**Supplementary materials**

**Supplement Table S1: Baseline characteristics by sex-specific quartiles**

|  |  |  |
| --- | --- | --- |
|  | **Women (n=7390)** |  |
|  | **Q1****(n=1845)**  | **Q2** **(n=1851)** | **Q3****(n=1847)**  | **Q4** **(n=1847)** | **p-value**  |
| TyG index  | 3.58-4.30 | 4.30-4.46 | 4.46-4.62 | 4.62-6.24 | - |
| Age (yrs) | 47.4 (±7.4)  | 47.6 (±7.6)  | 47.1 (±8.1)  | 47.7 (±8.1) | 0.566 |
| Height (m) | 1.64 (±0.06) | 1.64 (±0.06) | 1.64 (±0.06)  | 1.63 (±0.06)  | <0.001 |
| BMI (kg/m2) | 22.7 (±3.0)  | 23.3 (±3.4)  | 23.9 (±3.9) | 25.6 (±4.8)  | <0.001  |
| ESR (mm/h)a | 6.31 | 7.05 | 7.84 | 9.11 | <0.001 |
| Never smokersEver smokers (%) | 48.052.0 | 41.558.5 | 35.964.1 | 33.966.1  | <0.001  |
| Smoking amount >20 cig/day (%)  | 0.6 | 1.5 | 2.2 | 4.1  | <0.001  |
| FEV1/FVC  | 0.82 (±0.09) | 0.81 (±0.09) | 0.80 (±0.09) | 0.80 (0.09) | <0.001 |
| Prevalent CVD (%) | 0.7 | 0.9 | 0.5 | 0.9 | 0.811 |
| Prevalent diabetes (%) | 0.5 | 0.6 | 1.1 | 7.9 | <0.001 |
| Physical inactivity (%)  | 41.3 | 43.8 | 43.0 | 46.9 | <0.001 |
| Blood pressure medication (%) | 3.2 | 5.7 | 7.3 | 11.7 | <0.001 |
| Insulin (mIU/l)\* a | 4.49 | 4.88 | 6.06 | 7.27 | <0.001 |
|  | **Men (n=20,892)** |  |
|  | **Q1** **(n=5237)** | **Q2** **(n=5206)** | **Q3** **(n=5225)** | **Q4** **(n=5224)** | **p-value**  |
| TyG index  | 3.38-4.44 | 4.44-4.60 | 4.61-4.79 | 4.79-6.70 | - |
| Age (yrs) | 42.8 (±6.8)  | 43.5 (±6.8)  | 43.6 (±6.6)  | 44.0 (±6.4) | <0.001 |
| Height (m) | 1.77 (±0.07) | 1.77 (±0.07) | 1.77 (±0.07)  | 1.77 (±0.07)  | <0.001 |
| BMI (kg/m2) | 23.3 (±2.7)  | 24.1 (±2.9)  | 24.9 (±3.2) | 26.3 (±3.5)  | <0.001  |
| ESR (mm/h) a | 3.76 | 3.97 | 4.15 | 4.47 | <0.001 |
| Never smokersEver smokers (%) | 40.759.3 | 34.265.8 | 31.268.8 | 27.073.0 | <0.001  |
| Smoking amount >20 cig/day (%)  | 9.9  | 13.3 | 13.7 | 17.1 | <0.001  |
| FEV1/FVC  | 0.78 (±0.10) | 0.78 (±0.09) | 0.78 (±0.09) | 0.77 (±0.09) | <0.001 |
| Prevalent CVD (%) | 0.4 | 0.9 | 0.9 | 1.7 | <0.001 |
| Prevalent diabetes (%) | 0.7 | 0.7 | 2.1 | 9.7 | <0.001 |
| Physical inactivity (%)  | 46.4 | 51.8 | 52.9 | 59.2 | <0.001 |
| Blood pressure medication (%) | 1.8 | 2.4 | 4.0 | 7.6 | <0.001 |
| Insulin (mIU/l)\* a | 6.45 | 6.77 | 7.72 | 10.00 | <0.001 |

Data presented as mean (±standard deviation) unless otherwise stated. aGeometric mean presented for ESR. Linear by linear association for chi square tests used for *p* value for categorical variables, ANOVA test for linearity used for *p* value for continuous variable. \*Data from 963 women and 5807 men. TyG: Triglyceride-glucose, FEV1: forced expiratory volume in 1 second, FVC: forced vital capacity, ESR: erythrocyte sedimentation rate, CVD: cardiovascular disease, BMI: body mass index, AHT: antihypertensive drug treatment, TLC: total lung capacity, RV: residual volume, FRC; functional residual capacity, VC: vital capacity, LCI: lung clearance index.

**Supplement Table S2: Incidence of COPD events by quartiles of TyG index in different smoking groups**

|  |  |  |  |
| --- | --- | --- | --- |
|   | **COPD Events (n)** | **TyG quartiles** | **p-value****trend**  |
|   |   | **Q1** **3.38-4.35** | **Q2** **4.35-4.52** | **Q3** **4.52-4.70** | **Q4****4.70-6.14** |   |
| Never smokers (n=9898) | 404 | 1.00 | 1.07 (0.78-1.45) | 1.22 (0.90-1.65) | 1.47 (1.08-2.01)  | 0.004 |
|   |   | **Q1** **3.48-4.38** | **Q2** **4.38-4.56** | **Q3** **4.56-4.75** | **Q4****4.75-5.94** |   |
| FormerSmokers(n=4894)   | 385 | 1.00  | 0.78 (0.58-1.04) | 0.93 (0.70-1.24) | 0.95 (0.70-1.29) | 0.97 |
|   |   | **Q1** **3.50-4.44** | **Q2** **4.44-4.60** | **Q3** **4.60-4.78** | **Q4****4.78-6.70** |   |
| Current smokers (n=13,490) | 2580 | 1.00 | 1.08 (0.97-1.21) | 1.13 (1.01-1.26) | 1.04 (0.92-1.18) | 0.317 |
|    |   | **Q1** **3.48-4.42** | **Q2** **4.42-4.59** | **Q3** **4.59-4.77** | **Q4****4.77-6.70** |   |
| Ever smokers (n=18,384) | 2965 | 1.00 | 1.14 (1.03-1.26) | 1.22 (1.10-1.36)  | 1.20 (1.07-1.35) | <0.001 |

Adjustments: age, sex, height, BMI, FEV1/FVC, physical activity, prevalent CVD, prevalent diabetes, BP medication

**Supplement Table S3: Incidence of COPD by sex-specific quartiles of TyG index in subjects with no prevalent diabetes at baseline (n= 7203 women and 20204 men )**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Q1** | **Q2** | **Q3** | **Q4** | **p-value****trend**  |
| **Women** **(n=982 events)** | **3.58-4.30****(n=1801)** | **4.30-4.45****(n=1802)** | **4.45-4.61****(n=1801)** | **4.61-5.92****(n=1799)** |  |
| Model 1  | 1.00 (reference)  | 1.34 (1.10-1.64) | 1.63 (1.35-1.98) | 2.16 (1.79-2.59) | <0.001 |
| Model 2  | 1.00 (reference) | 1.22 (1.00-1.49) | 1.43 (1.18-1.74) | 1.83 (1.51-2.22) | <0.001 |
| Model 3 | 1.00 (reference) | 1.19 (0.97-1.45)  | 1.31 (1.07-1.59) | 1.75 (1.43-2.13) | <0.001 |
| **Men** **(n=2290 events)** | **3.38-4.43****(n=5051)** | **4.43-4.60****(n=5046)** | **4.60-4.77****(n=5054)** | **4.77-6.11****(n=5053)** |  |
| Model 1 | 1.00 (reference)  | 1.10 (0.98-1.24) | 1.19 (1.06-1.33) | 1.27 (1.13-1.43)  | <0.001 |
| Model 2  | 1.00 (reference) | 1.00 (0.89-1.12) | 1.05 (0.93-1.18) | 1.05 (0.93-1.19) | 0.296 |
| Model 3 | 1.00 (reference) | 1.03 (0.91-1.16) | 1.07 (0.95-1.20) | 1.04 (0.92-1.18) | 0.426 |

Model 1: Unadjusted

Model 2: age, height, BMI, smoking status, smoking amount >20 cig/day

Model 3: age, height, BMI, smoking status, smoking amount >20 cig/day, FEV1/FVC, physical activity, prevalent CVD, blood pressure medication