

Variables	Overall ^a (n=9557)	CKD		P value
		No (n=8845)	Yes (n=712)	
Blood lead, mean ± SD, µg/dL	1.3 ± 0.04	1.2 ± 0.04	1.5 ± 0.1	<0.001
Q1 (≤0.6)	1712 (26.6)	1665 (27.6)	47 (11.4)	<0.001
Q2 (>0.6–1.0)	1861 (27.9)	1759 (28.3)	102 (21.5)	
Q3 (>1.0–1.6)	1803 (24.4)	1642 (23.8)	161 (31.9)	
Q4 (>1.6)	1728 (21.2)	1519 (20.2)	209 (35.2)	
Missing	2453	2260	193	
Blood cadmium, mean ± SD, µg/L	0.5 ± 0.01	0.5 ± 0.01	0.5 ± 0.04	0.323
Q1 (≤0.2)	2107 (34.6)	2040 (36.0)	67 (13.9)	<0.001
Q2 (>0.2–0.3)	1397 (20.5)	1301 (20.6)	96 (19.6)	
Q3 (>0.3–0.6)	1969 (24.8)	1761 (23.6)	208 (41.9)	
Q4 (>0.6)	1631 (20.1)	1483 (19.7)	148 (24.6)	
Missing	2453	2260	193	
Blood mercury, mean ± SD, µg/L	1.3 ± 0.06	1.4 ± 0.1	1.2 ± 0.1	0.021
Q1 (≤0.4)	1820 (27.0)	1694 (27.2)	126 (23.8)	0.219
Q2 (>0.4–0.8)	1875 (26.1)	1734 (26.2)	141 (25.1)	
Q3 (>0.8–1.6)	1663 (24.2)	1504 (23.9)	129 (28.8)	
Q4 (>1.6)	1776 (22.7)	1653 (22.8)	123 (22.3)	
Missing	2453	2260	193	
Urinary arsenic, mean ± SD, µg/g creatinine	16.6 ± 1.5	16.6 ± 1.6	17.7 ± 3.3	0.757
Q1 (≤3.7)	842 (29.3)	791 (29.6)	51 (24.5)	0.596
Q2 (>3.7–6.5)	790 (24.6)	736 (24.6)	54 (24.8)	
Q3 (>6.5–14.3)	820 (24.3)	769 (24.3)	51 (25.1)	
Q4 (>14.3)	826 (21.8)	759 (21.5)	67 (25.6)	
Missing	6279	5790	489	
Plasma selenium, µg/L	195.3 ± 0.9	195.7 ± 0.9	189.6 ± 2.0	0.002
Q1 (≤176.8)	1723 (22.1)	1551 (21.4)	172 (32.5)	<0.001
Q2 (>176.8–191.4)	1826 (25.5)	1714 (25.7)	112 (22.6)	
Q3 (>191.4–207.1)	1756 (25.7)	1642 (26.0)	114 (20.4)	
Q4 (>207.1)	1799 (26.7)	1678 (26.9)	121 (24.5)	
Missing	2453	2260	193	
Serum folate, ng/mL	19.3 ± 0.3	18.8 ± 0.3	26.4 ± 1.1	<0.001
Q1 (≤11.4)	2284 (25.2)	2144 (25.5)	140 (19.8)	<0.001
Q2 (>11.4–16.3)	2170 (23.7)	2058 (24.2)	112 (17.3)	
Q3 (>16.3–23.9)	2096 (25.1)	1967 (25.4)	129 (20.5)	
Q4 (>23.9)	2092 (26.0)	1844 (24.9)	248 (42.4)	
Missing	915	832	83	

Variables	Overall ^a (n=9557)	CKD		P value
		No (n=8845)	Yes (n=712)	
RBC folate, ng/mL	409.0 ± 9.8	401.1 ± 9.7	530.0 ± 25.1	<0.001
Q1 (≤41.1)	2231 (24.9)	2101 (25.2)	130 (20.2)	<0.001
Q2 (>41.1–396.9)	2101 (22.3)	1991 (22.6)	110 (17.2)	
Q3 (>396.9–556.3)	2140 (25.0)	2004 (25.3)	136 (21.0)	
Q4 (>556.3)	2125 (27.8)	1879 (26.9)	246 (41.6)	
Missing	960	870	90	
Serum zinc, µg/dL	88.5 ± 0.5	88.7 ± 0.5	84.5 ± 1.8	0.013
Q1 (≤71.0)	229 (8.8)	195 (8.2)	34 (20.2)	0.003
Q2 (>71.0–80.4)	484 (19.0)	445 (18.9)	39 (20.8)	
Q3 (>80.4–90.3)	725 (32.0)	684 (32.3)	41 (26.6)	
Q4 (>90.3)	903 (40.2)	863 (40.6)	40 (32.4)	
Missing	7216	6658	558	
Age, years	46.7 ± 0.3	45.2 ± 0.3	68.5 ± 0.5	<0.001
18–29	1895 (21.0)	1890 (22.4)	5 (0.7)	
30–39	1516 (17.4)	1497 (18.3)	19 (3.8)	
40–59	3078 (35.1)	2995 (36.7)	83 (13.1)	
60–79	2533 (22.6)	2157 (20.3)	376 (55.4)	
80+	535 (3.9)	306 (2.3)	229 (27.0)	
Sex				
Male	4627 (48.5)	4316 (49.4)	311 (36.0)	<0.001
Female	4930 (51.5)	4529 (50.6)	401 (64.0)	
Race				
Non-Hispanic whites	3578 (64.4)	3170 (63.4)	408 (78.9)	<0.001
Non-Hispanic blacks	2007 (11.3)	1887 (11.6)	120 (8.1)	
Other Hispanic	1350 (8.9)	1297 (9.3)	53 (3.3)	
Others + Mexican American	2622 (15.3)	2491 (15.7)	131 (9.7)	
Poverty income ratio				
Not poor ≥1	6649 (84.1)	6118 (83.8)	531 (87.9)	0.029
Poor <1	2004 (15.9)	1886 (16.2)	118 (12.1)	
Missing	904	841	63	
Education level				
≤ High school	4021 (37.5)	3656 (37.1)	365 (43.5)	0.029
College or above	5086 (62.5)	4741 (62.9)	345 (56.5)	
Missing	450	448	2	
Vigorous physical activity	1909 (22.6)	1834 (23.4)	75 (11.9)	<0.001

Table 1. Blood and urine parameters, demographic characteristics, lifestyle and comorbid conditions of the study population with or without CKD. (Cont'd)

Variables	Overall ^a (n=9557)	CKD		P value
		No (n=8845)	Yes (n=712)	
BMI, category				
Underweight	284 (2.5)	262 (2.5)	22 (2.5)	0.019
Normal	2670 (27.8)	2518 (28.2)	152 (21.5)	
Overweight	3020 (32.0)	2782 (32.0)	238 (33.2)	
Obese	3583 (37.7)	3283 (37.3)	300 (42.7)	
Smoking status				
Never	5491 (57.0)	5137 (57.3)	354 (53.1)	0.001
Former	2196 (24.7)	1921 (23.8)	275 (37.2)	
Current smoker	1750 (18.3)	1667 (18.9)	83 (9.6)	
Missing	120	120	0	
Excessive alcohol consumption	426 (5.5)	396 (5.5)	30 (5.6)	0.952
Hypertension	3678 (34.7)	3130 (32.0)	548 (73.6)	<0.001
DM	1620 (12.5)	1355 (11.1)	265 (32.1)	<0.001
Hyperlipidaemia	5042 (52.0)	4515 (50.4)	527 (75.2)	<0.001
CVD history	1006 (9.0)	738 (7.2)	268 (34.8)	<0.001
COPD	659 (6.9)	566 (6.5)	93 (13.2)	<0.001

BMI: body mass index; CKD: chronic kidney disease; COPD: chronic obstructive pulmonary disease; CVD: cardiovascular disease; DM: diabetes mellitus; Q: quartile

^a The cohort size (n=9557) was equivalent to 236,263,413 weighted population in the US after applying the sample weights provided by NHANES.

Values in bold are statistically significant.

Unless indicated otherwise, all values in brackets are expressed in no. (%) of participants.