**Supplementary Materials**

**Sex-specific association between Chinese** **visceral adiposity index and** **hyperuricemia among adults: a population-based cross-sectional study in Chongqing, China**

**Supplementary Tables**

**Supplementary Table 1.** Baseline characteristics of excluded and included participants.

**Supplementary Table 2.** Sensitivity analyses for association between Chinese visceral adiposity index (CVAI) and hyperuricemia (HUA) among adults enrolled in the Chinese Multi-Ethnic Cohort study, stratified by sex, according to CVAI as categorical (quartile) or continuous variables, using logistic regression.

**Supplementary Table 3.** Sensitivity analyses for area under the receiver operator characteristic curve (AUROC) of adiposity indices for predicting hyperuricemia (HUA) among men (N=9866) and women (N=11,070) enrolled in the Chinese Multi-Ethnic Cohort study.

**Supplementary Figures**

**Supplemental Figure 1.** Flow chart of the selection of study participants.

**Supplemental Figure 2.** The variance inflation factors for all included variables in model 3.

model 3: included age, area, education level, marital status, smoking, drinking, spicy food intake, DASH score, physical activity, diabetes, hypertension, BMI, eGFR, TC, and LDL-C.

**Supplemental Figure 3.** Receiver operating characteristic curve of waist circumference (WC), waist-to-height ratio (WHtR), visceral adiposity index (VAI), lipid accumulation product index (LAP), cardiometabolic index (CMI), and Chinese visceral adiposity index (CVAI) for predicting hyperuricemia (HUA) among men and women enrolled in the Chinese Multi-Ethnic Cohort study.

**Supplemental Figure 4.** Sensitivity analyses for association between Chinese visceral adiposity index (CVAI) (per-SD increase) and hyperuricemia (HUA) among adults enrolled in the Chinese Multi-Ethnic Cohort study, stratified by age, smoking, drinking, spicy food, body mass index (BMI), diabetes, and hypertension, using logistic regression model.

**Supplementary Table 1.** Baseline characteristics of excluded and included participants.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Excluded | |  | Included | |  |
| Characteristics | Median | IQR |  | Median | IQR | *P* value |
| Age (years) | 50.61 | 44.63–61.03 |  | 49.66 | 43.36–60.83 | 0.154 |
| Sex (n and %) |  |  |  |  |  | 0.452 |
| Male | 544 | 47.85 |  | 10355 | 46.71 |  |
| Female | 593 | 52.15 |  | 11816 | 53.29 |  |
| Area (n and %) |  |  |  |  |  | ＜0.001 |
| Urban | 720 | 63.32 |  | 6358 | 28.68 |  |
| Rural | 417 | 36.68 |  | 15813 | 71.32 |  |
| Marital status (n and %) |  |  |  |  |  | 0.294 |
| Married/cohabiting | 987 | 86.88 |  | 19494 | 87.93 |  |
| Others | 149 | 13.12 |  | 2677 | 12.07 |  |
| Education (n and %) |  |  |  |  |  | 0.001 |
| Primary school or below | 312 | 27.44 |  | 7256 | 32.73 |  |
| Junior high school | 390 | 34.30 |  | 7131 | 32.16 |  |
| High school or above | 435 | 38.26 |  | 7784 | 35.11 |  |
| Smoking (n and %) |  |  |  |  |  | 0.494 |
| No | 843 | 74.14 |  | 16234 | 73.22 |  |
| Yes | 294 | 25.86 |  | 5937 | 26.78 |  |
| Drinking (n and %) |  |  |  |  |  | ＜0.001 |
| No | 614 | 54.00 |  | 10149 | 45.78 |  |
| Yes | 523 | 46.00 |  | 12022 | 54.22 |  |
| Spicy food intake (n and %) |  |  |  |  |  | ＜0.001 |
| No | 204 | 18.21 |  | 3127 | 14.10 |  |
| Yes | 916 | 81.79 |  | 19044 | 85.90 |  |
| DASH score (n and %) |  |  |  |  |  | ＜0.001 |
| ≤21 | 534 | 47.81 |  | 11877 | 53.57 |  |
| >21 | 583 | 52.19 |  | 10294 | 46.43 |  |
| Physical activity (METs/h/day) | 26.43 | 14.80–38.00 |  | 28.85 | 18.20–39.83 | ＜0.001 |
| Diabetes (n and %) |  |  |  |  |  | ＜0.001 |
| No | 981 | 86.28 |  | 20037 | 90.37 |  |
| Yes | 156 | 13.72 |  | 2134 | 9.63 |  |
| Hypertension (n and %) |  |  |  |  |  | ＜0.001 |
| No | 500 | 56.43 |  | 14384 | 64.88 |  |
| Yes | 386 | 43.57 |  | 7787 | 35.12 |  |
| SBP (mmHg) | 129.00 | 119.00–141.33 |  | 128 | 116.67–141.67 | 0.084 |
| DBP (mmHg) | 79.00 | 72.67–85.67 |  | 78.00 | 71.00–85.67 | 0.008 |
| FBG (mmol/L) | 5.63 | 5.11–6.61 |  | 5.26 | 4.94–5.72 | ＜0.001 |
| TC (mmol/L) | 5.91 | 5.03–7.08 |  | 4.93 | 4.36–5.57 | ＜0.001 |
| TG (mmol/L) | 1.01 | 0.70–1.76 |  | 1.25 | 0.89–1.84 | ＜0.001 |
| HDL-C (mmol/L) | 0.96 | 0.68–1.42 |  | 1.51 | 1.25–1.83 | ＜0.001 |
| LDL-C (mmol/L) | 2.20 | 1.48–2.85 |  | 2.68 | 2.18–3.24 | 0.016 |
| SUA (umol/L) | 328.00 | 267.75–405.00 |  | 304.00 | 254.00–363.00 | ＜0.001 |
| eGFR (ml/min/1.73m2) | 97.87 | 87.35–106.31 |  | 99.39 | 89.38–107.59 | 0.116 |
| BMI (kg/m2) | 24.40 | 22.43–26.78 |  | 24.44 | 22.39–26.67 | 0.735 |
| WC (cm) | 83.65 | 77.00–89.55 |  | 83.00 | 76.60–89.60 | 0.384 |
| WHtR | 0.52 | 0.49–0.56 |  | 0.52 | 0.48–0.56 | 0.516 |

DASH, dietary approaches to stop hypertension; METs, metabolic equivalent values; SBP, systolic blood pressure; DBP, diastolic blood pressure; FBG, fasting blood glucose; TC, total cholesterol; TG, triglyceride; HDL-C, high density lipoprotein cholesterol; LDL-C, low density lipoprotein cholesterol; SUA, serum uric acid; eGFR, estimated glomerular filtration rate; BMI, body mass index; WC, waist circumference; WHtR, waist-to-height ratio; VAI, visceral adiposity index; CVAI, Chinese visceral adiposity index; LAP, lipid accumulation product index; CMI, cardiometabolic index; HUA, hyperuricemia. others in marital status including separated/divorced/widowed/unmarried.

**Supplementary Table 2.** Sensitivity analyses for association between Chinese visceral adiposity index (CVAI) and hyperuricemia (HUA) among adults enrolled in the Chinese Multi-Ethnic Cohort study, stratified by sex, according to CVAI as categorical (quartile) or continuous variables, using logistic regression

(Odds ratios (OR) and 95% confidence intervals (CI); numbers)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| CVAI | No. of cases/participants | Model 1 |  | Model 2 |  | Model 3 |
| OR(95%CI) |  | OR(95%CI) |  | OR(95%CI) |
| Men | |  |  |  |  |  |
| CVAI (Quartiles) | |  |  |  |  |  |
| Q1(≤65.41) | 248/2466 | 1.00(ref) |  | 1.00(ref) |  | 1.00(ref) |
| Q2(65.42-94.49) | 397/2468 | 1.72(1.45,2.03)\* |  | 1.67(1.41,1.99)\* |  | 1.61(1.35,1.93)\* |
| Q3(94.50-120.73) | 579/2465 | 2.75(2.34,3.23)\* |  | 2.69(2.29,3.17)\* |  | 2.30(1.91,2.77)\* |
| Q4(˃120.74) | 851/2467 | 4.71(4.03,5.50)\* |  | 4.74(4.05,5.56)\* |  | 3.25(2.66,3.96)\* |
| *P* for trend |  | ＜0.001 |  | ＜0.001 |  | ＜0.001 |
| CVAI (per-SD increase) | 2075/9866 | 1.81(1.72,1.91)\* |  | 1.83(1.73,1.93)\* |  | 1.59(1.48,1.71)\* |
| Women | |  |  |  |  |  |
| CVAI (Quartiles) | |  |  |  |  |  |
| Q1(≤45.34) | 68/2767 | 1.00(ref) |  | 1.00(ref) |  | 1.00(ref) |
| Q2(45.35-72.82) | 129/2769 | 1.94(1.44,2.62)\* |  | 2.13(1.57,2.88)\* |  | 1.95(1.43,2.66)\* |
| Q3(72.83-100.83) | 261/2767 | 4.14(3.15,5.43)\* |  | 4.86(3.68,6.43)\* |  | 3.91(2.87,5.33)\* |
| Q4(˃100.83) | 559/2767 | 10.05(7.77,13.01)\* |  | 12.9(9.74,17.07)\* |  | 7.96(5.62,11.27)\* |
| *P* for trend |  | ＜0.001 |  | ＜0.001 |  | ＜0.001 |
| CVAI (per-SD increase) | 1017/11070 | 2.45(2.28,2.64)\* |  | 2.87(2.61,3.14)\* |  | 2.30(2.00,2.65)\* |

Model 1: without adjustments. Model 2: adjusted for age, area, education level, marital status, smoking, drinking, spicy food intake, DASH score, and physical activity. Model 3: further adjusted for diabetes, hypertension, BMI, eGFR, TC, and LDL-C. SD, standard deviation. \**P* <0.001.

**Supplementary Table 3.** Sensitivity analyses forarea under the receiver operator characteristic curve (AUROC) of adiposity indices for predicting hyperuricemia (HUA) among men (N=9866) and women (N=11,070) enrolled in the Chinese Multi-Ethnic Cohort study

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Adiposity indices | AUROC(95%CI) | Cutoff | Sensitivity (%) | Specificity (%) | Youden index(%) | *P* |
| Men |  |  |  |  |  |  |
| WC | 0.649(0.639-0.658) | 89.80 | 52.6 | 69.7 | 22.3 | <0.001 |
| WHtR | 0.620(0.610-0.630) | 0.53 | 55.2 | 62.3 | 17.5 | <0.001 |
| VAI | 0.697(0.688-0.706) | 1.37 | 70.2 | 59.8 | 30.0 | <0.001 |
| LAP | 0.710(0.701-0.719) | 34.02 | 68.8 | 64.1 | 32.9 | <0.001 |
| CMI | 0.700(0.691-0.710) | 0.50 | 75.6 | 54.1 | 29.6 | <0.001 |
| CVAI | 0.662(0.652-0.671) | 97.15 | 66.4 | 57.8 | 24.2 | - |
| Women |  |  |  |  |  |  |
| WC | 0.666(0.657-0.675) | 83.80 | 56.3 | 69.4 | 25.8 | <0.001 |
| WHtR | 0.669(0.660-0.677) | 0.52 | 68.0 | 57.1 | 25.1 | <0.001 |
| VAI | 0.712(0.704-0.721) | 1.55 | 67.8 | 65.1 | 32.8 | 0.013 |
| LAP | 0.726(0.718-0.734) | 32.75 | 67.1 | 68.0 | 35.0 | 0.334 |
| CMI | 0.723(0.715-0.732) | 0.47 | 67.3 | 68.0 | 35.2 | 0.262 |
| CVAI | 0.731(0.723-0.739) | 84.68 | 70.7 | 64.6 | 35.3 | - |

WC, waist circumference; WHtR, waist-to-height ratio; VAI, visceral adiposity index; LAP, lipid accumulation product; CMI, cardiometabolic index; CVAI, Chinese visceral adiposity index; HUA, hyperuricemia;



**Supplemental Figure 1.** Flow chart of the selection of study participants



**Supplemental Figure 2.** The variance inflation factors for all included variables in model 3.

model 3: included age, area, education level, marital status, smoking, drinking, spicy food intake, DASH score, physical activity, diabetes, hypertension, BMI, eGFR, TC, and LDL-C.



**Supplemental Figure 3.** Receiver operator characteristic curve of waist circumference (WC), waist-to-height ratio (WHtR), visceral adiposity index (VAI), lipid accumulation product index (LAP), cardiometabolic index (CMI), and Chinese visceral adiposity index (CVAI) for predicting hyperuricemia (HUA) among men and women enrolled in the Chinese Multi-Ethnic Cohort study.



**Supplemental Figure 4.** Sensitivity analyses for association between Chinese visceral adiposity index (CVAI) (per-SD increase) and hyperuricemia (HUA) among adults enrolled in the Chinese Multi-Ethnic Cohort study, stratified by age, smoking, drinking, spicy food, body mass index (BMI), diabetes, and hypertension, using logistic regression model. Data are odds ratio (OR) and 95% confidence interval (CI). BMI, body mass index; CVAI, Chinese visceral adiposity index; DASH, Dietary Approaches to Stop Hypertension; eGFR, estimated glomerular filtration rate; HUA, hyperuricemia; LDL-C, low-density lipoprotein cholesterol; TC, total cholesterol.