

Supplementary Material

Supplemental Table S1 Characteristics among adults aged 20 years or older by HUA

Characteristics	Adults Without HUA(n,%)	Adults With HUA(n,%)	<i>P-Value</i>
Sex No. (Weighted%)			<0.001
Female	9080(50.85)	2591(51.31)	
Male	9046(49.15)	2392(48.69)	
Age Group No. (Weighted%)			<0.001
20-39 y	6150(35.69)	1200(28.05)	
40-59 y	6198(38.44)	1482(34.33)	
60-79 y	4719(21.78)	1804(30.08)	
80+ y	1059(4.1)	497(7.53)	
Race No. (Weighted%)			<0.001
Non-Hispanic White	7878(68.3)	2297(71.23)	
Mexican American	3008(8.95)	593(6.28)	
Non-Hispanic Black	3404(9.92)	1228(12.22)	
Other	3836(12.83)	865(10.28)	
Education No. (Weighted%)			<0.001
< High School	4463(16.16)	1223(16.13)	
High school /GED	4045(21.59)	1221(24.41)	

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College/AA degree	5232(31.07)	1555(34.93)	
College or above	4386(31.17)	984(24.53)	
Family Income No. (Weighted%)			<0.001
0~130% FPL	5330(19.95)	1475(20.18)	
>130%~350% FPL	6127(32.5)	1791(35.84)	
>350% FPL	6669(47.55)	1717(43.98)	
BMI No. (Weighted%)			<0.001
Normal Weight	5381(31.03)	623(12.21)	
Underweight	312(1.72)	24(0.32)	
Overweight	6260(34.77)	1399(28.71)	
Obese	6173(32.49)	2937(58.76)	
Drink Level No. (Weighted%)			<0.001
None	5753(25.64)	1787(29.09)	
Light	5670(31.02)	1384(28.35)	
Moderate	6235(40.85)	1650(39)	
Heavy	468(2.5)	162(3.56)	
Smoke Status No.(Weighted%)			<0.001
Never Smoker	10079(55.62)	2632(53.34)	
Former Smoker	4200(23.99)	1460(29.34)	
Current Smoker	3847(20.39)	891(17.32)	
CKD No. (Weighted%)			<0.001
No	17671(98.1)	4667(94.8)	
Yes	455(1.9)	316(5.2)	
Diabetes No. (Weighted%)			<0.001

	No	16073(91.67)	4064(85.98)	
	Yes	2053(8.33)	919(14.02)	
Hypertension No. (Weighted%)				<0.001
	No	12462(72.24)	2231(50.16)	
	Yes	5664(27.76)	2752(49.84)	
HEI Category No. (Weighted%)				<0.001
	Q ₁	4482(24.92)	1243(25.26)	
	Q ₂	4446(24.7)	1304(26.19)	
	Q ₃	4619(25.06)	1265(24.77)	
	Q ₄	4579(25.32)	1171(23.78)	

Values are survey-weighted percentages. HUA=Hyperuricemia, FPL = family income to poverty. CKD=chronic kidney disease. HEI = healthy eating index.

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Supplemental Table S2 Relationship between HEI and HUA among Adults aged 20 years or older.

Variable	OR(95%CI)			P-Value
	Model 1	Model 2	Model 3	
Sex (reference, Female)				<0.001
Male	1.014(1.014,1.015)	0.943(0.942,0.943)	0.944(0.944,0.945)	
Age group (reference, 20-39 y)				<0.001
40-59 y	1.157(1.156,1.158)	1.007(1.006,1.008)	0.879(0.878,0.88)	
60- 79 y	1.781(1.779,1.783)	1.536(1.534,1.538)	1.149(1.148,1.15)	
80+ y	2.305(2.301,2.308)	2.514(2.509,2.518)	1.732(1.729,1.735)	
Race (reference, Non-Hispanic White)				<0.001
Mexican American	0.729(0.728,0.73)	0.613(0.612,0.614)	0.639 (0.638,0.64)	
Non-Hispanic Black	1.21(1.209,1.211)	1.102(1.1,1.103)	1.041(1.039,1.042)	
Other	0.849(0.848,0.85)	0.925(0.923,0.926)	0.921(0.92,0.922)	
Education (reference, < High School)				<0.001
High school /GED	1.097(1.096,1.098)	1.067(1.066,1.069)	1.088(1.086,1.089)	
College/AA degree	1.146(1.145,1.148)	1.092(1.09,1.093)	1.099(1.098,1.101)	
College or above	0.83(0.829,0.831)	0.878(0.877,0.879)	0.905(0.903,0.906)	
Family Income (reference, 0~130% FPL)				<0.001
>130%~350% FPL	1.024(1.023,1.025)	0.991(0.99,0.992)	1.022(1.021,1.023)	
>350% FPL	0.931(0.93,0.932)	0.9(0.899,0.901)	0.939(0.938,0.94)	
HEI Category (reference, Q₁)				<0.001
Q ₂	1.014(1.013,1.015)	1.012(1.011,1.013)	1.007(1.005,1.008)	
Q ₃	0.939(0.938,0.94)	0.969(0.968,0.97)	0.973(0.972,0.974)	

	Q4	0.888(0.887,0.889)	0.968(0.967,0.97)	0.978(0.976,0.979)	
BMI (reference, Normal Weight)					<0.001
	Underweight		0.483(0.481,0.486)	0.477(0.475,0.48)	
	Overweight		2.079(2.076,2.081)	1.973(1.97,1.975)	
	Obese		4.679(4.674,4.684)	4.145(4.14,4.149)	
Drink Level (reference, None)					<0.001
	Light		0.907(0.906,0.908)	0.933(0.932,0.934)	
	Moderate		1.186(1.185,1.187)	1.23(1.229,1.231)	
	Heavy		1.875(1.871,1.88)	1.883(1.879,1.888)	
Smoke Status (reference, Never)					<0.001
	Former		1.036(1.036,1.037)	1.007(1.006,1.008)	
	Current		0.904(0.903,0.905)	0.884(0.883,0.885)	
CKD (reference, No)					<0.001
	Yes			2.16(2.155,2.164)	
Diabetes (reference, No)					<0.001
	Yes			0.961(0.96,0.962)	
Hypertension (reference, No)					<0.001
	Yes			1.822(1.82,1.823)	

FPL = family income to poverty; CI = confidence interval; OR = odds ratio.
CKD=chronic kidney disease.

Model 1 = adjusted for demographics characteristics (sex, age group, race, education, family income);

Model 2 = adjusted for demographics characteristics (sex, age group, race, education, family income), BMI, smoking, and drinking status;

Model 3= adjusted for demographics characteristics (sex, age group, race, education, family income), BMI, smoking, drinking status, hypertension, CKD, and diabetes.

Supplemental Table S3 Relationship between WQS regression index and gout and hypernricemia among Adults aged 20 years or older

Outcome	OR	95%CI	<i>P</i> value
Gout			
Model 1	0.955	(0.930 ,0.982)	0.0009
Model 2	0.957	(0.933 ,0.983)	0.0011
Model 3	0.963	(0.937 ,0.990)	0.0067
Hypernricemia			
Model 1	0.927	(0.911 ,0.943)	<0.0001
Model 2	0.933	(0.918 ,0.949)	<0.0001
Model 3	0.934	(0.919 ,0.950)	<0.0001

Model of gout:Model 1 = adjusted for demographics characteristics (sex, age group, race, education, family income);

Model 2 = adjusted for demographics characteristics (sex, age group, race, education, family income), BMI, smoking, and drinking status;

Model 3= adjusted for demographics characteristics (sex, age group, race, education, family income), BMI, smoking, drinking status, hypertension, CKD, diabetes, hyperuricemia.

Model of Hypernricemia:Model 1 = adjusted for demographics characteristics (sex, age group, race, education, family income);

Model 2 = adjusted for demographics characteristics (sex, age group, race, education, family income), BMI, smoking, and drinking status;

Model 3= adjusted for demographics characteristics (sex, age group, race, education, family income), BMI, smoking, drinking status, hypertension, CKD, and diabetes.