

Supplementary Materials

Table S1. Missing counts and proportions of covariates.	2
Table S2. Oxidative balance score assignment scheme.	3
Table S3. Baseline characteristics of the selected participants.....	4
Table S4. Weighted mean and 95% confidence interval of OBS according to population characteristics.	6
Table S5. Association between OBS and mortality in gout and hyperuricemia subjects after excluding outliers of OBS.	7
Table S6. Association between OBS and mortality in gout and hyperuricemia subjects after excluding CVD patients at baseline.....	8
Table S7. Association between OBS and mortality in gout and hyperuricemia subjects after excluding deaths occurring in the first one year of follow-up.	9
Table S8. Association between OBS and mortality in gout and hyperuricemia subjects after imputing missing covariates with multiple imputation.	10
Table S9. E-values and lower limit of 95% CIs for the association between OBS and mortality in gout and hyperuricemia subjects.....	11

Table S1 Missing counts and proportions of covariates.

Covariates	No. of missing	Missing proportion (%)
Age	0	0
Sex	0	0
Race/ethnicity	0	0
Marital status	59	0.88
Education attainment	3	0.04
Family PIR	495	7.36
Smoking	2	0.03
Alcohol drinking	0	0
Hypertension	1	0.01
Diabetes	0	0

Abbreviations: PIR, poverty-income ratio.

Table S2 Oxidative balance score assignment scheme.

OBS components	Property	Male			Female		
		0	1	2	0	1	2
Dietary OBS components							
Dietary fiber (g/d)	A	<10.60	10.60-<18.60	≥18.60	<9.00	9.00-<15.00	≥15.00
Carotene (RE/d)	A	<365.00	365.00-<1284.33	≥1284.33	<347.00	347.00-<1511.00	≥1511.00
Riboflavin (mg/d)	A	<1.55	1.55-<2.43	≥2.43	<1.18	1.18-<1.83	≥1.83
Niacin (mg/d)	A	<20.82	20.82-<32.01	≥32.01	<14.35	14.35-<22.54	≥22.54
Vitamin B6 (mg/d)	A	<1.55	1.55-<2.46	≥2.46	<1.06	1.06-<1.75	≥1.75
Total folate (mcg/d)	A	<282.00	282.00-<458.00	≥458.00	<213.00	213.00-<348.00	≥348.00
Vitamin B12 (mcg/d)	A	<2.96	2.96-<5.68	≥5.68	<1.99	1.99-<3.98	≥3.98
Vitamin C (mg/d)	A	<26.90	26.90-<86.70	≥86.70	<24.10	24.10-<72.90	≥72.90
Vitamin E (ATE) (mg/d)	A	<5.10	5.10-<9.10	≥9.10	<4.26	4.26-<7.44	≥7.44
Calcium (mg/d)	A	<591.00	591.00-<1030.32	≥1030.32	<501.00	501.00-<826.00	≥826.00
Magnesium (mg/d)	A	<233.00	233.00-<353.08	≥353.08	<181.00	181.00-<268.56	≥268.56
Zinc (mg/d)	A	<8.59	8.59-<13.82	≥13.82	<6.22	6.22-<9.80	≥9.80
Copper (mg/d)	A	<0.95	0.95-<1.44	≥1.44	<0.75	0.75-<1.13	≥1.13
Selenium (mcg/d)	A	<91.70	91.70-<142.53	≥142.53	<66.80	66.80-<103.70	≥103.70
Total fat (g/d)	P	≥100.50	62.51-<100.50	<62.51	≥76.88	48.20-<76.88	<48.20
Iron (mg/d)	P	≥16.95	10.97-<16.95	<10.97	≥13.12	8.43-<13.12	<8.43
Lifestyle OBS components							
Physical activity (MET-minute/week)	A	<480.00	480.00-<2880.00	≥2880.00	<40.00	40.00-<1260.00	≥1260.00
Alcohol (g/d)	P	≥30	0-<30	0	≥15	0-<15	0
Body mass index (kg/m ²)	P	≥32.90	28.09-<32.09	<28.09	≥36.82	30.20-<36.82	<30.20
Cotinine (ng/mL)	P	≥1.97	0.04-<1.97	<0.04	≥0.34	0.03-<0.34	<0.03

Abbreviations: A, antioxidant; ATE, alpha-tocopherol equivalent; MET, metabolic equivalent; OBS, oxidative balance score; P, prooxidant; RE, retinol equivalent.

Table S3 Baseline characteristics of the selected participants.

Characteristics^a	Overall (N=6178)
Age, years	49.21 (0.28)
Male, n (%)	3822 (62.47)
Race/ethnicity, n (%)	
Non-Hispanic white	2912 (72.45)
Non-Hispanic black	1560 (11.33)
Mexican American	743 (5.75)
Others	963 (10.46)
Marital status, n (%)	
Married	3313 (57.06)
Single	2421 (35.55)
Living with a partner	444 (7.39)
Education attainment, n (%)	
Under high school	1376 (14.11)
High school	1522 (25.52)
Above high school	3280 (60.37)
Family PIR, n (%)	
<1.3	1794 (19.32)
1.3-<3.5	2364 (36.02)
≥3.5	2020 (44.66)
Current smoking, n (%)	1317 (20.47)
Current drinking, n (%)	4654 (79.87)
Hypertension, n (%)	3764 (55.82)
Diabetes, n (%)	1464 (17.85)
OBS	20.90 (0.15)
OBS components	

Table S3 (continued)

Characteristics ^a	Overall (N=6178)
Dietary fiber, g/d	15.52 (0.18)
Carotene, RE/d	2305.05 (71.98)
Riboflavin, mg/d	2.11 (0.02)
Niacin, mg/d	26.88 (0.27)
Vitamin B ₆ , mg/d	2.10 (0.03)
Total folate, mcg/d	392.28 (4.34)
Vitamin B ₁₂ , mcg/d	5.11 (0.09)
Vitamin C, mg/d	75.66 (1.38)
Vitamin E (ATE), mg/d	8.28 (0.13)
Calcium, mg/d	890.64 (9.84)
Magnesium, mg/d	297.45 (2.92)
Zinc, mg/d	11.76 (0.14)
Copper, mg/d	1.26 (0.01)
Selenium, mcg/d	117.41 (1.11)
Total fat, g/d	84.88 (0.90)
Iron, mg/d	14.58 (0.15)
Physical activity, MET-minute/week	3255.23 (121.63)
Alcohol, g/d	9.95 (0.35)
Body mass index, kg/m ²	32.53 (0.15)
Cotinine, ng/mL	64.89 (2.85)

^a Continuous variables were expressed as weighted means and standard errors and categorical variables were expressed as numbers and weighted percentages. The sums of percentages may not reach 100%, owing to the rounding of decimals.

Abbreviations: ATE, alpha-tocopherol equivalent; MET, metabolic equivalent; OBS, oxidative balance score; PIR, poverty-income ratio.

Table S4 Weighted mean and 95% confidence interval of OBS according to population characteristics.

Characteristics	No. of subjects	Weighted mean (95% CI)	P-value
Overall	6178	20.90 (20.61-21.19)	
Age, years			0.23
<50	2545	21.04 (20.65-21.44)	
≥50	3633	20.77 (20.43-21.10)	
Sex			0.28
Male	3822	20.81 (20.50-21.12)	
Female	2356	21.06 (20.62-21.49)	
Race/ethnicity			<0.001
Others	3822	20.81 (20.50-21.12)	
Non-Hispanic white	2356	21.06 (20.62-21.49)	
Marital status			<0.001
Others	2600	20.28 (19.88-20.67)	
Married	3578	21.37 (21.01-21.73)	
Education attainment			<0.001
High school and below	2898	19.58 (19.20-19.97)	
Above high school	3280	21.76 (21.42-22.11)	
Family PIR			<0.001
<3.5	4158	19.85 (19.51-20.18)	
≥3.5	2020	22.21 (21.82-22.59)	
Current smoking			<0.001
No	4861	21.44 (21.16-21.72)	
Yes	1317	18.80 (18.20-19.40)	
Current drinking			0.02
No	1524	20.33 (19.76-20.90)	
Yes	4654	21.04 (20.73-21.35)	
Hypertension			0.005
No	2414	21.25 (20.84-21.67)	
Yes	3764	20.62 (20.31-20.93)	
Diabetes			<0.001
No	4714	21.11 (20.79-21.42)	
Yes	1464	19.95 (19.42-20.48)	

Abbreviations: CI, confidence interval; OBS, oxidative balance score; PIR, poverty-income ratio.

Table S5 Association between OBS and mortality in gout and hyperuricemia subjects after excluding outliers of OBS.

Outcome	Quartiles of OBS				P-trend	Continuous
	Q1 (lowest)	Q2	Q3	Q4 (highest)		
Range	<16	16-20	21-26	>26		
All-cause mortality						
Deaths/person-years	364/14955	238/11134	234/14247	118/11187		954/51523
Crude model	1.00 (reference)	0.99 (0.81-1.21)	0.69 (0.54-0.86)	0.42 (0.32-0.56)	<0.001	0.96 (0.95-0.97)
Model 1 ^a	1.00 (reference)	0.92 (0.74-1.13)	0.67 (0.54-0.84)	0.42 (0.32-0.55)	<0.001	0.96 (0.95-0.97)
Model 2 ^b	1.00 (reference)	1.10 (0.89-1.35)	0.89 (0.72-1.10)	0.58 (0.45-0.76)	<0.001	0.98 (0.97-0.99)
cardiovascular mortality						
Deaths/person-years	126/14955	91/11134	71/14247	34/11187		322/51523
Crude model	1.00 (reference)	1.16 (0.82-1.65)	0.71 (0.47-1.05)	0.36 (0.22-0.59)	<0.001	0.96 (0.94-0.98)
Model 1 ^a	1.00 (reference)	1.07 (0.75-1.52)	0.69 (0.47-1.01)	0.36 (0.23-0.58)	<0.001	0.96 (0.94-0.98)
Model 2 ^b	1.00 (reference)	1.28 (0.91-1.81)	0.92 (0.63-1.36)	0.50 (0.31-0.80)	0.004	0.98 (0.96-1.00)

^a Model 1 was adjusted for age (<50, ≥50 years), sex (male, female), and race/ethnicity (non-Hispanic white, others).

^b Model 2 was further adjusted for marital status (married, others), family poverty-income ratio (<3.5, ≥3.5), education attainment (above high school, high school and below), current smoking (yes, no), current drinking (yes, no), hypertension (yes, no), and diabetes (yes, no).

Abbreviations: OBS, oxidative balance score.

Table S6 Association between OBS and mortality in gout and hyperuricemia subjects after excluding CVD patients at baseline.

Outcome	Quartiles of OBS				P-trend	Continuous
	Q1 (lowest)	Q2	Q3	Q4 (highest)		
Range	<15	15-20	21-26	>26		
All-cause mortality						
Deaths/person-years	226/11859	179/11721	153/12447	82/9828		640/45854
Crude model	1.00 (reference)	0.93 (0.73-1.19)	0.66 (0.50-0.86)	0.43 (0.30-0.61)	<0.001	0.96 (0.95-0.97)
Model 1 ^a	1.00 (reference)	0.85 (0.66-1.10)	0.63 (0.48-0.84)	0.41 (0.29-0.58)	<0.001	0.96 (0.94-0.97)
Model 2 ^b	1.00 (reference)	1.04 (0.80-1.36)	0.84 (0.63-1.12)	0.58 (0.41-0.82)	0.002	0.98 (0.96-0.99)
cardiovascular mortality						
Deaths/person-years	69/11859	58/11721	47/12447	20/9828		194/45854
Crude model	1.00 (reference)	0.96 (0.63-1.46)	0.71 (0.46-1.12)	0.38 (0.22-0.66)	<0.001	0.96 (0.94-0.99)
Model 1 ^a	1.00 (reference)	0.88 (0.56-1.36)	0.68 (0.44-1.06)	0.37 (0.22-0.62)	<0.001	0.96 (0.94-0.98)
Model 2 ^b	1.00 (reference)	1.09 (0.70-1.69)	0.92 (0.58-1.45)	0.53 (0.31-0.91)	0.04	0.98 (0.95-1.00)

^a Model 1 was adjusted for age (<50, ≥50 years), sex (male, female), and race/ethnicity (non-Hispanic white, others).

^b Model 2 was further adjusted for marital status (married, others), family poverty-income ratio (<3.5, ≥3.5), education attainment (above high school, high school and below), current smoking (yes, no), current drinking (yes, no), hypertension (yes, no), and diabetes (yes, no).

Abbreviations: CVD, cardiovascular disease; OBS, oxidative balance score.

Table S7 Association between OBS and mortality in gout and hyperuricemia subjects after excluding deaths occurring in the first one year of follow-up.

Outcome	Quartiles of OBS				P-trend	Continuous
	Q1 (lowest)	Q2	Q3	Q4 (highest)		
Range	<16	16-20	21-26	>26		
All-cause mortality						
Deaths/person-years	305/13349	268/13245	220/14252	112/11611		905/52458
Crude model	1.00 (reference)	0.96 (0.77-1.18)	0.67 (0.53-0.86)	0.40 (0.30-0.53)	<0.001	0.96 (0.95-0.97)
Model 1 ^a	1.00 (reference)	0.89 (0.71-1.12)	0.65 (0.52-0.83)	0.39 (0.30-0.51)	<0.001	0.96 (0.95-0.97)
Model 2 ^b	1.00 (reference)	1.04 (0.82-1.32)	0.86 (0.68-1.09)	0.53 (0.40-0.70)	<0.001	0.98 (0.96-0.99)
cardiovascular mortality						
Deaths/person-years	108/13349	98/13245	67/14252	32/11611		305/52458
Crude model	1.00 (reference)	1.01 (0.72-1.42)	0.63 (0.43-0.94)	0.33 (0.20-0.53)	<0.001	0.95 (0.94-0.97)
Model 1 ^a	1.00 (reference)	0.94 (0.66-1.34)	0.61 (0.42-0.91)	0.32 (0.20-0.52)	<0.001	0.95 (0.94-0.97)
Model 2 ^b	1.00 (reference)	1.09 (0.75-1.59)	0.81 (0.54-1.22)	0.44 (0.27-0.72)	0.001	0.97 (0.95-0.99)

^a Model 1 was adjusted for age (<50, ≥50 years), sex (male, female), and race/ethnicity (non-Hispanic white, others).

^b Model 2 was further adjusted for marital status (married, others), family poverty-income ratio (<3.5, ≥3.5), education attainment (above high school, high school and below), current smoking (yes, no), current drinking (yes, no), hypertension (yes, no), and diabetes (yes, no).

Abbreviations: OBS, oxidative balance score.

Table S8 Association between OBS and mortality in gout and hyperuricemia subjects after imputing missing covariates with multiple imputation.

Outcome	Quartiles of OBS				P-trend	Continuous
	Q1 (lowest)	Q2	Q3	Q4 (highest)		
Range	<16	16-20	21-26	>26		
All-cause mortality						
Deaths/person-years	364/14561	312/14405	259/15646	135/12828		1070/57440
Crude model	1.00 (reference)	0.98 (0.81-1.19)	0.68 (0.56-0.83)	0.40 (0.30-0.53)	<0.001	0.96 (0.95-0.97)
Model 1 ^a	1.00 (reference)	0.91 (0.74-1.11)	0.66 (0.54-0.81)	0.39 (0.29-0.51)	<0.001	0.96 (0.95-0.97)
Model 2 ^b	1.00 (reference)	1.06 (0.84-1.35)	0.85 (0.68-1.06)	0.53 (0.41-0.70)	<0.001	0.98 (0.96-0.99)
cardiovascular mortality						
Deaths/person-years	128/14561	109/14405	78/15646	37/12828		352/57440
Crude model	1.00 (reference)	0.91 (0.65-1.26)	0.62 (0.43-0.87)	0.28 (0.18-0.46)	<0.001	0.95 (0.93-0.97)
Model 1 ^a	1.00 (reference)	0.84 (0.60-1.17)	0.59 (0.42-0.83)	0.28 (0.17-0.44)	<0.001	0.95 (0.93-0.97)
Model 2 ^b	1.00 (reference)	1.01 (0.69-1.48)	0.81 (0.55-1.18)	0.41 (0.25-0.66)	<0.001	0.97 (0.95-0.99)

^a Model 1 was adjusted for age (<50, ≥50 years), sex (male, female), and race/ethnicity (non-Hispanic white, others).

^b Model 2 was further adjusted for marital status (married, others), family poverty-income ratio (<3.5, ≥3.5), education attainment (above high school, high school and below), current smoking (yes, no), current drinking (yes, no), hypertension (yes, no), and diabetes (yes, no).

Abbreviations: OBS, oxidative balance score.

Table S9 E-values and lower limit of 95% CIs for the association between OBS and mortality in gout and hyperuricemia subjects.

Outcome	HR (95% CI)	E-value
All-cause mortality		
Quartiles of OBS		
Q1	1.00 (ref.)	–
Q2	1.00 (0.79-1.28)	1.00
Q3	0.84 (0.67-1.06)	1.67
Q4	0.53 (0.40-0.69)	3.18
Continuous	0.98 (0.96-0.99)	1.16
cardiovascular mortality		
Quartiles of OBS		
Q1	1.00 (ref.)	–
Q2	1.03 (0.72-1.49)	1.21
Q3	0.80 (0.54-1.19)	1.81
Q4	0.41 (0.25-0.67)	4.31
Continuous	0.97 (0.95-0.99)	1.21

Abbreviations: CI, confidence interval; HR, hazard ratio; OBS, oxidative balance score.