

Supplementary Table S1. Summary of the general situation of this survey

District	Water samples	Salt sample	Urine sample	B ultrasonic	Questionnaire
coastal urban area(CUA)	13	203	1,317	1,317	1,113
non-coastal urban area (Non-CUA)	6	96	649	649	551
coastal rural area(CRA)	19	190	1,315	1,315	1,106
non-coastal rural area (Non-CRA)	8	89	645	645	555
All	46	578	3,926	3,926	3,325

Note. CUA: coastal urban area; Non-CUA: non-coastal urban area; CRA: coastal rural area; Non-CRA: non-coastal rural area. The coastal urban survey sites (Jimei District of Xiamen City, Chengxiang District of Putian City, Taijiang District of Fuzhou City, Jiaocheng District of Ningde City, Licheng District of Quanzhou City, and Xiangcheng District of Zhangzhou City), The inland urban survey sites (Xinluo District of Longyan City, Yanping District of Nanping City, and the Sanyuan District of Sanming City), The coastal rural survey sites (Xiang'an District of Xiamen City, Licheng District of Putian City, Changle City of Fuzhou, Xiapu County of Ningde City, Nan'an City of Yangzhou City, and Dongshan County of Zhangzhou City), The inland rural survey sites (the Zhangping City of Longyan City, Jian'ou city of Nanping City, and Mingxi County of Sanming City).

Supplementary Table S2. Comparison of urinary iodine concentrations among the adult population

Variables	Number of subjects	Urinary iodine concentration	P
Water iodine			$P < 0.001$
0–5 µg/L	2,616	127.0 (60.3–183.3)	
5–10 µg/L	1,099	133.0 (79.0–211.5)	
10–20 µg/L	207	156.5 (85.6–244.5)	
Iodized salt			$P = 0.002$
NO	58	113.8 (49.5–183.5)	
YES	526	184.0 (118.8–280.8)	
Iodine-rich food			$P < 0.05$
None	160	124.5 (77.7–196.0)	
1–11t per year	467	126.75 (69.1–194.8)	
1–3t per month	1,093	147.30 (83.8–228.5)	
1–2t per week	1,155	147.33 (82.2–235.8)	
> 3t per week	454	156.0 (87.5–237.0)	
Goitrogenic food			$P > 0.05$
None	74	130.0 (81.75–183.5)	
1–11t per year	304	128.0 (73.3–197.5)	
1–3t per month	662	150.0 (93.8–242.0)	
1–2t per week	1,127	142.0 (80.0–227.0)	
> 3t per week	1,162	144.0 (80.0–229.0)	

Note. ¹Wilcoxon's test. ²Values are medians; IQRs in parentheses. ³Iodized salt indicates that subjects consistently consumed iodized salt; non-iodized salt indicates that subjects intermittently consumed iodized salt or consistently consumed non-iodized salt. 1–11t: 1–11 times; 1–3t: 1–3 times; 1–2t: 1–2 times; 3t: 3 times.

Supplementary Table S3. The joint association¹ of iodized salt and iodine-rich food on UIC among male and female adults, respectively

Type of salt	Iodine-rich food	UI (µg/L)	UI < 100 µg/L (%)	UI ≥ 100 µg/L (%)	OR (95% CI)	P	
Pooled							
Iodized salt	Yes	149 (85.0–235.0)	334 (73.9)	2,148 (79.7)	1.00 (ref)	0.012	
	No	130 (73.7–202.0)	43 (10.3)	427 (14.7)			
Non-iodized salt	Yes	140 (78.0–214.0)	27 (6.6)	193 (6.4)	1.19 (1.1–1.3)		
	No	118 (68.5–169.0)	15 (3.6)	138 (4.7)			
<i>P</i> < 0.000							
Female							
Iodized salt	Yes	150 (83.0–238.0)	175 (76.8)	1,062 (72.5)	1.00 (ref)	0.050	
	No	134 (75.7–208.5)	28 (12.3)	226 (15.4)			
Non-iodized salt	Yes	146 (78.0–216.5)	15 (6.6)	98 (6.7)	1.14 (1.1–1.3)		
	No	116.5 (60.0–191.7)	10 (4.4)	78 (5.3)			
<i>P</i> < 0.010							
Male							
Iodized salt	Yes	149 (86.5–230.0)	159 (83.2)	1,086 (75.3)	1.00 (ref)	0.011	
	No	123 (70.2–183.2)	15 (7.9)	201 (13.9)			
Non-iodized salt	Yes	130 (72.0–215.0)	12 (6.3)	95 (6.6)	1.33 (1.1–1.7)		
	No	122 (77.0–189.0)	5 (2.6)	60 (4.2)			
<i>P</i> < 0.001							

Supplementary Table S4. Associations between iodized salt, milk and dairy product, iodine-rich food, goitrogenic food, drinking water, and thyroid nodule

Variables	Nodule <i>N</i> (%)	Non-nodule <i>N</i> (%)	OR (95% CI)	<i>P</i>
Pooled				
Water iodine				
0–5 µg/L	561 (63.8)	2,059 (67.6)	1.00	
5–10 µg/L	270 (30.7)	830 (27.2)	0.8 (0.7–1.0)	0.12
10–20 µg/L	49 (5.2)	158 (5.6)	0.8 (0.5–1.3)	0.49
Salt iodine				
No	692 (86.1)	2,257 (88.8)	1.00	
Yes	112 (13.9)	284 (11.2)	1 (0.8–1.2)	0.81
Iodine-rich food				
< 1t per week	416 (53.0)	1,306 (51.3)	1.00	
1–2t per week	272 (34.6)	885 (34.7)	1.0 (0.8–1.2)	0.69
3–4t per week	73 (9.3)	264 (10.4)	1.0 (0.7–1.4)	0.94
> 5t per week	24 (3.1)	93 (3.6)	1.1 (0.7–1.9)	0.75
Goitrogenic food				
< 1t per week	239 (30.4)	802 (31.5)	1.00	
1–2t per week	277 (35.3)	852 (33.4)	0.9 (0.7–1.1)	0.22
3–4t per week	174 (22.2)	599 (23.5)	1.1 (0.8–1.3)	0.69
> 5t per week	95 (12.1)	295 (11.6)	1.0 (0.8–1.4)	0.93
Man				
Drinking water				
0–5 µg/L	202 (63.7)	1,093 (67.6)	1.00	
5–10 µg/L	99 (31.2)	443 (27.4)	0.8 (0.6–1.1)	0.22
10–20 µg/L	16 (5.0)	82 (5.1)	0.7 (0.3–1.6)	0.42
Iodized salt				
No	32 (10.1)	169 (10.4)	1.00	
Yes	284 (89.6)	1,442 (89.1)	1.0 (0.8–1.5)	0.71
Iodine-rich food				
< 1t per week	150 (52.3)	684 (50.7)	1.00	
1–2t per week	100 (34.8)	472 (35)	0.9 (0.7–1.3)	0.69
3–4t per week	30 (10.5)	138 (10.2)	0.8 (0.5–1.3)	0.45
> 5t per week	7 (2.4)	56 (4.1)	1.5 (0.6–3.5)	0.38
Goitrogenic food				
< 1t per week	98 (34.1)	412 (30.5)	1.00	
1–2t per week	101 (35.2)	472 (35)	1.1 (0.8–1.5)	0.60
3–4t per week	58 (20.2)	309 (22.9)	1.4 (0.9–2.0)	0.12
> 5t per week	30 (10.5)	157 (11.6)	1.3 (0.8–2.1)	0.29
Women				
Water iodine				
0–5 µg/L	359 (63.8)	966 (67.6)	1.00	

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Variables	Nodule N (%)	Non-nodule N (%)	OR (95% CI)	P
5–10 µg/L	171 (30.4)	387 (27.1)	0.9 (0.5–1.7)	0.73
10–20 µg/L	33 (5.9)	76 (5.3)	0.9 (0.6–1.2)	0.30
Iodized salt				
NO	63 (11.2)	156 (10.9)	1.00	
YES	500 (88.8)	1269 (88.9)	0.9 (0.7–1.2)	0.55
Iodine-rich food				
< 1t per week	266 (53.4)	622 (51.9)	1.00	
1–2t per week	172 (34.5)	413 (34.5)	1.0 (0.9–1.3)	0.89
3–4t per week	43 (8.6)	126 (10.5)	1.1 (0.7–1.7)	0.58
> 5t per week	17 (3.4)	37 (3.1)	0.9 (0.5–1.8)	0.80
Goitrogenic food				
< 1t per week	141 (28.3)	390 (32.6)	1.00	
1–2t per week	176 (35.3)	380 (31.7)	0.7 (0.5–1)	0.22
3–4t per week	116 (23.3)	290 (24.2)	0.8 (0.6–1.2)	0.29
> 5t per week	65 (13.1)	138 (11.5)	0.8 (0.5–1.2)	0.21

Note. ¹Adjustment for age, iodized salt, water iodine, urban and rural, geographical, BMI, ethnicity, marital status, education, occupation, smoking, drinking, consumption of salt, iodine-rich food, goitrogenic food, milk, and dairy product intake. ²A logistic regression model was used in the analysis. ³OR: Odds Ratio; BMI: Body mass index; 95% CI: 95% confidence interval. 1t: 1 times; 1–2t: 1–2 times; 3–4t: 3–4 times; 5t: 5 times.

Supplementary Table S5. Socio-demographic characteristics of different patients

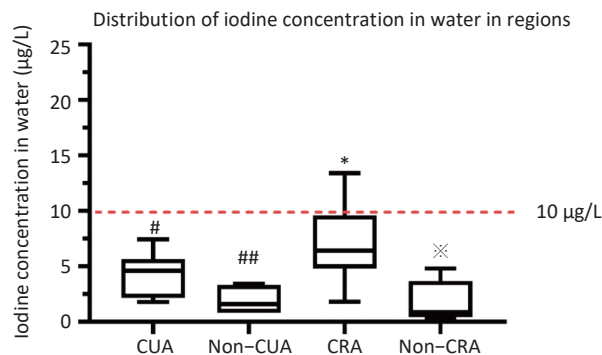
Variables	Nodule (%)	Non-nodule (%)	P
Basic information			
Age (y)	47.2 ± 20.5	37.7 ± 20.1	< 0.001
Sex, n (%)			
Male	320 (36)	1614 (53.2)	< 0.001
Female	569 (64)	1420 (46.8)	
Marital status			
Unmarried	108 (13.4)	489 (19.2)	< 0.001
Married	634 (78.8)	1969 (77.5)	
Divorce	9 (1.1)	24 (0.9)	
Widowed	54 (6.7)	60 (2.4)	
Educational status			
Primary and below	308 (38.3)	768 (30.2)	< 0.001
Secondary education	183 (22.7)	680 (26.8)	
Secondary education	209 (26.0)	629 (24.7)	
College or above	105 (13.0)	465 (18.3)	
Physical index			
BMI	23.2 ± 3.4	23.1 ± 3.9	> 0.05
BSA	1.59 ± 0.2	1.61 ± 0.2	0.015

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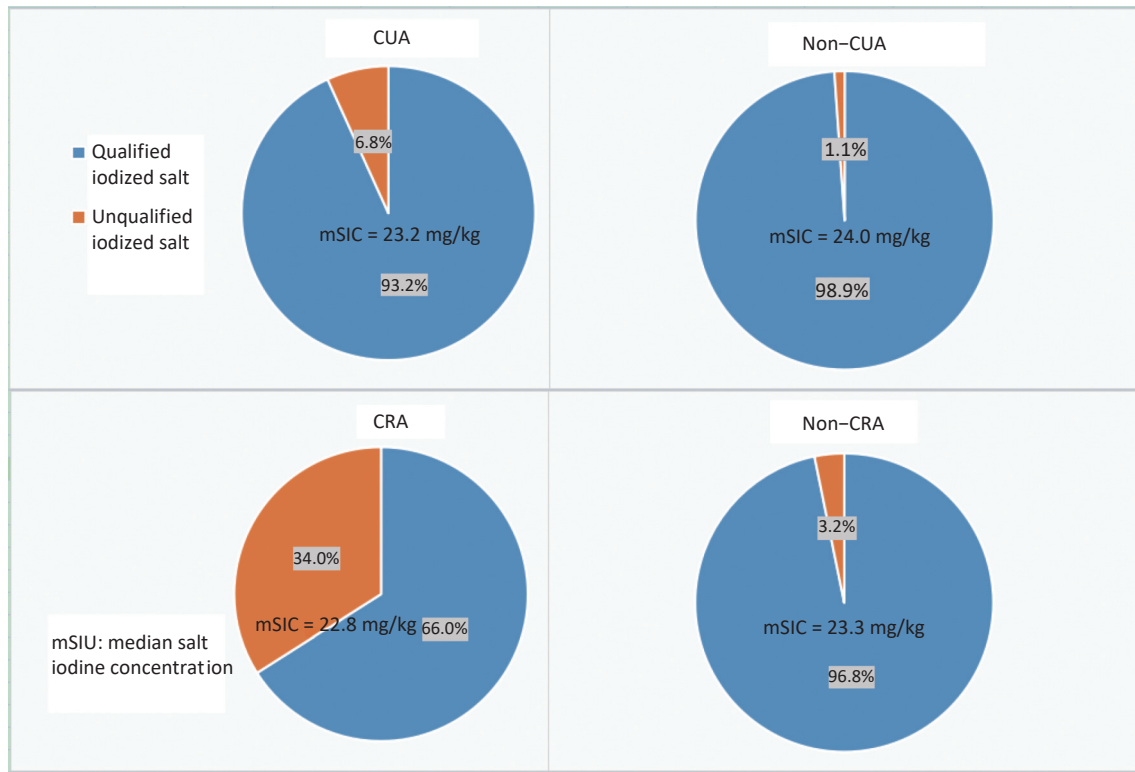
Variables	Nodule (%)	Non-nodule (%)	P
Different Regions			< 0.001
Coastal cities	323 (36.3)	994 (32.8)	
Coastal rural areas	319 (35.9)	992 (32.7)	
Inland cities	149 (16.8)	502 (16.5)	
Rural land	98 (11.0)	546 (18.0)	
Lifestyle			
Smoking			0.05
No	628 (78.0)	1835 (72.2)	
Closed	28 (3.5)	119 (4.7)	
Yes	149 (18.5)	588 (23.1)	
Drinking			< 0.001
No	677 (84.1)	1978 (77.8)	
Closed	19 (2.4)	52 (2.1)	
Yes	109 (13.5)	512 (20.1)	
Exercise habits			0.023
≥ 6/week	209 (26.0)	530 (20.8)	
3–5/week	131 (16.3)	397 (15.6)	
1–2/week	130 (16.2)	473 (18.6)	
< 1/week	296 (36.8)	1023 (40.2)	
None	38 (4.7)	119 (4.7)	
Stay up late			0.001
No	587 (74.8)	1745 (68.5)	
Yes	198 (25.2)	803 (31.5)	
Eating habits			
Water iodine			> 0.05
0–5 µg/L	561 (63.8)	2059 (67.6)	
5–10 µg/L	270 (30.7)	830 (27.2)	
10–20 µg/L	49 (5.2)	158 (5.6)	
Salt iodine			> 0.05
NO	36 (4.5)	144 (5.8)	
YES	703 (88.2)	2226 (89.0)	
Iodine-rich food			0.002
< 1/week	416 (53.0)	1306 (51.3)	
1–2/week	272 (34.6)	885 (34.7)	
3–4/week	73 (9.3)	264 (10.4)	
> 5/week	24 (3.1)	93 (3.6)	
Milk and dairy intake			< 0.001
< 1 per week	432 (55)	1379 (54.1)	
1–2 per week	106 (13.5)	497 (19.5)	
3–4/week	94 (12)	277 (10.9)	
> 5/week	153 (19.5)	395 (15.5)	

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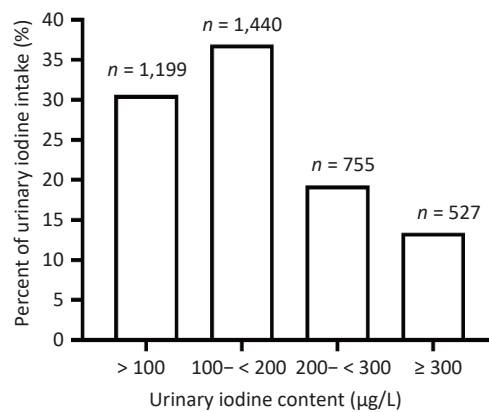
Variables	Nodule (%)	Non-nodule (%)	P
Goitrogenic food			> 0.05
< 1/week	239 (30.4)	802 (31.5)	
1–2/week	277 (35.3)	852 (33.4)	
3–4/week	174 (22.2)	599 (23.5)	
> 5/week	95 (12.1)	295 (11.6)	
Vegetable and fruit intake			> 0.05
< 1/week	8 (1)	39 (1.5)	
1–2/week	22 (2.8)	88 (3.5)	
3–4/week	74 (9.4)	221 (8.7)	
> 5/week	681 (86.8)	2,200 (86.3)	
Soybean and Products Intake			> 0.05
< 1/week	295 (37.6)	868 (34.1)	
1–2/week	254 (32.4)	878 (34.5)	
3–4/week	138 (17.6)	491 (19.3)	
> 5/week	98 (12.5)	311 (12.2)	
Social psychological factors			
Daily work hours			< 0.001
< 2 hours	153 (19.5)	401 (15.7)	
2–4 hours	120 (15.3)	275 (10.8)	
5–7 hours	279 (35.5)	857 (33.6)	
> 8 hours	233 (29.7)	1,015 (39.9)	
Pressure in the last five years			0.002
No pressure	470 (59.9)	1,325 (52)	
Occasional stress	242 (30.8)	944 (37)	
Always under pressure	62 (7.9)	259 (10.2)	
Anxiety	11 (1.4)	20 (0.8)	



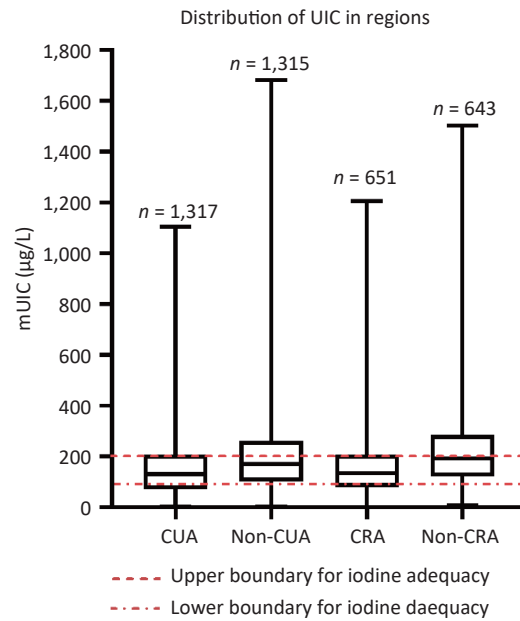
Supplementary Figure S1. Distribution of mWIU in regions. #Median water iodine concentration (mWIC) of CRA was significantly higher compared to CUA ($P < 0.05$). ##Median water iodine concentration (mWIC) of Non-CUA was significantly lower compared to CUA ($P < 0.05$). *Median water iodine concentration (mWIC) of CRA was significantly higher compared to Non-CRA ($P < 0.05$). Median water iodine concentration (mWIC) of Non-CRA was significantly lower compared to Non-CUA ($P < 0.05$).



Supplementary Figure S2. The percentage of qualified iodized and unqualified iodized salt collected from households from different regions in the year 2017.



Supplementary Figure S3. Distribution of UICs in the study population. In the study population, 30.57% of adults were iodine deficient (< 100 µg/L), 36.92% of adults had the recommended intake (100–200 µg/L), 19.25% of adults had greater than appropriate iodine intake (200–300 µg/l), and 13.36% of adults had excessive iodine intake (> 300 µg/L). UIC: urinary iodine concentration.



Supplementary Figure S4. Distribution of UIC by different regions. mUIC: urinary iodine concentration; CUA: coastal urban area; Non-CUA: non-coastal urban area; CRA: coastal rural area; Non-CRA: non-coastal rural area