

**Supplementary materials-analysis results**

Table S1 Weighted logistic regression analysis of the association between active smoking, age, and infertility, cross-sectional analysis of NHANES 2013-2020 (United States)

Variables	Comparison group	Reference group	Model a (age<40) (n=3429)			Model b (age≥40) (n=1553)		
			OR	95%CI	P value	OR	95%CI	P value
Bivariable models			Model a1			Model b1		
Age (baseline=18)	Continuous		1.12	1.09-1.14	<0.001	0.86	0.89-1.04	0.283
Smoker Current	Current	Never	3.64	1.51-8.78	0.005	1.17	0.77-1.77	0.460
	Former		5.77	2.31-14.41	<0.001	1.01	0.68-1.51	0.950
Interaction item	Age: Current		0.91	0.86-0.97	0.002	—	—	—
	Age: Former		0.91	0.85-0.97	0.004	—	—	—
Multi-variable models			Model a2			Model b2		
Age (baseline=18)	Continuous		1.10	1.07-1.14	<0.001	0.93	0.85-1.02	0.124
Smoker Current	Current	Never	3.10	1.14-8.39	0.005	1.15	0.73-1.81	0.529
	Former		4.83	1.78-13.09	<0.001	0.80	0.52-1.24	0.314
Interaction item	Age: Current		0.92	0.86-0.98	0.010	—	—	—
	Age: Former		0.91	0.85-0.98	0.012	—	—	—

Note: OR: odds ratio; CI: Confidence Interval;

Multi-variable analysis adjusted for race/ ethnicity, education, BMI, PIR (log), alcohol drinker, hypertension, diabetes and passive smoking.

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Table S2 Weighted logistic regression analysis of the association between serum cotinine, age, and infertility, cross-sectional analysis of NHANES 2013-2020 (United States)

Variables	Comparison group	Reference	Model c (age<40) (n=3208)			Model d (age≥40) (n=1494)		
			OR	95%CI	P value	OR	95%CI	P value
Bivariable models			Model c1			Model d1		
Age (baseline=18)	Continuous		1.14	1.10-1.18	<0.001	0.96	0.88-1.04	0.277
Cotinine group(ng/mL)	0.5-10	<0.05	3.65	1.56-8.54	0.004	1.14	0.59-2.22	0.691
	>10		6.74	2.69-16.89	<0.001	1.03	0.68-1.56	0.876
Interaction item	Age: 0.5-10		0.95	0.90-1.00	0.049	—	—	—
	Age: >10		0.89	0.84-0.95	<0.001	—	—	—
Multi-variable models			Model c2			Model d2		
Age (baseline=18)	Continuous		1.13	1.08-1.18	<0.001	0.93	0.85-1.02	0.136
Cotinine group(ng/mL)	0.5-10	<0.05	4.27	1.55-11.76	0.006	1.15	0.57-2.31	0.691
	>10		7.66	2.67-22.01	<0.001	1.18	0.75-1.85	0.460
Interaction item	Age: 0.5-10		0.93	0.88-1.10	0.039	—	—	—
	Age: >10		0.89	0.83-0.95	<0.001	—	—	—

Note: OR: odds ratio; CI: Confidence Interval;

Multi-variable analysis adjusted for race/ ethnicity, education, BMI, PIR (log), alcohol drinker, hypertension and diabetes.

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