Ezhou│
                    │ Cohort study n = 5533            │
                    └─────────────────────────────────┘
                                    │
                                    │        ┌──────────────────────────────┐
                                    ├───────▶│ Excluding 1749 subjects:     │
                                    │        │ 1396 with uncomplete data for│
                                    │        │ determination of MetS;       │
                                    │        │ 256 with missing selenium    │
                                    │        │ data;                        │
                                    │        │ 97 with clinically significant│
                                    │        │ diseases.                    │
                                    │        └──────────────────────────────┘
              ┌─────────────────────┴──────────────────────┐
              ▼                                             ▼
┌──────────────────────────┐              ┌────────────────────────────┐
│ MetS cases with complete  │              │ Non-MetS controls with     │
│ selenium data n = 1279    │              │ complete selenium data     │
│                           │              │ n = 2505                   │
└──────────────────────────┘              └────────────────────────────┘
              │                                             │
              └──────────────────────┬──────────────────────┘
                                     │       ┌───────────────────────────────┐
                                     ├──────▶│ Excluding 1226 unpaired controls│
                                     │       └───────────────────────────────┘
                                     ▼
                    ┌─────────────────────────────────┐
                    │ 1279 matched case-control pairs │
                    │ included in the final analyses  │
                    └─────────────────────────────────┘
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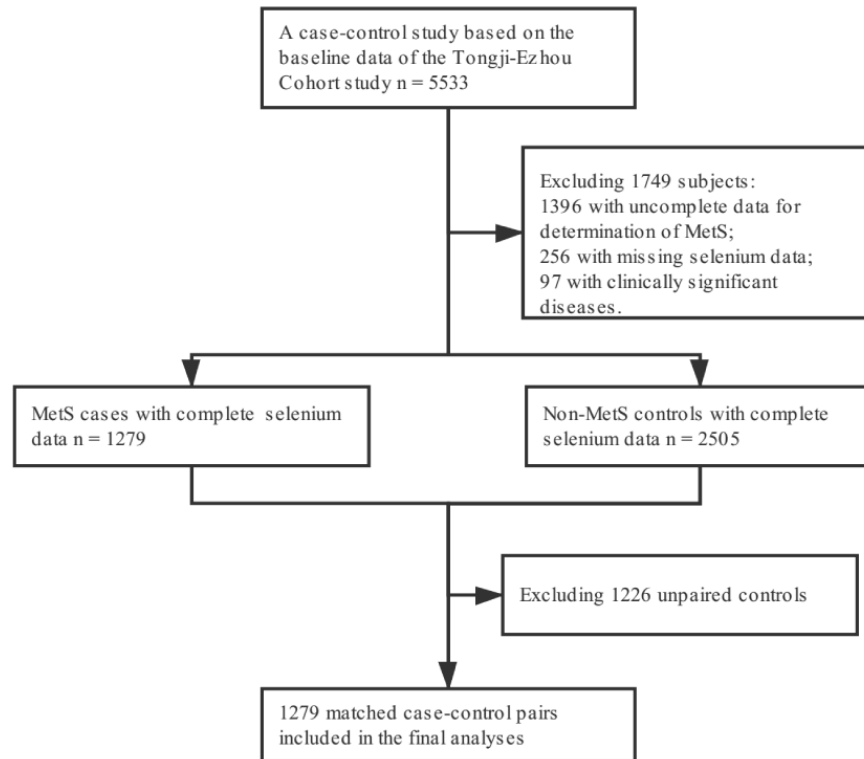
Figure S1. The flow chart of participants recruitment and case-control selection.