

Table S1. Association between dietary fat intake and incidence of obesity.

| Dietary fat | Person-years | Model 1 ⁽¹⁾ | Model 2 ⁽²⁾ |
|------------------------------------|--------------|------------------------|------------------------|
| | | HR (95% CI) | HR (95% CI) |
| Men (<i>n</i> = 1540) | | | |
| <15.4 (% energy) (<i>n</i> = 769) | 7023.1 | 1.00 (Ref.) | 1.00 (Ref.) |
| ≥15.4 (% energy) (<i>n</i> = 771) | 6981.5 | 1.23 (0.97-1.55) | 1.19 (0.93-1.52) |
| Continuous (per 1 energy %) | 14,004.6 | 1.03 (1.01-1.05) | 1.03 (0.99-1.05) |
| Women (<i>n</i> = 1515) | | | |
| <13.7 (% energy) (<i>n</i> = 758) | 6889.6 | 1.00 (Ref.) | 1.00 (Ref.) |
| ≥13.7 (% energy) (<i>n</i> = 757) | 7068.5 | 1.03 (1.01-1.05) | 1.03 (0.99-1.05) |
| Continuous (per 1 energy%) | 13,958.1 | 0.99 (0.99-1.03) | 1.01 (0.99-1.03) |

HR, hazard ratio; CI, confidence interval; Ref., reference.⁽¹⁾Adjusted for age, sex, area, alcohol consumption, smoking, body mass index, education level, household income, and metabolic equivalent of task (MET).⁽²⁾Adjusted for age, sex, area, alcohol consumption, smoking, body mass index, education level, household income, MET, total energy, and dietary fiber.

Table S2. The incidence of obesity stratified by dietary fat intake (<15% energy, ≥15% energy).

| Dietary fat (% energy) | Men (n = 1540) | | | | Women (n = 1515) | | | |
|---------------------------|---------------------|--|-----------------------|--|---------------------|--|-----------------------|--|
| | < 15% | | ≥ 15% | | < 15% | | ≥ 15% | |
| Person-years | 6705.5 | | 7299.1 | | 8258.0 | | 5700.1 | |
| Incident cases (n) | 125/732 | | 187/808 | | 183/909 | | 132/606 | |
| | HR (95% CI) p-value | | HR (95% CI) p-value | | HR (95% CI) p-value | | HR (95% CI) p-value | |
| Model 1 ⁽¹⁾ | 1.00 (Ref.) | | 1.27 (1.00-1.61) 0.05 | | 1.00 (Ref.) | | 1.15 (0.91-1.47) 0.25 | |
| Model 2 ⁽²⁾ | 1.00 (Ref.) | | 1.23 (0.96-1.58) 0.11 | | 1.00 (Ref.) | | 1.17 (0.91-1.49) 0.21 | |

HR, hazard ratio; CI, confidence interval; Ref., reference.⁽¹⁾Adjusted for age, sex, area, alcohol consumption, smoking, body mass index, education level, household income, metabolic equivalent of task (MET).⁽²⁾Adjusted for age, sex, area, alcohol consumption, smoking, body mass index, education level, household income, MET, total energy, and dietary fiber.

Table S3. Association between *COBLL1* rs6717858 genotypes and BMI.

| SNP | Chr | Minor allele | BMI (kg/m ²) | |
|-------------------------|-----|--------------|--------------------------|----------------------------|
| | | | Beta ± SE | Add p-value ⁽¹⁾ |
| <i>COBLL1</i> rs6717858 | 2 | C | 0.12 ± 1.37 | 0.17 |

SNP, single nucleotide polymorphism; Chr, chromosome; SE, standard error; Add, additive model; BMI, body mass index.⁽¹⁾Adjusted for age, sex, and area.

Table S4. Association between *COBLL1* rs6717858 genotypes and incidence of obesity, stratified by dietary fat intake (<15% energy, ≥15% energy).

| | | Men (n = 1540) | | | | Women (n = 1515) | | | |
|------------------------|--------|------------------|---------|------------------|---------|------------------|---------|------------------|---------|
| | | <15% | | ≥15% | | <15% | | ≥15% | |
| | | HR (95% CI) | P-value | HR (95% CI) | P-value | HR (95% CI) | P-value | HR (95% CI) | P-value |
| Model 1 ⁽¹⁾ | TT | 1.00 (Ref.) | | 1.22 (0.93-1.61) | 0.14 | 1.00 (Ref.) | | 1.31 (1.01-1.70) | 0.0458 |
| | CT, CC | 0.99 (0.64-1.53) | 0.96 | 1.39 (0.97-1.99) | 0.07 | 1.64 (1.16-2.30) | 0.0046 | 1.04 (0.60-1.78) | 0.90 |
| Model 2 ⁽²⁾ | TT | 1.00 (Ref.) | | 1.18 (0.89-1.57) | 0.25 | 1.00 (Ref.) | | 1.34 (1.02-1.75) | 0.03 |
| | CT, CC | 0.98 (0.63-1.52) | 0.92 | 1.35 (0.94-1.95) | 0.11 | 1.64 (1.17-2.31) | 0.0046 | 1.02 (0.59-1.76) | 0.93 |

HR, hazard ratio; CI, confidence interval; Ref., reference.⁽¹⁾Adjusted for age, sex, area, alcohol consumption, smoking, body mass index, education level, household income, metabolic equivalent of task (MET).⁽²⁾Adjusted for age, sex, area, alcohol consumption, smoking, body mass index, education level, household income, MET, total energy, and dietary fiber.

Table S5. Distribution of dietary fat intake by *COBLL1* rs6717858 genotypes.

| Dietary fat (% energy) | | | |
|--------------------------------|------------------|------------------|------------------|
| Men (<i>n</i> = 1540) | Tertile 1 | Tertile 2 | Tertile 3 |
| Median (ranges) | 10.7 (2.9-13.2) | 15.4 (13.2-17.5) | 20.3 (17.5-35.1) |
| Person-years | 4717.5 | 4653.1 | 4634.0 |
| Incident cases (<i>n</i>) | 84/513 | 109/514 | 119/513 |
| TT | 67/416 | 85/393 | 89/411 |
| CT, CC | 17/97 | 24/121 | 30/102 |
| Women (<i>n</i> = 1515) | Tertile 1 | Tertile 2 | Tertile 3 |
| Median (ranges) | 8.9 (1.9-11.5) | 13.7 (11.5-15.9) | 18.9 (15.9-42.0) |
| Person-years | 4582.6 | 4622.1 | 4753.4 |
| Incident cases (<i>n</i>) | 97/505 | 108/505 | 110/505 |
| TT | 72/400 | 84/431 | 99/422 |
| CT, CC | 25/105 | 24/74 | 11/83 |