**Supplementary table 1** Quantile regression analysis on the relationship between Tvol and related variables

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Independent  Variables | 2.5th | |  | 25th | |  | 50th | |  | 75th | |  | 97.5th | |
| *β（95CI%)* | *pa* |  | *β（95CI%)* | *pa* |  | *β（95CI%)* | *pa* |  | *β（95CI%)* | *pa* |  | *β（95CI%)* | *pa* |
| **Total** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Age | 0.00(-0.01,0.02) | 0.50 |  | 0.02(0.00,0.03) | 0.003 |  | 0.02(0.01,0.03) | <0.001 |  | 0.03(0.02,0.04) | <0.001 |  | 0.08(0.03,0.13) | 0.001 |
| BSA | 4.60(3.14,6.06) | <0.001 |  | 5.90(5.10,6.70) | <0.001 |  | 7.17(6.28,8.06) | <0.001 |  | 8.05(7.13,8.97) | <0.001 |  | 6.32(2.70,9.95) | 0.0006 |
| TSH | -0.44(-0.73,-0.15) | 0.003 |  | -0.48(-0.63,-0.33) | <0.001 |  | -0.65(-0.79,-0.51) | <0.001 |  | -0.94(-1.16,-0.73) | <0.001 |  | -1.19(-1.81,-0.57) | 0.0002 |
| TNs | 0.26(-0.23,0.75) | 0.30 |  | 0.51(0.10,0.92) | 0.02 |  | 1.08(0.64,1.51) | <0.001 |  | 1.02(0.37,1.67) | 0.002 |  | 4.96(1.92,8.01) | 0.001 |
| UIC | 0.00(-0.00,0.00) | 0.14 |  | 0.00(0.00,0.00) | 0.05 |  | 0.00(0.00,0.00) | <0.001 |  | 0.00(-0.00,0.00) | 0.38 |  | 0.00(-0.00,0.00) | 0.91 |
| MetS | 0.17(-0.29,0.62) | 0.47 |  | 0.10(-0.22,0.43) | 0.53 |  | 0.12(-0.32,0.55) | 0.60 |  | 0.77(0.18,1.36) | 0.01 |  | 0.99(-0.99,2.97) | 0.33 |
| Smoking | 0.47(-0.09,1.00) | 0.10 |  | 0.81(0.46,1.16) | <0.001 |  | 0.73(0.35,1.11) | 0.0002 |  | 0.71(0.21,1.20) | 0.01 |  | 1.72(-0.07,3.50) | 0.06 |
| **Males** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Age | 0.02(-0.00,0.04) | 0.02 |  | 0.03(0.01,0.04) | <0.001 |  | 0.05(0.03,0.06) | <0.001 |  | 0.04(0.02,0.07) | <0.001 |  | 0.10(0.03,0.16) | 0.01 |
| BSA | 3.70(1.92,5.47) | <0.001 |  | 4.43(3.10,5.76) | <0.001 |  | 5.09(3.78,6.40) | <0.001 |  | 7.22(5.33,9.12) | <0.001 |  | 5.72(0.46,10.98) | 0.03 |
| TSH | -0.53(-0.97,-0.08) | 0.01 |  | -0.58(-0.83,-0.32) | <0.001 |  | -0.84(-1.08,-0.60) | <0.001 |  | -0.93(-1.27,-0.58) | <0.001 |  | -1.48(-2.39,-0.57) | 0.001 |
| TNs | -0.07(-1.14,1.01) | 0.90 |  | 0.83(0.28,1.37) | 0.003 |  | 0.96(0.33,1.59) | 0.003 |  | 1.85(0.58,3.12) | 0.004 |  | 6.70(2.19,11.22) | 0.003 |
| UIC | 0.00(-0.00,0.01) | 0.31 |  | 0.00(-0.00,0.00) | 0.24 |  | 0.00(-0.00,0.00) | 0.70 |  | 0.00(-0.00,0.00) | 0.86 |  | 0.00(-0.01,0.01) | 0.95 |
| MetS | 0.85(0.01,1.69) | 0.047 |  | 0.59(0.10,1.08) | 0.02 |  | 1.00(0.50,1.50) | <0.001 |  | 1.40(0.63,2.17) | <0.0004 |  | 1.36(-1.09,3.82) | 0.28 |
| Smoking | -0.11(-0.89,0.66) | 0.77 |  | 0.58(0.19,0.98) | 0.003 |  | 0.46(0.04,0.87) | 0.03 |  | 0.49(-0.13,1.10) | 0.12 |  | 1.68(-0.22,3.57) | 0.08 |
| **Females** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Age | -0.01(-0.03,0.00) | 0.06 |  | -0.01(-0.02,0.00) | 0.19 |  | 0.01(-0.00,0.02) | 0.16 |  | 0.01(-0.01,0.04) | 0.28 |  | 0.06(-0.03,0.15) | 0.20 |
| BSA | 4.35(2.51,6.20) | <0.001 |  | 5.32(4.41,6.23) | <0.001 |  | 6.70(5.17,8.24) | <0.001 |  | 7.71(5.54,9.88) | <0.001 |  | 9.64(2.66,16.61) | 0.01 |
| TSH | -0.38(-0.69,-0.07) | 0.02 |  | -0.60(-0.78,-0.43) | <0.001 |  | -0.53(-0.76,-0.30) | <0.001 |  | -0.78(-1.16,-0.39) | <0.001 |  | -0.92(-1.84,0.00) | 0.05 |
| TNs | 0.49(-0.00,0.98) | 0.05 |  | 0.40(-0.05,0.86) | 0.08 |  | 1.13(0.57,1.69) | <0.001 |  | 1.11(0.43,1.79) | 0.001 |  | 3.58(-0.38,7.54) | 0.08 |
| UIC | -0.00(-0.00,0.00) | 0.78 |  | 0.00(0.00,0.00) | 0.02 |  | 0.00(0.00,0.00) | 0.03 |  | 0.00(-0.00,0.00) | 0.15 |  | -0.00(-0.01,0.01) | 0.83 |
| MetS | 0.23(-0.46,0.92) | 0.52 |  | -0.19(-0.63,0.25) | 0.40 |  | -0.58(-1.12,-0.03) | 0.03 |  | -0.05(-1.02,0.92) | 0.92 |  | 0.19(-3.17,3.54) | 0.90 |
| Smoking | 0.09(-3.29,3.47) | 0.96 |  | -0.05(-0.62,0.52) | 0.86 |  | -0.33(-1.95,1.28) | 0.68 |  | 0.02(-1.52,1.55) | 0.98 |  | 0.04(-17.05,17.13) | 1.00 |

*a*Quantile regression was used to estimate the effects of BSA, TSH, TN, UIC, MetS, and smoking on Tvol across different quantiles. p<0.05 indicates statistical significance. BSA, body surface area; TSH, thyroid-stimulating hormone; TNs, thyroid nodules; UIC, urine iodine concentrations; MetS, metabolic syndrome.

**Supplementary table 2** The reference values for Tvol based on bootstrapping in subjects with TNs

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Population Categories | Mean | 2.5th | 25th | 50th | 75th | 97.5th |
| Total | 9.65 (9.48,9.81) | 4.42 (4.22,4.62) | 7.09 (6.97,7.24) | 9.00 (8.84,9.18) | 11.48 (11.22,11.87) | 18.38 (17.59,19.20) |
| Males | 10.80 (10.58,11.04) | 5.59 (5.31,5.89) | 8.29 (8.06,8.48) | 10.15 (9.92,10.39) | 12.64 (12.37,12.97) | 19.68 (18.59,21.07) |
| Females | 8.03 (7.82,8.24) | 3.93 (3.81,4.21) | 5.99 (5.82,6.13) | 7.46 (7.27,7.68) | 9.42 (9.05,9.72) | 15.27 (14.39,16.35) |

The 95% CIs of different quantiles (2.5th, 25th, 50th, 75th, and 97.5th) of Tvol were derived from 1000 bootstrapped replications.

**Supplementary table 3**  The reference values for Tvol based on bootstrapping in subjects without TNs

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Population Categories | Mean | 2.5th | 25th | 50th | 75th | 97.5th |
| Total | 9.25 (9.09,9.40) | 4.37 (4.20,4.62) | 6.97 (6.81,7.13) | 8.76 (8.55,8.93) | 11.09 (10.81,11.34) | 16.33 (15.90,16.98) |
| Males | 10.31 (10.09,10.52) | 5.49 (5.27,5.88) | 8.01 (7.76,8.31) | 9.85 (9.59,10.07) | 12.17 (11.81,12.49) | 17.33 (16.35,18.16) |
| Females | 7.70 (7.49,7.91) | 3.93 (3.81,4.20) | 5.88 (5.70,6.07) | 7.26 (7.06,7.48) | 8.93 (8.63,9.33) | 14.34 (12.97,15.33) |

The 95% CIs of different quantiles (2.5th, 25th, 50th, 75th, and 97.5th) of Tvol were derived from 1000 bootstrapped replications.

**Supplementary fig. 1** Thyroid volume among women without and with the previous pregnancy (a) and among premenopausal and postmenopausal women (b). Comparison in women without and with the previous pregnancy: p>0.05; Comparison of premenopausal and postmenopausal women: p>0.05. (a) A: The women who have never been pregnant; (a) B: The women who have been pregnant one or more times. (b) A: The women who are not menopausal; (b) B: The women who have been menopausal.