Supplemental Tables

Table S1. Factor loadings of food groups in dietary patterns identified using principle component analysis

|   | Balanced diet |  | Prudent diet |  | Noodle/meat diet |  | Rice-based diet |   |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Rice | -2 |   | -7 |   | 3 |   | 93 | \* |
| Grain | 8 |   | -5 |   | -2 |   | -93 | \* |
| Noodles | 3 |   | 1 |   | 62 | \* | 3 |   |
| Breads | -5 |   | 35 |   | 53 | \* | -4 |   |
| Cakes | -4 |   | 29 |   | 31 |   | 6 |   |
| Cookies | 36 |  | 44 | \* | 3 |   | 1 |   |
| Beans | 27 |   | 49 | \* | 6 |   | -2 |   |
| Potatoes | 51 | \* | -3 |   | -1 |   | -3 |   |
| Kimchi | 11 |   | 41 | \* | 16 |   | 5 |   |
| Eggs | -3 |   | 15 |   | 76 | \* | -3 |   |
| Fast foods | 69 | \* | 39 |  | -2 |   | -2 |   |
| Green vegetables | 72 | \* | 25 |   | 1 |   | 1 |   |
| Mushroom | 51 | \* | 33 |   | -5 |   | -4 |   |
| White vegetables | 54 | \* | 20 |   | 11 |   | 0 |   |
| Fatty fish | 66 | \* | 14 |   | 12 |   | 0 |   |
| White fish | 49 | \* | 2 |   | 18 |   | 1 |   |
| Crabs | 20 |   | 13 |   | 6 |   | -2 |   |
| Processed meats | 46 | \* | -11 |   | 40 | \* | 8 |   |
| Red meats | 16 |   | 2 |   | 66 | \* | -4 |   |
| Soups | 33 |   | -8 |   | 38 |  | 4 |   |
| Chickens | 46 | \* | 38 |  | -2 |   | -4 |   |
| Seaweeds | 14 |   | 48 | \* | 2 |   | 1 |   |
| Milk | 22 |   | 29 |   | 6 |   | 2 |   |
| Beverages  | 11 |   | -19 |   | 16 |   | 13 |   |
| Coffee | 14 |   | -11 |   | 23 |   | 14 |   |
| Tea | 22 |   | 46 | \* | -5 |   | -5 |   |
| Fruit | 50 | \* | -4 |   | 4 |   | 1 |   |
| Pickle | 17 |   | -30 |   | 15 |   | 5 |   |
| Nuts | 1 |   | 50 | \* | 7 |   | -4 |   |
| Variance explained by each factor | 3.7096422 | 2.3282962 | 2.2892598 | 1.7968546 |
|  |

Table S2. Adjusted odds ratios for breast cancer according to the polygenetic risk scores of the best model (PRS) for gene-gene interaction after covariate adjustments

|  |  |  |
| --- | --- | --- |
|  | Model 1 | Model 2 |
| Low-PRS(n=5,276) | Medium-PRS(n=19,660) | High-PRS(n=12,178) | Medium-PRS(n=21,641) | High-PRS(n=4,201) |
| BMI  | 1 | 1.004 (0.935-1.077) | 1.002 (0.893-1.124) | 0.972 (0.881-1.073) | 1.003 (0.903-1.113) |
| Waist circumference  | 1 | 1.014(0.908-1.132) | 0.955 (0.849-1.073) | 0.988 (0.847-1.151) | 0.903 (0.766-1.063) |
| Type 2 diabetes | 1 | 1.037(0.913~1.177) | 1.019(0.890~1.167) | 0.975(0.727~1.308) | 1.100(0.808~1.498) |
| Hypertension | 1 | 1.080 (0.993-1.174) | 1.103 (1.010-1.206) | 1.011 (0.902-1.133) | 1.035 (0.917-1.168) |
| Total cholesterol | 1 | 1.077 (0.973-1.192) | 1.104 (0.991-1.231) | 1.099 (0.954-1.267) | 1.153 (0.990-1.343) |
| LDL cholesterol | 1 | 0.979 (0.899-1.067) | 1.005 (0.917-1.100) | 0.952 (0.849-1.067) | 0.979 (0.867-1.105) |
| HDL cholesterol | 1 | 1.064(0.992-1.140) | 1.044 (0.970-1.124) | 1.087 (0.985-1.198) | 1.063 (0.958-1.180) |
| TG | 1 | 1.051 (0.968-1.142) | 1.051 (0.968-1.142) | 1.014 (0.913-1.127) | 1.084 (0.970-1.212) |
| Hs CRP | 1 | 0.815 (0.638-1.041) | 0.875 (0.675-1.135) | 0.922 (0.674-1.261) | 1.054 (0.759-1.462) |
| WBC counts | 1 | 0.963 (0.906-1.023) | 1.032 (0.967-1.102) | 0.965 (0.907-1.025) | 1.030 (0.964-1.100) |

Values represent odd ratios and 95% confidence intervals.

The PRSBM scores of the subjects in the best model were calculated by the summation of the risk alleles of the included genetic variants in the model.

The subjects were divided into three groups by the tertiles of the PRS (0-3, 4-5, and >5).

Low-PRS was the reference for both model 1 and model 2.

The cutoff value of each parameter was as follows: <25 kg/m2 BMI, 90 cm for men and 85 cm for women waist circumferences; < 25 kg/m2 BMI, 90 cm for men and 85 cm for women waist circumferences, 230 mg/dL plasma total cholesterol concentrations, 40 mg/dL for men and 50 mg/dL for women plasma HDL cholesterol, 150 mg/dL plasma triglyceride concentrations, <126 ml/dL fasting serum glucose plus diabetic drug intake, 140 mmHg SBP, 90 mmHg DBP plus hypertension medication, 0.5 mg/dL serum high sensitive-C-reactive protein (hs-CRP) concentrations, and 5.6X109/L white blood cell counts

Model 1: adjusted for age, residence area, survey year, body mass index (BMI), education, job, and income.

Model 2: adjusted for age, residence area, survey year, BMI, education, income, smoking, alcohol, energy, physical activity, fat percent intake carbohydrate percent intake, menopause age, initial menstruation age, and pregnancy experience.

\*Significantly different from low GRS in logistic regression analysis at \* P<0.05, \*\* P<0.01, \*\*\* P<0.001.