# *Supplemental Material*

**Section 1: Table S1-S4**

**Table S1.** Clinical and laboratory characteristics of participants according to prior-defined centile categories of FT3 from 2010 to 2018.

**Table S2.** Clinical and laboratory characteristics of participants according to prior-defined centile categories of FT4 from 2010 to 2018.

**Table S3.** Clinical and laboratory characteristics of participants according to prior-defined centile categories of TSH from 2010 to 2018.

**Table S4.** Clinical and laboratory characteristics of participants with and without MAFLD from 2010 to 2017 in sensitivity analysis 2.

**Section 2: Figure S1-S6**

**Figure S1.** Restricted cubic spline analyses with four knots for nonlinear association between FT4 levels and MAFLD on a continuous scale. (A) all population. (B) by sex. (C) by age groups. (D) by location groups.

**Figure S2.** Multivariable-adjusted logistic regression analyses for MAFLD according to FT4 levels by the prior-defined centile categories.

**Figure S3.** Restricted cubic spline analyses with five knots for nonlinear association between TSH levels and MAFLD on a continuous scale. (A) all population. (B) by sex. (C) by age groups. (D) by location groups.

**Figure S4.** Multivariable-adjusted logistic regression analyses for MAFLD according to TSH levels by the prior-defined centile categories.

**Figure S5.** Restricted cubic spline analyses with different knots for nonlinear association between thyroid function parameters and MAFLD on a continuous scale in sensitivity analysis 1. (A) FT3. (B) FT4. (C) TSH.

**Figure S6.** Restricted cubic spline analyses with different knots for nonlinear association between thyroid function parameters and MAFLD on a continuous scale in sensitivity analysis 2. (A) FT3. (B) FT4. (C) TSH.

**Table S1.** Clinical and laboratory characteristics of participants according to prior-defined centile categories of FT3 from 2010 to 2018.

| Characteristics | All | Centile (pmol/L) 1st-5th (FT3<3.89) | 6th-20th (3.89≤FT3<4.38) | 21st-40th (4.38≤FT3<4.74) | 41st-60th (4.74≤FT3<5.06) | 61st-80th (5.06≤FT3<5.45) | 81st-95th (5.45≤FT3<6.05) | 96st-100th (FT3≥6.05) | P-value |
|---|---|---|---|---|---|---|---|---|---|
| | N = 177540 | N = 8742 | N = 26695 | N = 34854 | N = 35450 | N = 35617 | N = 27174 | N = 9008 | |
| **Clinical characteristics** | | | | | | | | | |
| Age (years, median [IQR]) | 48.00 [42.00, 54.00] | 50.00 [44.00, 57.00] | 49.00 [43.00, 55.00] | 49.00 [43.00, 55.00] | 48.00 [42.00, 54.00] | 47.00 [41.00, 53.00] | 46.00 [39.00, 51.00] | 44.00 [36.00, 50.00] | <0.05 |
| Gender, Male, n (%) | 106859 (60.19) | 2103 (24.06) | 8991 (33.68) | 16857 (48.36) | 22035 (62.16) | 26292 (73.82) | 23011 (84.68) | 7570 (84.04) | <0.05 |
| BMI (kg/m$^2$, median [IQR]) | 24.76 [22.48, 27.04] | 23.33 [21.25, 25.69] | 23.75 [21.59, 26.08] | 24.35 [22.10, 26.60] | 24.83 [22.59, 27.05] | 25.18 [22.99, 27.39] | 25.58 [23.49, 27.80] | 25.60 [23.33, 27.96] | <0.05 |
| WC (cm, median [IQR]) | 87.00 [79.00, 94.00] | 80.00 [73.00, 88.00] | 82.00 [75.00, 90.00] | 85.00 [77.00, 93.00] | 88.00 [80.00, 94.00] | 89.00 [82.00, 96.00] | 91.00 [84.00, 97.00] | 91.00 [84.00, 97.00] | <0.05 |
| Self-reported smoking, n (%) | 26119 (14.71) | 327 (3.74) | 1561 (5.85) | 3529 (10.13) | 5272 (14.87) | 6803 (19.10) | 6431 (23.67) | 2196 (24.38) | <0.05 |
| Self-reported drinking, n (%) | 39846 (22.44) | 715 (8.18) | 3214 (12.04) | 6174 (17.71) | 8243 (23.25) | 9872 (27.72) | 8798 (32.38) | 2830 (31.42) | <0.05 |
| SBP (mmHg, median [IQR]) | 120.00 [109.00, 132.00] | 114.00 [103.00, 128.00] | 116.00 [104.00, 129.00] | 118.00 [107.00, 131.00] | 121.00 [109.00, 133.00] | 122.00 [111.00, 133.00] | 124.00 [113.00, 134.00] | 124.00 [114.00, 135.00] | <0.05 |
| DBP (mmHg, median [IQR]) | 78.00 [70.00, 87.00] | 74.00 [66.00, 82.00] | 75.00 [68.00, 83.00] | 77.00 [69.00, 85.00] | 79.00 [71.00, 87.00] | 80.00 [72.00, 88.00] | 81.00 [74.00, 89.00] | 81.00 [74.00, 89.00] | <0.05 |
| **Laboratory Examination** | | | | | | | | | |
| HR (/min, median [IQR]) | 70.00 [64.00, 76.00] | 69.00 [64.00, 74.00] | 69.00 [64.00, 75.00] | 70.00 [64.00, 75.00] | 70.00 [64.00, 76.00] | 70.00 [64.00, 76.00] | 71.00 [65.00, 76.00] | 72.00 [66.00, 78.00] | <0.05 |
| LEU (×10$^9$/L, median [IQR]) | 5.82 [4.94, 6.88] | 5.48 [4.59, 6.54] | 5.55 [4.70, 6.57] | 5.67 [4.82, 6.68] | 5.81 [4.94, 6.83] | 5.94 [5.07, 6.98] | 6.10 [5.24, 7.17] | 6.28 [5.32, 7.41] | <0.05 |
| RBC (×10$^{12}$/L, median [IQR]) | 4.79 [4.46, 5.12] | 4.37 [4.10, 4.66] | 4.51 [4.24, 4.81] | 4.66 [4.37, 4.98] | 4.80 [4.50, 5.10] | 4.92 [4.62, 5.20] | 5.05 [4.77, 5.30] | 5.10 [4.82, 5.38] | <0.05 |
| PLT (×10$^9$/L, median [IQR]) | 220.00 [188.00, 257.00] | 222.00 [187.00, 259.00] | 222.00 [188.00, 259.00] | 221.00 [188.00, 258.00] | 220.00 [187.00, 256.00] | 219.00 [187.00, 255.00] | 220.00 [188.00, 254.00] | 224.00 [192.00, 258.00] | <0.05 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HGB (g/L, median [IQR]) | 147.00 [135.00, 158.00] | 131.00 [123.00, 141.00] | 136.00 [127.00, 146.00] | 142.00 [132.00, 153.00] | 147.00 [137.00, 157.00] | 152.00 [142.00, 160.00] | 156.00 [147.00, 163.00] | 157.00 [148.00, 165.00] | <0.05 |
| ALT (IU/L, median [IQR]) | 19.40 [13.80, 28.70] | 14.60 [11.00, 21.00] | 15.60 [11.60, 22.30] | 17.50 [12.70, 25.20] | 19.40 [14.00, 28.00] | 21.40 [15.30, 31.10] | 24.00 [17.00, 35.30] | 27.00 [18.70, 40.30] | <0.05 |
| AST (IU/L, median [IQR]) | 18.40 [15.50, 22.60] | 16.90 [14.30, 20.70] | 17.10 [14.60, 20.60] | 17.80 [15.10, 21.60] | 18.40 [15.50, 22.40] | 19.00 [16.10, 23.30] | 19.90 [16.70, 24.60] | 21.00 [17.30, 27.10] | <0.05 |
| GGT (IU/L, median [IQR]) | 26.00 [16.00, 46.00] | 16.70 [12.00, 27.20] | 18.10 [12.60, 30.60] | 22.00 [14.20, 38.00] | 26.20 [16.60, 45.00] | 30.70 [19.00, 52.00] | 36.30 [23.00, 62.00] | 40.20 [24.00, 70.07] | <0.05 |
| Scr (μmol/L, median [IQR]) | 68.00 [57.60, 78.00] | 60.15 [53.00, 69.70] | 61.00 [54.00, 71.90] | 64.30 [55.30, 75.80] | 68.10 [58.00, 78.30] | 71.00 [61.00, 80.00] | 72.90 [64.00, 81.00] | 72.00 [63.00, 80.00] | <0.05 |
| BUN (mmol/L, median [IQR]) | 4.90 [4.11, 5.72] | 4.70 [3.93, 5.66] | 4.74 [4.00, 5.60] | 4.80 [4.10, 5.70] | 4.90 [4.14, 5.74] | 4.93 [4.20, 5.79] | 5.00 [4.28, 5.80] | 4.98 [4.22, 5.83] | <0.05 |
| UA (μmol/L, median [IQR]) | 327.00 [264.40, 391.70] | 271.00 [228.00, 328.00] | 284.00 [237.00, 347.00] | 306.50 [250.60, 372.60] | 330.00 [268.00, 393.00] | 347.40 [287.10, 406.00] | 363.00 [307.85, 419.00] | 365.00 [307.30, 423.00] | <0.05 |
| FBG (mmol/L, median [IQR]) | 5.32 [4.97, 5.82] | 5.09 [4.76, 5.56] | 5.19 [4.86, 5.64] | 5.28 [4.94, 5.76] | 5.34 [5.00, 5.83] | 5.39 [5.03, 5.89] | 5.42 [5.07, 5.92] | 5.45 [5.09, 5.93] | <0.05 |
| TC (mmol/L, median [IQR]) | 4.72 [4.15, 5.35] | 4.82 [4.23, 5.51] | 4.75 [4.17, 5.40] | 4.74 [4.16, 5.38] | 4.72 [4.15, 5.35] | 4.72 [4.15, 5.32] | 4.70 [4.14, 5.29] | 4.61 [4.02, 5.23] | <0.05 |
| TG (mmol/L, median [IQR]) | 1.37 [0.94, 2.05] | 1.13 [0.80, 1.69] | 1.18 [0.83, 1.76] | 1.28 [0.89, 1.92] | 1.38 [0.95, 2.05] | 1.48 [1.02, 2.18] | 1.57 [1.09, 2.30] | 1.58 [1.09, 2.34] | <0.05 |
| LDL-C (mmol/L, median [IQR]) | 3.00 [2.47, 3.55] | 3.00 [2.45, 3.60] | 2.99 [2.46, 3.55] | 3.00 [2.47, 3.56] | 3.00 [2.47, 3.55] | 3.01 [2.49, 3.55] | 3.00 [2.49, 3.52] | 2.90 [2.36, 3.44] | <0.05 |
| HDL-C (mmol/L, median [IQR]) | 1.24 [1.03, 1.49] | 1.37 [1.13, 1.64] | 1.33 [1.10, 1.60] | 1.28 [1.06, 1.54] | 1.23 [1.03, 1.48] | 1.20 [1.00, 1.43] | 1.16 [0.99, 1.38] | 1.16 [0.99, 1.36] | <0.05 |
| FT3 (pmol/L, median [IQR]) | 4.90 [4.48, 5.34] | 3.69 [3.50, 3.80] | 4.19 [4.06, 4.29] | 4.57 [4.48, 4.65] | 4.89 [4.81, 4.97] | 5.23 [5.14, 5.33] | 5.66 [5.54, 5.82] | 6.29 [6.15, 6.68] | <0.05 |
| FT4 (pmol/L, median [IQR]) | 16.24 [14.80, 17.80] | 14.51 [13.05, 16.05] | 15.23 [13.93, 16.62] | 15.75 [14.44, 17.13] | 16.22 [14.93, 17.60] | 16.67 [15.35, 18.11] | 17.26 [15.90, 18.73] | 18.41 [16.69, 20.48] | <0.05 |
| TSH (uIU/mL, median [IQR]) | 2.07 [1.42, 3.02] | 2.42 [1.58, 3.80] | 2.24 [1.53, 3.33] | 2.15 [1.48, 3.15] | 2.05 [1.43, 2.98] | 2.00 [1.39, 2.87] | 1.94 [1.36, 2.79] | 1.74 [1.03, 2.61] | <0.05 |
| **Comorbidities** | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type 2 diabetes, n (%) | 23349 (13.19) | 1208 (13.85) | 3444 (12.94) | 4732 (13.62) | 4889 (13.84) | 4701 (13.23) | 3390 (12.50) | 985 (10.96) | <0.05 |
| Hypertension, n (%) | 44234 (26.27) | 1450 (18.34) | 4896 (19.75) | 7796 (23.67) | 9110 (26.99) | 9976 (29.26) | 8265 (31.54) | 2741 (31.48) | <0.05 |
| MetS, n (%) | 82226 (48.46) | 2946 (36.59) | 9863 (39.36) | 14988 (45.05) | 16749 (49.25) | 17990 (52.46) | 14806 (56.36) | 4884 (55.93) | <0.05 |
| MAFLD, n (%) | 90787 (51.14) | 2811 (32.16) | 10272 (38.48) | 16059 (46.08) | 18598 (52.46) | 20534 (57.65) | 17091 (62.89) | 5422 (60.19) | <0.05 |

**Abbreviations:** IQR, interquartile range; BMI, body mass index; WC, waist circumference; SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rates; LEU, leukocyte counts; RBC, red blood cells; PLT, platelet counts; HGB, hemoglobin; ALT, alanine aminotransferase; AST, aspartate transaminase; GGT, glutamyl transpeptidase; Scr, serum creatinine; BUN, blood urea nitrogen; UA, uric acid; FBG, fasting blood glucose; TC, total cholesterol; TG, triglycerides; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FT3, free triiodothyronine; FT4, free tetraiodothyronine; TSH, thyroid-stimulating hormone; MetS, metabolic syndrome; MAFLD, metabolic dysfunction-associated fatty liver disease.

**Table S2.** Clinical and laboratory characteristics of participants according to prior-defined centile categories of FT4 from 2010 to 2018.

| | | Centile (pmol/L) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Characteristics** | All | 1st-5th (FT4<12.80) | 6th-20th (12.80≤FT4<14.45) | 21st-40th (14.45≤FT4<15.69) | 41st-60th (15.69≤FT4<16.80) | 61st-80th (16.80≤FT4<18.21) | 81st-95th (18.21≤FT4<20.43) | 96st-100th (FT4≥20.43) | P value |
| | N = 177540 | N = 8803 | N = 26528 | N = 35429 | N = 35513 | N = 35592 | N = 26788 | N = 8887 | |
| **Clinical characteristics** | | | | | | | | | |
| Age (years, median [IQR]) | 48.00 [42.00, 54.00] | 50.00 [44.00, 56.00] | 49.00 [43.00, 55.00] | 48.00 [42.00, 54.00] | 48.00 [42.00, 53.00] | 47.00 [41.00, 53.00] | 46.00 [40.00, 52.00] | 46.00 [38.00, 52.00] | <0.05 |
| Gender, Male, n (%) | 106859 (60.19) | 3201 (36.36) | 11932 (44.98) | 18962 (53.52) | 21803 (61.39) | 24351 (68.42) | 19988 (74.62) | 6622 (74.51) | <0.05 |
| BMI (kg/m$^2$, median [IQR]) | 24.76 [22.48, 27.04] | 24.81 [22.59, 27.15] | 24.67 [22.41, 27.01] | 24.72 [22.43, 27.04] | 24.78 [22.49, 27.05] | 24.82 [22.58, 27.08] | 24.80 [22.52, 27.05] | 24.60 [22.22, 26.86] | <0.05 |
| WC (cm, median [IQR]) | 87.00 [79.00, 94.00] | 85.00 [78.00, 93.00] | 86.00 [78.00, 93.00] | 87.00 [78.00, 94.00] | 88.00 [79.00, 95.00] | 88.00 [80.00, 95.00] | 88.00 [81.00, 95.00] | 87.00 [80.00, 94.00] | <0.05 |
| Self-reported smoking, n (%) | 26119 (14.71) | 816 (9.27) | 2962 (11.17) | 4666 (13.17) | 5348 (15.06) | 5870 (16.49) | 4861 (18.15) | 1596 (17.96) | <0.05 |
| Self-reported drinking, n (%) | 39846 (22.44) | 1323 (15.03) | 4932 (18.59) | 7327 (20.68) | 8152 (22.95) | 8779 (24.67) | 7120 (26.58) | 2213 (24.90) | <0.05 |
| SBP (mmHg, median [IQR]) | 120.00 [109.00, 132.00] | 119.00 [107.00, 132.00] | 118.00 [107.00, 131.00] | 119.00 [108.00, 132.00] | 120.00 [109.00, 132.00] | 121.00 [110.00, 133.00] | 122.00 [111.00, 133.00] | 123.00 [112.00, 134.00] | <0.05 |
| DBP (mmHg, median [IQR]) | 78.00 [70.00, 87.00] | 76.00 [69.00, 85.00] | 77.00 [69.00, 85.00] | 78.00 [70.00, 86.00] | 78.00 [70.00, 87.00] | 79.00 [71.00, 87.00] | 80.00 [72.00, 88.00] | 80.00 [72.00, 88.00] | <0.05 |
| **Laboratory Examination** | | | | | | | | | |
| HR (/min, median [IQR]) | 70.00 [64.00, 76.00] | 69.00 [64.00, 74.00] | 70.00 [64.00, 75.00] | 70.00 [64.00, 75.00] | 70.00 [64.00, 76.00] | 70.00 [64.00, 76.00] | 71.00 [65.00, 76.00] | 72.00 [66.00, 78.00] | <0.05 |
| LEU (×10$^9$/L, median [IQR]) | 5.82 [4.94, 6.88] | 5.61 [4.78, 6.65] | 5.68 [4.81, 6.69] | 5.75 [4.89, 6.79] | 5.83 [4.94, 6.88] | 5.89 [5.01, 6.96] | 5.96 [5.07, 7.04] | 6.00 [5.09, 7.12] | <0.05 |
| RBC (×10$^{12}$/L, median [IQR]) | 4.79 [4.46, 5.12] | 4.53 [4.24, 4.85] | 4.62 [4.32, 4.96] | 4.72 [4.40, 5.05] | 4.79 [4.47, 5.11] | 4.88 [4.55, 5.18] | 4.95 [4.63, 5.24] | 4.99 [4.67, 5.28] | <0.05 |
| PLT (×10$^9$/L, | 220.00 | 218.00 | 219.00 | 220.00 | 220.00 | 221.00 | 222.00 | 225.00 | <0.05 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| median [IQR]) | [188.00, 257.00] | [183.00, 256.00] | [185.00, 256.00] | [187.00, 257.00] | [188.00, 255.00] | [189.00, 256.00] | [191.00, 258.00] | [192.00, 261.00] | |
| HGB (g/L, | 147.00 | 137.00 | 140.00 | 144.00 | 147.00 | 150.00 | 152.00 | 154.00 | <0.05 |
| median [IQR]) | [135.00, 158.00] | [127.00, 149.00] | [130.00, 152.00] | [133.00, 155.00] | [135.00, 158.00] | [139.00, 159.00] | [142.00, 161.00] | [142.00, 162.00] | |
| ALT (IU/L, | 19.40 | 18.20 | 18.30 | 18.90 | 19.40 | 20.00 | 20.20 | 21.00 | <0.05 |
| median [IQR]) | [13.80, 28.70] | [13.10, 27.10] | [13.00, 27.30] | [13.30, 28.00] | [13.80, 28.80] | [14.00, 29.40] | [14.50, 29.60] | [15.00, 30.80] | |
| AST (IU/L, | 18.40 | 18.60 | 18.30 | 18.30 | 18.50 | 18.50 | 18.60 | 18.85 | <0.05 |
| median [IQR]) | [15.50, 22.60] | [15.50, 23.10] | [15.30, 22.40] | [15.40, 22.50] | [15.50, 22.60] | [15.60, 22.80] | [15.70, 22.70] | [15.70, 23.10] | |
| GGT (IU/L, | 26.00 | 21.90 | 22.70 | 24.60 | 26.30 | 28.00 | 29.10 | 30.00 | <0.05 |
| median [IQR]) | [16.00, 46.00] | [14.00, 39.00] | [14.10, 40.90] | [15.00, 43.80] | [16.00, 47.00] | [17.00, 49.00] | [18.40, 50.00] | [19.00, 51.00] | |
| Scr (μmol/L, | 68.00 | 61.30 | 63.00 | 65.70 | 68.00 | 70.00 | 72.00 | 72.00 | <0.05 |
| median [IQR]) | [57.60, 78.00] | [53.00, 72.00] | [54.20, 74.00] | [56.00, 76.00] | [58.00, 78.00] | [60.00, 79.20] | [62.00, 81.00] | [61.00, 81.20] | |
| BUN (mmol/L, | 4.90 | 4.73 | 4.80 | 4.84 | 4.90 | 4.91 | 4.94 | 4.90 | <0.05 |
| median [IQR]) | [4.11, 5.72] | [4.00, 5.60] | [4.02, 5.63] | [4.10, 5.70] | [4.13, 5.77] | [4.20, 5.80] | [4.20, 5.80] | [4.18, 5.80] | |
| UA (μmol/L, | 327.00 | 292.80 | 304.00 | 317.00 | 329.80 | 338.60 | 345.00 | 345.30 | <0.05 |
| median [IQR]) | [264.40, 391.70] | [241.00, 359.20] | [247.00, 373.00] | [256.00, 384.00] | [266.00, 393.00] | [276.00, 399.70] | [285.90, 404.00] | [286.00, 404.50] | |
| FBG (mmol/L, | 5.32 | 5.25 | 5.28 | 5.30 | 5.33 | 5.35 | 5.37 | 5.38 | <0.05 |
| median [IQR]) | [4.97, 5.82] | [4.90, 5.71] | [4.93, 5.75] | [4.95, 5.78] | [4.98, 5.83] | [5.00, 5.85] | [5.01, 5.88] | [5.01, 5.90] | |
| TC (mmol/L, | 4.72 | 4.82 | 4.74 | 4.74 | 4.73 | 4.72 | 4.70 | 4.61 | <0.05 |
| median [IQR]) | [4.15, 5.35] | [4.21, 5.50] | [4.16, 5.38] | [4.16, 5.36] | [4.16, 5.35] | [4.15, 5.33] | [4.14, 5.30] | [4.00, 5.26] | |
| TG (mmol/L, | 1.37 | 1.39 | 1.36 | 1.36 | 1.38 | 1.39 | 1.38 | 1.32 | <0.05 |
| median [IQR]) | [0.94, 2.05] | [0.94, 2.13] | [0.93, 2.06] | [0.93, 2.05] | [0.94, 2.07] | [0.95, 2.06] | [0.95, 2.03] | [0.93, 1.92] | |
| LDL-C (mmol/L, | 3.00 | 3.01 | 3.00 | 3.01 | 3.00 | 3.01 | 2.99 | 2.90 | <0.05 |
| median [IQR]) | [2.47, 3.55] | [2.47, 3.62] | [2.47, 3.56] | [2.48, 3.55] | [2.48, 3.55] | [2.48, 3.54] | [2.46, 3.53] | [2.35, 3.44] | |
| HDL-C (mmol/L, | 1.24 | 1.27 | 1.25 | 1.24 | 1.23 | 1.23 | 1.23 | 1.24 | <0.05 |
| median [IQR]) | [1.03, 1.49] | [1.04, 1.53] | [1.04, 1.51] | [1.03, 1.50] | [1.03, 1.49] | [1.03, 1.48] | [1.03, 1.48] | [1.05, 1.48] | |
| FT3 (pmol/L, | 4.90 | 4.37 | 4.60 | 4.78 | 4.91 | 5.04 | 5.19 | 5.47 | <0.05 |
| median [IQR]) | [4.48, 5.34] | [3.96, 4.78] | [4.24, 4.99] | [4.40, 5.16] | [4.52, 5.30] | [4.65, 5.44] | [4.79, 5.61] | [4.98, 6.06] | |
| FT4 (pmol/L, | 16.24 | 12.15 | 13.81 | 15.11 | 16.23 | 17.43 | 19.00 | 21.46 | <0.05 |
| median [IQR]) | [14.80, 17.80] | [11.49, 12.51] | [13.39, 14.15] | [14.80, 15.40] | [15.96, 16.51] | [17.10, 17.79] | [18.57, 19.55] | [20.87, 22.46] | |
| TSH (uIU/mL, | 2.07 | 3.11 | 2.41 | 2.17 | 2.05 | 1.94 | 1.84 | 1.54 | <0.05 |
| median [IQR]) | [1.42, 3.02] | [1.93, 5.53] | [1.63, 3.56] | [1.50, 3.16] | [1.43, 2.94] | [1.36, 2.76] | [1.29, 2.59] | [0.87, 2.31] | |
| **Comorbidities** | | | | | | | | | |
| Type 2 diabetes, | 23349 (13.19) | 1042 (11.87) | 3222 (12.17) | 4482 (12.68) | 4679 (13.21) | 4912 (13.84) | 3767 (14.10) | 1245 (14.07) | <0.05 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| n (%) | | | | | | | | | |
| Hypertension, n (%) | 44234 (26.27) | 1896 (23.01) | 5919 (23.67) | 8448 (25.18) | 8807 (26.16) | 9339 (27.51) | 7364 (28.88) | 2461 (28.95) | <0.05 |
| MetS, n (%) | 82226 (48.46) | 4115 (49.45) | 12185 (48.29) | 16371 (48.37) | 16535 (48.68) | 16660 (48.79) | 12383 (48.28) | 3977 (46.66) | <0.05 |
| MAFLD, n (%) | 90787 (51.14) | 4308 (48.94) | 13362 (50.37) | 18046 (50.94) | 18402 (51.82) | 18720 (52.60) | 13748 (51.32) | 4201 (47.27) | <0.05 |

**Abbreviations:** IQR, interquartile range; BMI, body mass index; WC, waist circumference; SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rates; LEU, leukocyte counts; RBC, red blood cells; PLT, platelet counts; HGB, hemoglobin; ALT, alanine aminotransferase; AST, aspartate transaminase; GGT, glutamyl transpeptidase; Scr, serum creatinine; BUN, blood urea nitrogen; UA, uric acid; FBG, fasting blood glucose; TC, total cholesterol; TG, triglycerides; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FT3, free triiodothyronine; FT4, free tetraiodothyronine; TSH, thyroid-stimulating hormone; MetS, metabolic syndrome; MAFLD, metabolic dysfunction-associated fatty liver disease.

**Table S3.** Clinical and laboratory characteristics of participants according to prior-defined centile categories of TSH from 2010 to 2018.

| Characteristics | All | Centile (uIU/mL) 1st-5th (TSH<0.75) | 6th-20th (0.75≤TSH<1.29) | 21st-40th (1.29≤TSH<1.80) | 41st-60th (1.80≤TSH<2.38) | 61st-80th (2.38≤TSH<3.33) | 81st-95th (3.33≤TSH<5.60) | 96st-100th (TSH≥5.60) | P value |
|---|---|---|---|---|---|---|---|---|---|
| | N = 177540 | N = 8732 | N = 26474 | N = 35743 | N = 35373 | N = 35623 | N = 26714 | N = 8881 | |
| **Clinical characteristics** | | | | | | | | | |
| Age (years, median [IQR]) | 48.00 [42.00, 54.00] | 48.00 [42.00, 54.00] | 48.00 [42.00, 53.00] | 47.00 [41.00, 53.00] | 47.00 [41.00, 53.00] | 48.00 [41.00, 53.00] | 48.00 [42.00, 54.00] | 50.00 [43.00, 57.00] | <0.05 |
| Gender, Male, n (%) | 106859 (60.19) | 5195 (59.49) | 18079 (68.29) | 23952 (67.01) | 22222 (62.82) | 20625 (57.90) | 13180 (49.34) | 3606 (40.60) | <0.05 |
| BMI (kg/m$^2$, median [IQR]) | 24.76 [22.48, 27.04] | 24.43 [22.15, 26.67] | 24.79 [22.52, 26.99] | 24.85 [22.61, 27.10] | 24.89 [22.60, 27.16] | 24.77 [22.46, 27.10] | 24.61 [22.32, 26.95] | 24.47 [22.23, 26.84] | <0.05 |
| WC (cm, median [IQR]) | 87.00 [79.00, 94.00] | 87.00 [78.00, 94.00] | 88.00 [80.00, 95.00] | 88.00 [80.00, 95.00] | 88.00 [80.00, 95.00] | 87.00 [79.00, 94.00] | 86.00 [78.00, 93.00] | 85.00 [77.00, 92.00] | <0.05 |
| Self-reported smoking, n (%) | 26119 (14.71) | 1383 (15.84) | 4923 (18.60) | 6283 (17.58) | 5447 (15.40) | 4666 (13.10) | 2705 (10.13) | 712 ( 8.02) | <0.05 |
| Self-reported drinking, n (%) | 39846 (22.44) | 1760 (20.16) | 6562 (24.79) | 8949 (25.04) | 8468 (23.94) | 7894 (22.16) | 4949 (18.53) | 1264 (14.23) | <0.05 |
| SBP (mmHg, median [IQR]) | 120.00 [109.00, 132.00] | 120.00 [109.00, 132.00] | 120.00 [109.00, 132.00] | 120.00 [109.00, 132.00] | 120.00 [109.00, 132.00] | 120.00 [109.00, 133.00] | 120.00 [109.00, 133.00] | 121.00 [109.00, 134.00] | <0.05 |
| DBP (mmHg, median [IQR]) | 78.00 [70.00, 87.00] | 77.00 [70.00, 85.00] | 78.00 [70.00, 86.00] | 78.00 [71.00, 87.00] | 79.00 [71.00, 87.00] | 78.00 [71.00, 87.00] | 78.00 [71.00, 87.00] | 78.00 [70.00, 86.00] | <0.05 |
| **Laboratory Examination** | | | | | | | | | |
| HR (/min, median [IQR]) | 70.00 [64.00, 76.00] | 71.00 [65.00, 76.00] | 70.00 [65.00, 76.00] | 70.00 [64.00, 76.00] | 70.00 [64.00, 76.00] | 70.00 [64.00, 76.00] | 70.00 [64.00, 76.00] | 70.00 [64.00, 76.00] | <0.05 |
| LEU (×10$^9$/L, median [IQR]) | 5.82 [4.94, 6.88] | 5.89 [4.96, 7.01] | 5.89 [4.97, 6.99] | 5.85 [4.98, 6.91] | 5.81 [4.95, 6.85] | 5.80 [4.92, 6.83] | 5.78 [4.90, 6.79] | 5.74 [4.87, 6.80] | <0.05 |
| RBC (×10$^{12}$/L, median [IQR]) | 4.79 [4.46, 5.12] | 4.78 [4.46, 5.11] | 4.84 [4.51, 5.15] | 4.84 [4.50, 5.15] | 4.82 [4.48, 5.14] | 4.78 [4.44, 5.11] | 4.71 [4.40, 5.06] | 4.64 [4.34, 4.97] | <0.05 |
| PLT (×10$^9$/L, median [IQR]) | 220.00 [188.00, 257.00] | 220.00 [187.00, 257.00] | 220.00 [188.00, 255.00] | 220.00 [188.00, 256.00] | 220.00 [188.00, 256.00] | 221.00 [188.00, 257.00] | 221.00 [188.00, 258.00] | 221.00 [186.00, 259.00] | 0.10 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| HGB (g/L, median [IQR]) | 147.00 [135.00, 158.00] | 146.00 [134.00, 157.00] | 149.00 [137.00, 159.00] | 149.00 [137.00, 159.00] | 148.00 [136.00, 158.00] | 146.00 [134.00, 157.00] | 143.00 [133.00, 155.00] | 140.00 [131.00, 152.00] | <0.05 |
| ALT (IU/L, median [IQR]) | 19.40 [13.80, 28.70] | 19.70 [13.90, 28.60] | 19.50 [13.98, 28.60] | 19.70 [14.00, 29.00] | 19.70 [13.90, 29.00] | 19.30 [13.60, 29.00] | 18.80 [13.40, 28.00] | 18.40 [13.30, 27.00] | <0.05 |
| AST (IU/L, median [IQR]) | 18.40 [15.50, 22.60] | 17.90 [15.10, 22.00] | 18.10 [15.30, 22.20] | 18.30 [15.40, 22.50] | 18.40 [15.60, 22.60] | 18.60 [15.60, 22.80] | 18.70 [15.70, 23.00] | 19.00 [16.00, 23.50] | <0.05 |
| GGT (IU/L, median [IQR]) | 26.00 [16.00, 46.00] | 26.60 [17.00, 46.00] | 28.00 [17.00, 48.50] | 27.40 [17.00, 48.00] | 27.00 [16.10, 47.00] | 25.70 [15.80, 45.70] | 24.00 [15.00, 42.90] | 22.00 [14.20, 39.00] | <0.05 |
| Scr (μmol/L, median [IQR]) | 68.00 [57.60, 78.00] | 65.00 [55.00, 75.23] | 68.80 [58.50, 78.00] | 69.00 [59.00, 78.60] | 68.50 [58.00, 78.10] | 67.60 [57.00, 78.00] | 66.00 [56.40, 77.00] | 65.00 [56.00, 76.30] | <0.05 |
| BUN (mmol/L, median [IQR]) | 4.90 [4.11, 5.72] | 4.90 [4.10, 5.80] | 4.92 [4.20, 5.80] | 4.90 [4.18, 5.80] | 4.90 [4.11, 5.72] | 4.82 [4.10, 5.70] | 4.80 [4.10, 5.70] | 4.82 [4.08, 5.70] | <0.05 |
| UA (μmol/L, median [IQR]) | 327.00 [264.40, 391.70] | 319.00 [261.00, 383.00] | 333.80 [272.00, 394.00] | 335.00 [271.83, 396.30] | 332.00 [267.22, 396.00] | 326.00 [263.00, 392.00] | 314.65 [255.00, 383.00] | 301.60 [248.80, 368.00] | <0.05 |
| FBG (mmol/L, median [IQR]) | 5.32 [4.97, 5.82] | 5.36 [4.99, 5.87] | 5.35 [5.00, 5.87] | 5.34 [4.99, 5.84] | 5.33 [4.98, 5.82] | 5.31 [4.96, 5.80] | 5.29 [4.94, 5.77] | 5.26 [4.90, 5.71] | <0.05 |
| TC (mmol/L, median [IQR]) | 4.72 [4.15, 5.35] | 4.56 [3.98, 5.18] | 4.68 [4.12, 5.29] | 4.70 [4.13, 5.31] | 4.73 [4.15, 5.34] | 4.74 [4.17, 5.36] | 4.79 [4.20, 5.41] | 4.88 [4.27, 5.57] | <0.05 |
| TG (mmol/L, median [IQR]) | 1.37 [0.94, 2.05] | 1.28 [0.90, 1.89] | 1.34 [0.92, 2.01] | 1.38 [0.94, 2.07] | 1.39 [0.95, 2.09] | 1.38 [0.94, 2.07] | 1.38 [0.95, 2.05] | 1.36 [0.95, 2.02] | <0.05 |
| LDL-C (mmol/L, median [IQR]) | 3.00 [2.47, 3.55] | 2.86 [2.33, 3.42] | 2.98 [2.46, 3.52] | 2.99 [2.46, 3.53] | 3.01 [2.48, 3.55] | 3.00 [2.47, 3.55] | 3.03 [2.50, 3.58] | 3.06 [2.53, 3.66] | <0.05 |
| HDL-C (mmol/L, median [IQR]) | 1.24 [1.03, 1.49] | 1.23 [1.02, 1.49] | 1.22 [1.01, 1.47] | 1.22 [1.02, 1.47] | 1.23 [1.03, 1.48] | 1.25 [1.04, 1.50] | 1.27 [1.05, 1.52] | 1.31 [1.08, 1.57] | <0.05 |
| FT3 (pmol/L, median [IQR]) | 4.90 [4.48, 5.34] | 5.13 [4.63, 5.76] | 4.96 [4.55, 5.39] | 4.94 [4.53, 5.37] | 4.92 [4.51, 5.35] | 4.88 [4.46, 5.31] | 4.80 [4.39, 5.23] | 4.63 [4.21, 5.09] | <0.05 |
| FT4 (pmol/L, median [IQR]) | 16.24 [14.80, 17.80] | 17.50 [15.72, 19.96] | 16.66 [15.29, 18.20] | 16.49 [15.14, 17.99] | 16.32 [14.95, 17.83] | 16.12 [14.72, 17.60] | 15.67 [14.29, 17.15] | 14.51 [12.84, 16.09] | <0.05 |
| TSH (uIU/mL, median [IQR]) | 2.07 [1.42, 3.02] | 0.53 [0.23, 0.66] | 1.07 [0.93, 1.18] | 1.54 [1.42, 1.67] | 2.07 [1.93, 2.21] | 2.77 [2.56, 3.02] | 4.02 [3.62, 4.60] | 7.17 [6.19, 9.40] | <0.05 |
| **Comorbidities** | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Type 2 diabetes, n (%) | 23349 (13.19) | 1280 (14.72) | 3857 (14.61) | 4845 (13.59) | 4655 (13.19) | 4457 (12.55) | 3211 (12.06) | 1044 (11.80) | <0.05 |
| Hypertension, n (%) | 44234 (26.27) | 1987 (24.31) | 6352 (25.45) | 8840 (26.12) | 9007 (26.78) | 8995 (26.51) | 6745 (26.51) | 2308 (27.40) | <0.05 |
| MetS, n (%) | 82226 (48.46) | 3897 (47.33) | 12191 (48.38) | 16773 (49.07) | 16656 (49.18) | 16462 (48.21) | 12278 (47.96) | 3969 (46.94) | <0.05 |
| MAFLD, n (%) | 90787 (51.14) | 4126 (47.25) | 13715 (51.81) | 18899 (52.87) | 18731 (52.95) | 18111 (50.84) | 13185 (49.36) | 4020 (45.27) | <0.05 |

**Abbreviations:** IQR, interquartile range; BMI, body mass index; WC, waist circumference; SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rates; LEU, leukocyte counts; RBC, red blood cells; PLT, platelet counts; HGB, hemoglobin; ALT, alanine aminotransferase; AST, aspartate transaminase; GGT, glutamyl transpeptidase; Scr, serum creatinine; BUN, blood urea nitrogen; UA, uric acid; FBG, fasting blood glucose; TC, total cholesterol; TG, triglycerides; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FT3, free triiodothyronine; FT4, free tetraiodothyronine; TSH, thyroid-stimulating hormone; MetS, metabolic syndrome; MAFLD, metabolic dysfunction-associated fatty liver disease.

**Table S4.** Clinical and laboratory characteristics of participants with and without MAFLD from 2010 to 2017 in sensitivity analysis 2.

| Characteristics | Total (N = 9437) | Non-MAFLD (N = 6696, 70.95%) | MAFLD (N = 2741, 20.05%) | P-value |
|---|---|---|---|---|
| **Clinical characteristics** | | | | |
| Age (years, median [IQR]) | 45.00 [37.00, 53.00] | 45.00 [35.00, 53.00] | 47.00 [39.00, 54.00] | <0.05 |
| Gender, Male, n (%) | 5282 (55.97) | 3163 (47.24) | 2119 (77.31) | <0.05 |
| BMI (kg/m$^2$, median [IQR]) | 23.76 [21.56, 26.02] | 22.54 [20.82, 24.45] | 26.43 [24.79, 28.33] | <0.05 |
| WC (cm, median [IQR]) | 82.00 [75.00, 90.00] | 80.00 [72.00, 85.00] | 91.00 [86.00, 96.00] | <0.05 |
| Self-reported smoking, n (%) | - | - | - | - |
| Self-reported drinking, n (%) | - | - | - | - |
| SBP (mmHg, median [IQR]) | 120.00 [110.00, 133.00] | 118.00 [108.00, 130.00] | 128.00 [118.00, 138.00] | <0.05 |
| DBP (mmHg, median [IQR]) | 74.00 [65.00, 80.00] | 70.00 [64.00, 78.00] | 78.00 [72.00, 86.00] | <0.05 |
| **Laboratory Examination** | | | | |
| HR (/min, median [IQR]) | 72.00 [70.00, 76.00] | 72.00 [70.00, 76.00] | 72.00 [68.00, 76.00] | 0.08 |
| LEU (×10$^9$/L, median [IQR]) | 6.10 [5.20, 7.27] | 5.91 [5.10, 7.00] | 6.70 [5.70, 7.80] | <0.05 |
| RBC (×10$^{12}$/L, median [IQR]) | 4.81 [4.45, 5.18] | 4.70 [4.37, 5.07] | 5.06 [4.76, 5.35] | <0.05 |
| PLT (×10$^9$/L, median [IQR]) | 224.00 [191.00, 261.00] | 222.00 [188.00, 258.00] | 230.00 [196.00, 269.00] | <0.05 |
| HGB (g/L, median [IQR]) | 146.00 [134.00, 157.00] | 142.00 [132.00, 154.00] | 154.00 [144.00, 162.00] | <0.05 |
| ALT (IU/L, median [IQR]) | 20.00 [15.00, 29.00] | 18.00 [13.20, 24.00] | 29.00 [21.00, 41.00] | <0.05 |
| AST (IU/L, median [IQR]) | 22.00 [18.00, 26.00] | 21.00 [18.00, 25.00] | 24.00 [21.00, 30.00] | <0.05 |
| GGT (IU/L, median [IQR]) | 21.00 [14.00, 35.00] | 18.00 [12.00, 28.00] | 32.00 [23.00, 51.00] | <0.05 |
| Scr (μmol/L, median [IQR]) | 66.00 [56.00, 77.00] | 64.00 [55.00, 75.79] | 71.13 [62.00, 80.00] | <0.05 |
| BUN (mmol/L, median [IQR]) | 4.89 [4.10, 5.72] | 4.80 [4.02, 5.68] | 5.04 [4.33, 5.89] | <0.05 |
| UA (μmol/L, median [IQR]) | 328.00 [266.00, 397.00] | 305.00 [252.00, 370.00] | 384.00 [326.00, 444.85] | <0.05 |
| FBG (mmol/L, median [IQR]) | 4.98 [4.67, 5.36] | 4.91 [4.62, 5.25] | 5.21 [4.84, 5.76] | <0.05 |
| TC (mmol/L, median [IQR]) | 4.67 [4.11, 5.26] | 4.57 [4.03, 5.15] | 4.89 [4.34, 5.53] | <0.05 |
| TG (mmol/L, median [IQR]) | 1.24 [0.85, 1.84] | 1.07 [0.77, 1.49] | 1.86 [1.36, 2.64] | <0.05 |
| LDL-C (mmol/L, median [IQR]) | 2.71 [2.24, 3.23] | 2.64 [2.18, 3.14] | 2.91 [2.45, 3.49] | <0.05 |
| HDL-C (mmol/L, median [IQR]) | 1.20 [1.02, 1.42] | 1.26 [1.07, 1.49] | 1.05 [0.93, 1.20] | <0.05 |
| FT3 (pg/L, median [IQR]) | 3.22 [2.95, 3.49] | 3.17 [2.92, 3.44] | 3.34 [3.08, 3.60] | <0.05 |
| FT4 (ng/dL, median [IQR]) | 1.14 [0.99, 1.27] | 1.14 [1.00, 1.27] | 1.13 [0.97, 1.27] | <0.05 |
| TSH (uIU/mL, median [IQR]) | 1.92 [1.37, 2.78] | 1.92 [1.37, 2.80] | 1.92 [1.36, 2.76] | 0.55 |
| **Comorbidities** | | | | |
| Type 2 diabetes, n (%) | 649 (6.88) | 261 (3.90) | 388 (14.16) | <0.05 |
| Hypertension, n (%) | 2163 (23.29) | 1171 (17.86) | 992 (36.31) | <0.05 |
| MetS, n (%) | 3063 (34.81) | 1296 (20.72) | 1767 (69.43) | <0.05 |

**Abbreviations:** MAFLD, metabolic dysfunction-associated fatty liver disease; IQR, interquartile range; BMI, body mass index; WC, waist circumference; SBP, systolic blood pressure; DBP, diastolic blood pressure; HR, heart rates; LEU, leukocyte counts; RBC, red blood cells; PLT, platelet counts; HGB, hemoglobin; ALT, alanine aminotransferase; AST, aspartate transaminase; GGT, gamma-glutamyl transpeptidase; Scr, serum creatinine; BUN, blood urea nitrogen; UA, uric acid; FBG, fasting blood glucose; TC, total cholesterol; TG, triglycerides; LDL-C, low-density lipoprotein cholesterol; HDL-C, high-density lipoprotein cholesterol; FT3, free triiodothyronine; FT4, free tetraiodothyronine; TSH, thyroid-stimulating hormone; MetS, metabolic syndrome.

## Figure S1

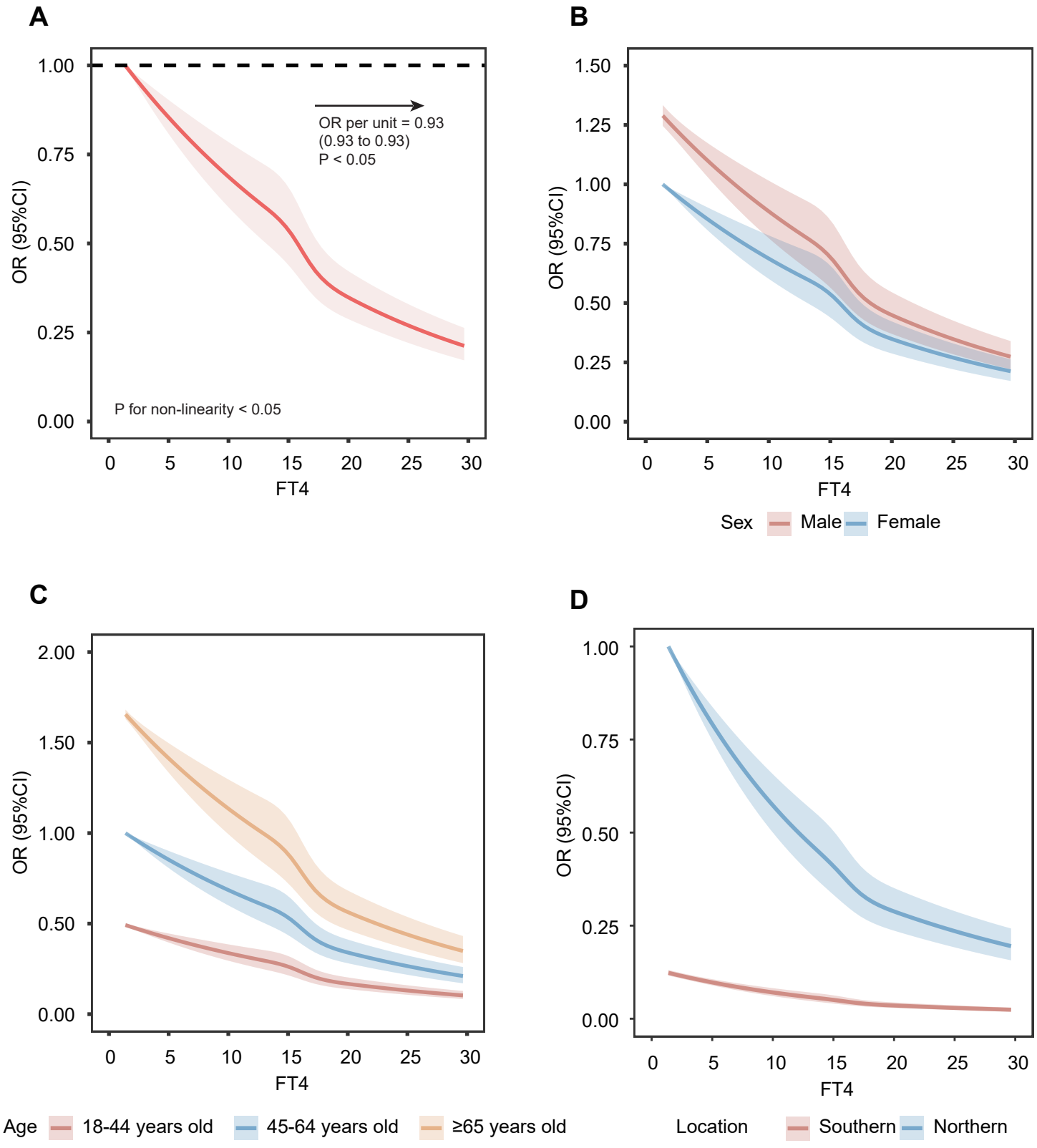


**Figure S1.** Restricted cubic spline analyses with four knots for nonlinear association between FT4 levels and MAFLD on a continuous scale. (A) all population. (B) by sex. (C) by age groups. (D) by location groups. Odd ratios are indicated by solid lines and 95% CIs by shaded areas. Reference point is lowest value for FT4. Analyses were adjusted for age, sex, heart rates, leukocyte counts, red blood cells, platelets, hemoglobin, gamma-glutamyl transpeptidase, estimated glomerular filtration rate, uric acid, total cholesterol, smoking status, alcohol consumption, and a history of diabetes and hypertension. FT4, free tetraiodothyronine; MAFLD, metabolic dysfunction-associated fatty liver disease; OR, odd ratio; CI, confidence interval.

## Figure S2

| Centile | FT4 (pmol/L) | Individuals | MAFLD | Multivariable−adjusted OR (95% CI) | OR (95% CI) | P value |
|---|---|---|---|---|---|---|
| 1st−5th | FT4<12.80 | 8803 | 4308 | | Reference | |
| 6th−20th | 12.80≤FT4<14.45 | 26528 | 13362 | | 0.93 (0.88,0.99) | <0.05 |
| 21st−40th | 14.45≤FT4<15.69 | 35429 | 18046 | | 0.81 (0.77,0.86) | <0.05 |
| 41st−60th | 15.69≤FT4<16.80 | 35513 | 18402 | | 0.74 (0.70,0.78) | <0.05 |
| 61st−80th | 16.80≤FT4<18.21 | 35592 | 18720 | | 0.67 (0.63,0.71) | <0.05 |
| 81st−95th | 18.21≤FT4<20.43 | 26788 | 13748 | | 0.57 (0.54,0.60) | <0.05 |
| 96th−100th | FT4≥20.43 | 8887 | 4201 | | 0.45 (0.42,0.48) | <0.05 |

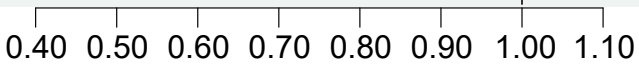


**Figure S2.** Multivariable adjusted logistic regression analyses for MAFLD according to FT4 levels by the prior-defined centile categories. Analyses were adjusted for age, sex, heart rates, leukocyte counts, red blood cells, platelets, hemoglobin, gamma-glutamyl transpeptidase, estimated glomerular filtration rate, uric acid, total cholesterol, smoking status, alcohol consumption, and a history of diabetes and hypertension. MAFLD, metabolic dysfunction-associated fatty liver disease; OR, odd ratio; FT4, free tetraiodothyronine.

## Figure S3

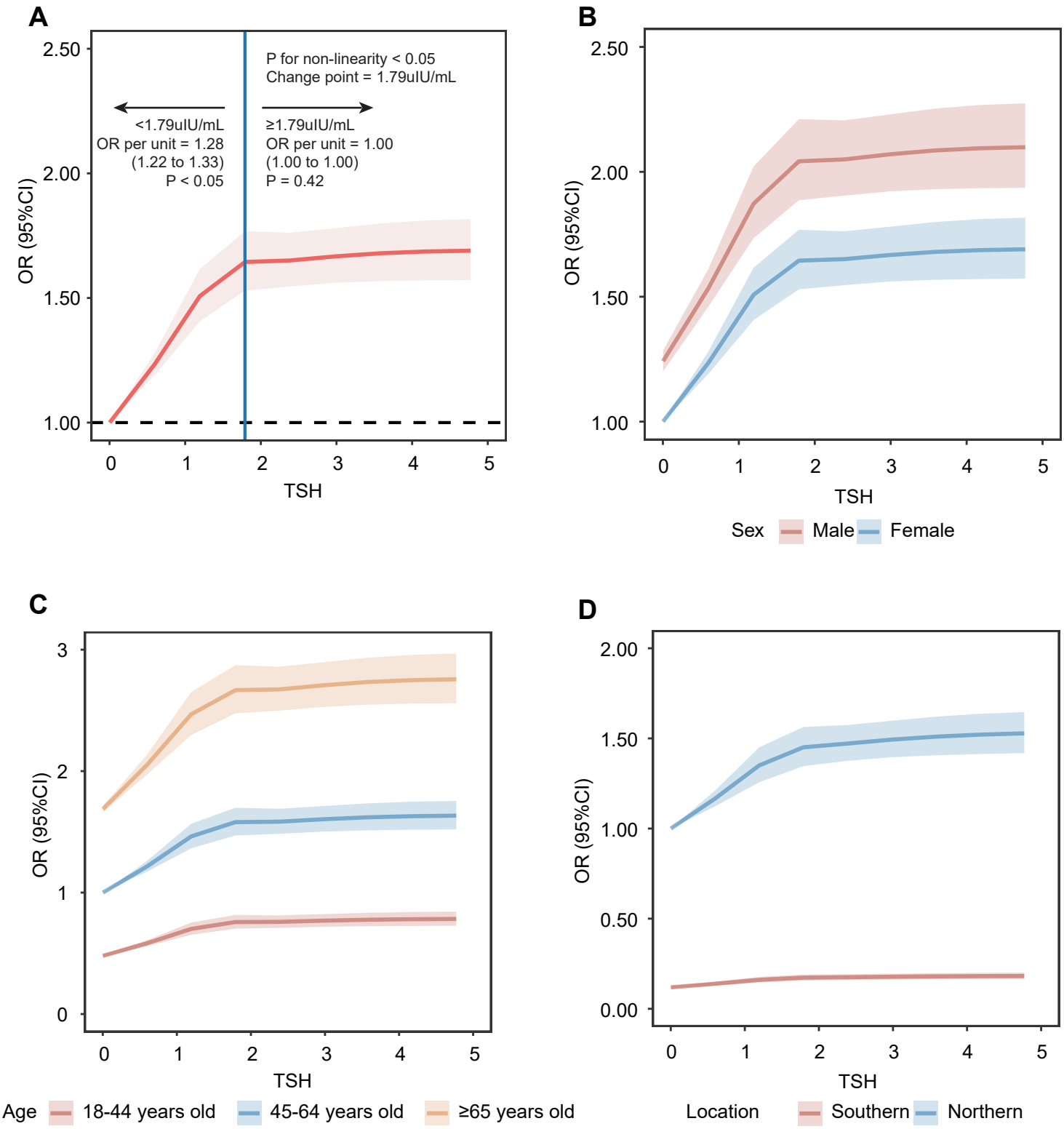


**Figure S3.** Restricted cubic spline analyses with five knots for nonlinear association between TSH levels and MAFLD on a continuous scale. (A) all population. (B) by sex. (C) by age groups. (D) by location groups. ORs are indicated by solid lines and 95% CIs by shaded areas. Reference point is lowest value for TSH. Analyses were adjusted for age, sex, heart rates, leukocyte counts, red blood cells, platelets, hemoglobin, gamma-glutamyl transpeptidase, estimated glomerular filtration rate, uric acid, total cholesterol, smoking status, alcohol consumption, and a history of diabetes and hypertension. TSH, thyroid stimulating hormone; MAFLD, metabolic dysfunction-associated fatty liver disease; OR, odd ratio; CI, confidence interval.

## Figure S4

| Centile | TSH (uIU/mL) | Individuals | MAFLD | Multivariable−adjusted OR (95% CI) | OR (95% CI) | P value |
|---|---|---|---|---|---|---|
| 1st−5th | TSH<0.75 | 8732 | 4126 | | Reference | |
| 6th−20th | 0.75≤TSH<1.29 | 26474 | 13715 | | 1.17 (1.11,1.24) | <0.05 |
| 21st−40th | 1.29≤TSH<1.80 | 35743 | 18899 | | 1.28 (1.21,1.35) | <0.05 |
| 41st−60th | 1.80≤TSH<2.38 | 35373 | 18731 | | 1.37 (1.30,1.45) | <0.05 |
| 61st−80th | 2.38≤TSH<3.33 | 35623 | 18111 | | 1.33 (1.26,1.41) | <0.05 |
| 81st−95th | 3.33≤TSH<5.60 | 26714 | 13185 | | 1.40 (1.33,1.48) | <0.05 |
| 96th−100th | TSH≥5.60 | 8881 | 4020 | | 1.30 (1.21,1.39) | <0.05 |

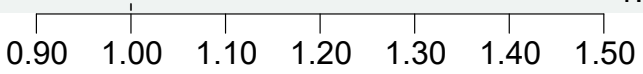


**Figure S4.** Multivariable adjusted logistic regression analyses for MAFLD according to TSH levels by the prior-defined centile categories. Analyses were adjusted for age, sex, heart rates, leukocyte counts, red blood cells, platelets, hemoglobin, gamma-glutamyl transpeptidase, estimated glomerular filtration rate, uric acid, total cholesterol, smoking status, alcohol consumption, and a history of diabetes and hypertension. MAFLD, metabolic dysfunction-associated fatty liver disease; TSH, thyroid stimulating hormone; OR, odd ratio; CI, confidence interval.

**Figure S5**

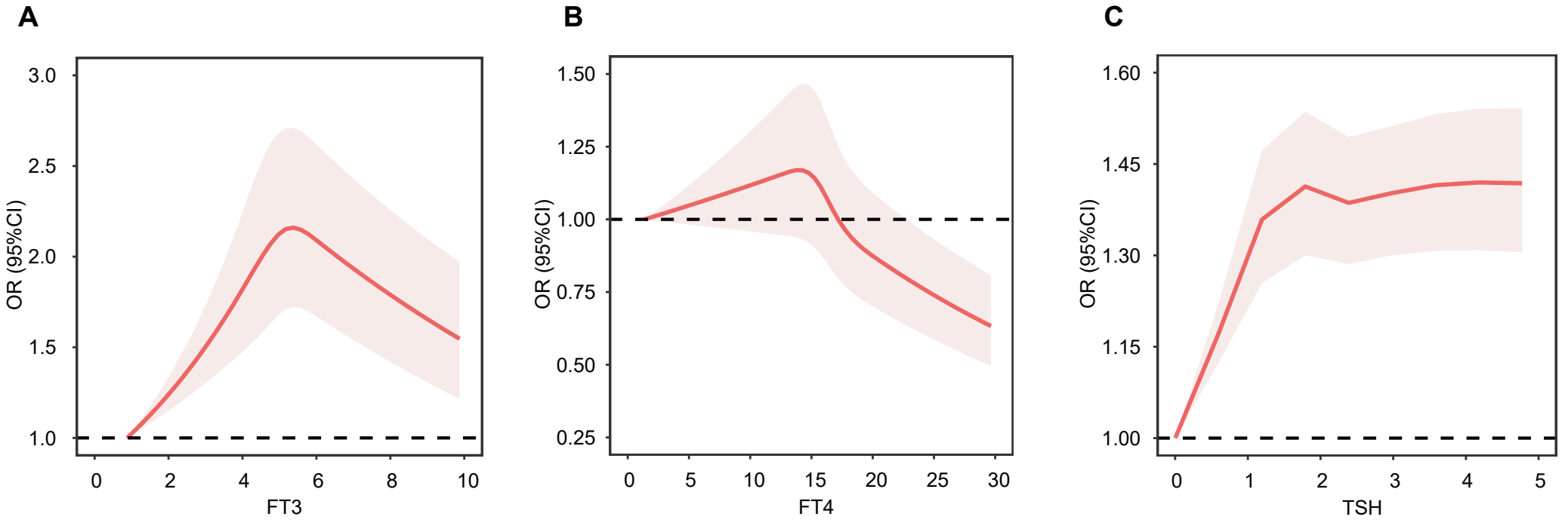


**Figure S5.** Restricted cubic spline analyses with different knots for nonlinear association between thyroid function parameters and MAFLD on a continuous scale in sensitivity analysis 1. (A) FT3. (B) FT4. (C) TSH. ORs are indicated by solid lines and 95% CIs by shaded areas. Reference point is lowest value for thyroid function parameters. Analyses were adjusted for age, sex, BMI, heart rates, leukocyte counts, red blood cells, platelets, hemoglobin, gamma-glutamyl transpeptidase, estimated glomerular filtration rate, uric acid, total cholesterol, smoking status, alcohol consumption, and a history of diabetes and hypertension. MAFLD, metabolic dysfunction-associated fatty liver disease; FT3, free triiodothyronine; FT4, free tetraiodothyronine, TSH, thyroid stimulating hormone; OR, odd ratio; CI, confidence interval; BMI, body mass index.

## Figure S6

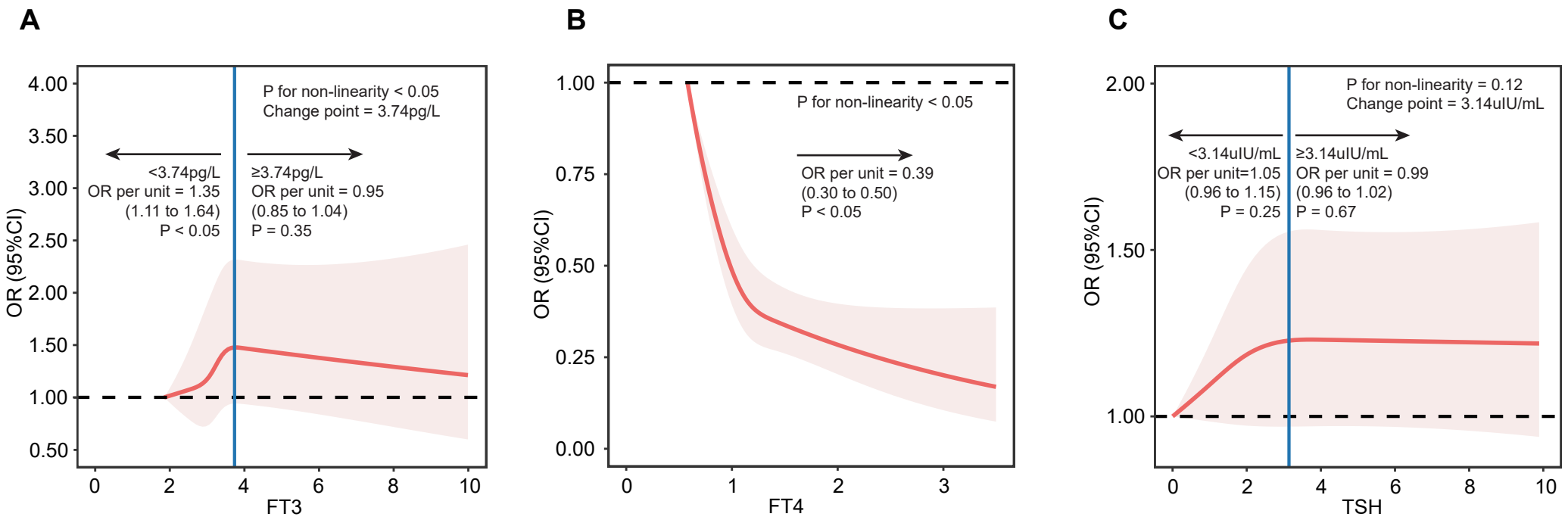


**Figure S6.** Restricted cubic spline analyses with different knots for nonlinear association between thyroid function parameters and MAFLD on a continuous scale in sensitivity analysis 2. (A) FT3. (B) FT4. (C) TSH. ORs are indicated by solid lines and 95% CIs by shaded areas. Reference point is lowest value for thyroid function parameters. Analyses were adjusted for age, sex, BMI, heart rates, leukocyte counts, red blood cells, platelets, hemoglobin, gamma-glutamyl transpeptidase, estimated glomerular filtration rate, uric acid, total cholesterol, and a history of diabetes and hypertension. MAFLD, metabolic dysfunction-associated fatty liver disease; FT3, free triiodothyronine; FT4, free tetraiodothyronine, TSH, thyroid stimulating hormone; OR, odd ratio; CI, confidence interval; BMI, body mass index.