# Table S1. Characteristics of the Participants According to the Vegetable Low-Carbohydrate-Diet Score

|  |  |  |
| --- | --- | --- |
|  | Quartile of vegetable LCD score | *P*-value |
|  | Quartile1 (*n* 241) |  | Quartile 2 (*n* 242) |  | Quartile 3 (*n* 263) |  | Quartile 4 (*n* 272) |
| Characteristic | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |
| Low-carbohydrate diet score |  |  |  |  |  |  |  |  |  |  |  |  |
| Median | 7 |  |  | 12 |  |  | 17 |  |  | 24 |  |  |
| Interquartile range | 5-8 |  |  | 10-13 |  |  | 15-18 |  |  | 21-27 |  |  |
| Age (years) | 29.4 | 4.95 |  | 29.4 | 4.71 |  | 30.3 | 4.51 |  | 30.9 | 5.06 | 0.001 |
| GDM, n (%) | 47 (19.5) |  |  | 42 (17.4) |  |  | 49 (18.6) |  |  | 56 (20.6) |  | 0.82 |
| Gestational weeks (weeks) | 25.5 | 2.32 |  | 25.6 | 2.18 |  | 25.5 | 2.18 |  | 25.2 | 2.45 | 0.8 |
| Family history of diabetes, n (%) | 36 (15.1) |  |  | 34 (14.2) |  |  | 36 (13.7) |  |  | 42 (15.5) |  | 0.94 |
| Passive smoking, n (%) | 47 (20.8) |  |  | 53 (22.8) |  |  | 68 (27.4) |  |  | 50 (19.8) |  | 0.18 |
| Alcohol use, n (%) | 9 (3.73) |  |  | 8 (3.31) |  |  | 9 (3.42) |  |  | 8 (2.94) |  | 0.97 |
| Pre-pregnancy BMI (kg/m2) | 20.2 | 3.00 |  | 20.3 | 2.77 |  | 20.8 | 2.77 |  | 21.0 | 3.04 | <0.001 |
| Gestational weight gain\* (kg) | 7.55 | 4.60 |  | 7.21 | 3.35 |  | 7.35 | 4.99 |  | 6.81 | 3.90 | 0.23 |
| Physical activity (MET-h/w) | 270.0 | 247.8 |  | 254.2 | 210.1 |  | 267.4 | 237.5 |  | 299.7 | 219.3 | 0.32 |
| **parity** |  |  |  |  |  |  |  |  |  |  |  | 0.19 |
| 0, n (%) | 93 (38.9) |  |  | 103 (42.7) |  |  | 88 (33.6) |  |  | 108 (40.0) |  |  |
| ≥1, n (%) | 146 (61.1) |  |  | 138 (57.3) |  |  | 174 (66.4) |  |  | 162 (60.0) |  |  |
| FPG (mmol/L) | 4.43 | 0.45 |  | 4.42 | 0.43 |  | 4.40 | 0.37 |  | 4.41 | 0.45 | 0.91 |
| OGTT 1h glucose (mmol/L) | 7.60 | 1.78 |  | 7.77 | 1.66 |  | 7.90 | 1.78 |  | 7.91 | 1.81 | 0.22 |
| OGTT 2h glucose (mmol/L) | 6.60 | 1.33 |  | 6.58 | 1.42 |  | 6.84 | 1.37 |  | 6.84 | 1.34 | 0.07 |
| Fast Insulin (uU/mL) | 4.38 | 2.06 |  | 435 | 1.82 |  | 4.65 | 4.79 |  | 4.44 | 2.01 | 0.90 |
| HOMA-IR | 0.88 | 0.52 |  | 0.86 | 0.38 |  | 0.91 | 0.87 |  | 0.89 | 0.49 | 0.92 |
| Total calories(kcal/d) | 1920.0 | 504.3 |  | 1803.0 | 473.3 |  | 1831.8 | 560.1 |  | 2270.8 | 719.4 | <0.001 |
| Carbohydrate (% of energy) | 52.6 | 5.31 |  | 47.3 | 6.12 |  | 45.4 | 5.56 |  | 40.5 | 5.21 | <0.001 |

**Table S1**. *Cont.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Quartile1 (*n* 241) |  | Quartile2 (*n* 242) |  | Quartile3 (*n* 263) |  | Quartile4 (*n* 272) | *P*-value |
| Characteristic | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |
| Protein (% of energy) | 15.1 | 2.44 |  | 15.6 | 2.63 |  | 15.7 | 2.60 |  | 15.7 | 2.10 | 0.008 |
| Animal protein (% of energy) | 8.72 | 2.81 |  | 9.06 | 3.10 |  | 8.52 | 3.05 |  | 7.03 | 2.58 | <0.001 |
| Vegetable protein (% of energy) | 6.37 | 0.97 |  | 6.57 | 1.15 |  | 7.21 | 1.28 |  | 8.71 | 1.38 | <0.001 |
| Total fat (% of energy) | 33.4 | 4.39 |  | 38.2 | 4.95 |  | 40.2 | 4.53 |  | 45.2 | 4.82 | <0.001 |
| Animal fat (% of energy) | 13.6 | 5.13 |  | 14.8 | 6.29 |  | 13.0 | 5.01 |  | 10.6 | 4.02 | <0.001 |
| Vegetable fat (% of energy) | 19.8 | 3.58 |  | 23.4 | 3.11 |  | 27.2 | 3.17 |  | 34.6 | 5.56 | <0.001 |
| Cholesterol(mg/d) | 396.6 | 204.7 |  | 424.6 | 205.3 |  | 386.8 | 183.5 |  | 404.9 | 200.2 | 0.21 |
| SUFA (% of energy) | 3.40 | 1.32 |  | 3.46 | 1.43 |  | 3.32 | 1.26 |  | 2.77 | 1.21 | <0.001 |
| MUFA (% of energy) | 10.1 | 2.18 |  | 11.8 | 3.09 |  | 12.8 | 2.58 |  | 15.2 | 3.05 | <0.001 |
| PUFA (% of energy) | 11.2 | 2.21 |  | 12.3 | 2.60 |  | 12.7 | 2.41 |  | 12.8 | 2.20 | <0.001 |
| Diet fiber (g/d) | 11.6 | 5.60 |  | 10.6 | 4.42 |  | 11.7 | 5.32 |  | 16.4 | 6.60 | <0.001 |
| **Educational level, n (%)** |  |  |  |  |  |  |  |  |  |  |  | <0.001 |
| senior high school or below | 116 (49.8) |  |  | 101 (42.6) |  |  | 93 (36.1) |  |  | 89 (33.6) |  |  |
| junior college | 69 (29.6) |  |  | 83 (35.0) |  |  | 73 (28.3) |  |  | 75 (28.3) |  |  |
| college or above | 48 (20.6) |  |  | 53 (22.4) |  |  | 92 (35.7) |  |  | 101 (38.1) |  |  |
| **Monthly household income (CNY), n (%)** |  |  |  |  |  |  |  |  |  |  |  | 0.04 |
| <4000 | 57 (25.3) |  |  | 64 (27.1) |  |  | 43 (16.6) |  |  | 45 (16.9) |  |  |
| 4001-6000 | 55 (24.4) |  |  | 57 (24.2) |  |  | 65 (25.1) |  |  | 61 (22.9) |  |  |
| 6001-10000 | 58 (25.8) |  |  | 53 (22.5) |  |  | 63 (24.3) |  |  | 70 (26.3) |  |  |
| >10000 | 55 (24.4) |  |  | 62 (26.3) |  |  | 88 (34.0) |  |  | 90 (33.8) |  |  |
| **Survey year, n (%)** |  |  |  |  |  |  |  |  |  |  |  | 0.14 |
| 2017 | 129 (53.5) |  |  | 108 (44.6) |  |  | 142 (54.0) |  |  | 135 (49.6) |  |  |
| 2018 | 112 (46.5) |  |  | 134 (55.4) |  |  | 121 (46.0) |  |  | 137 (50.4) |  |  |

GDM, gestational diabetes mellitus; BMI, body mass index; MET, metabolic equivalent; FPG, fasting plasma glucose; OGTT, oral Glucose Tolerance Test; HOMA-IR, homeostasis model assessment-insulin resistance; CNY, China yuan (1 China yuan = 0.14 US dollar).

\* gestational weight gain until the glucose screening test

# Table S2. Characteristics of the Participants According to the Animal Low-Carbohydrate-Diet Score

|  |  |  |
| --- | --- | --- |
|  | Quartile of animal LCD score | *P*-value |
|  | Quartile1 (*n* 236) |  | Quartile2 (*n* 251) |  | Quartile3 (*n* 251) |  | Quartile4 (*n* 280) |
| Characteristic | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |
| Low-carbohydrate diet score |  |  |  |  |  |  |  |  |  |  |  |  |
| Median | 5 |  |  | 12 |  |  | 17 |  |  | 25 |  |  |
| Interquartile range | 3-7 |  |  | 10-13 |  |  | 16-19 |  |  | 22.5-27 |  |  |
| Age (years) | 29.8 | 5.1 |  | 29.9 | 4.9 |  | 30.0 | 4.7 |  | 30.4 | 4.7 | 0.67 |
| GDM, n (%) | 37 (15.7) |  |  | 39 (15.5) |  |  | 55 (21.9) |  |  | 63 (22.5) |  | 0.06 |
| Gestational weeks (weeks) | 25.5 | 2.25 |  | 25.6 | 2.54 |  | 25.3 | 2.36 |  | 25.5 | 2.01 | 0.61 |
| Family history of diabetes, n (%) | 30 (12.8) |  |  | 37 (14.9) |  |  | 33 (13.3) |  |  | 48 (17.3) |  | 0.45 |
| Passive smoking, n (%) | 50 (22.2) |  |  | 45 (18.9) |  |  | 44 (19.1) |  |  | 79 (29.6) |  | **0.01** |
| Alcohol use, n (%) | 10 (4.24) |  |  | 8 (3.19) |  |  | 7 (2.79) |  |  | 9 (3.21) |  | 0.84 |
| Pre-pregnancy BMI (kg/m2) | 20.6 | 2.95 |  | 20.5 | 2.85 |  | 20.7 | 3.03 |  | 20.5 | 2.83 | 0.89 |
| Gestational weight gain\* (kg) | 7.37 | 4.03 |  | 6.91 | 4.01 |  | 7.18 | 4.19 |  | 7.40 | 4.76 | 0.74 |
| Physical activity (MET-h/w) | 270.5 | 229.2 |  | 289.8 | 275.9 |  | 292.2 | 234.6 |  | 245.2 | 208.8 | 0.09 |
| **parity** |  |  |  |  |  |  |  |  |  |  |  | 0.39 |
| 0, n (%) | 88 (37.5) |  |  | 88 (35.23) |  |  | 98 (39.5) |  |  | 118 (42.3) |  |  |
| ≥1, n (%) | 147 (62.6) |  |  | 162 (64.8) |  |  | 150 (60.5) |  |  | 161 (57.7) |  |  |
| FPG (mmol/L) | 4.45 | 0.41 |  | 4.39 | 0.41 |  | 4.44 | 0.43 |  | 4.39 | 0.44 | 0.27 |
| OGTT 1h glucose (mmol/L) | 7.57 | 1.77 |  | 7.75 | 1.73 |  | 7.87 | 1.79 |  | 8.00 | 1.74 | 0.04 |
| OGTT 2h glucose (mmol/L) | 6.58 | 1.30 |  | 6.66 | 1.32 |  | 6.81 | 1.37 |  | 6.81 | 1.45 | 0.16 |
| Fast Insulin (uU/mL) | 4.47 | 2.25 |  | 4.38 | 2.02 |  | 4.28 | 1.88 |  | 4.69 | 4.59 | 0.85 |
| HOMA-IR | 0.90 | 0.58 |  | 0.86 | 0.43 |  | 0.85 | 0.42 |  | 0.92 | 0.84 | 0.90 |
| Total calories(kcal/d) | 1856.9 | 594.5 |  | 2079.9 | 659.6 |  | 1984.3 | 594.3 |  | 1929.1 | 560.9 | <0.001 |
| Carbohydrate (% of energy) | 53.1 | 5.03 |  | 47.6 | 6.18 |  | 45.3 | 5.24 |  | 40.2 | 4.69 | <0.001 |

**Table S2**. *Cont.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Quartile1 (*n* 236) |  | Quartile2 (*n* 251) |  | Quartile3 (*n* 251) |  | Quartile4 (*n* 280) | *P*-value |
| Characteristic | Mean | SD |  | Mean | SD |  | Mean | SD |  | Mean | SD |
| Protein (% of energy) | 13.2 | 1.62 |  | 15.0 | 1.56 |  | 16.0 | 1.76 |  | 17.7 | 2.28 | <0.001 |
| Animal protein (% of energy) | 5.25 | 1.63 |  | 7.14 | 1.63 |  | 8.78 | 1.78 |  | 11.5 | 2.39 | <0.001 |
| Vegetable protein (% of energy) | 7.99 | 1.36 |  | 7.80 | 1.48 |  | 7.20 | 1.32 |  | 6.20 | 1.27 | <0.001 |
| Total fat (% of energy) | 35.0 | 5.07 |  | 38.8 | 6.42 |  | 40.0 | 5.72 |  | 43.2 | 5.02 | <0.001 |
| Animal fat (% of energy) | 7.78 | 2.18 |  | 10.7 | 2.67 |  | 13.6 | 3.01 |  | 18.7 | 5.14 | <0.001 |
| Vegetable fat (% of energy) | 27.3 | 6.06 |  | 28.1 | 8.06 |  | 26.4 | 7.12 |  | 24.6 | 5.46 | <0.001 |
| Cholesterol(mg/d) | 266.5 | 139.9 |  | 369.1 | 152.9 |  | 426.4 | 176.8 |  | 527.0 | 213.2 | <0.001 |
| SUFA (% of energy) | 3.10 | 1.14 |  | 3.11 | 1.27 |  | 3.23 | 1.31 |  | 3.43 | 1.31 | 0.10  |
| MUFA (% of energy) | 12.4 | 3.66 |  | 12.7 | 3.66 |  | 12.7 | 3.69 |  | 12.4 | 2.62 | 0.65 |
| PUFA (% of energy) | 10.6 | 2.13 |  | 11.7 | 1.82 |  | 12.5 | 2.10 |  | 14.0 | 2.26 | <0.001 |
| Diet fiber (g/d) | 12.6 | 5.98 |  | 14.0 | 6.73 |  | 13.0 | 5.99 |  | 11.3 | 5.04 | <0.001 |
| **Educational level, n (%)** |  |  |  |  |  |  |  |  |  |  |  | 0.009 |
| senior high school or below | 108 (46.4) |  |  | 106 (44.0) |  |  | 92 (37.9) |  |  | 93 (33.7) |  |  |
| junior college | 76 (32.6) |  |  | 62 (25.7) |  |  | 75 (30.9) |  |  | 87 (31.5) |  |  |
| college or above | 49 (21.0) |  |  | 73 (30.3) |  |  | 76 (31.3) |  |  | 96 (34.8) |  |  |
| **Monthly household income (CNY), n (%)** |  |  |  |  |  |  |  |  |  |  |  | 0.22 |
| <4000 | 54 (23.8) |  |  | 53 (22.2) |  |  | 49 (19.9) |  |  | 53 (19.3) |  |  |
| 4001-6000 | 61 (26.9) |  |  | 57 (23.9) |  |  | 62 (25.2) |  |  | 58 (21.2) |  |  |
| 6001-10000 | 56 (24.7) |  |  | 52 (21.8) |  |  | 70 (28.5) |  |  | 66 (24.1) |  |  |
| >10000 | 56 (24.7) |  |  | 77 (32.2) |  |  | 65 (26.4) |  |  | 97 (35.4) |  |  |
| **Survey year, n (%)** |  |  |  |  |  |  |  |  |  |  |  | 0.02 |
| 2017 | 136 (57.6) |  |  | 128 (51.0) |  |  | 128 (51.0) |  |  | 122 (43.6) |  |  |
| 2018 | 100 (42.4) |  |  | 123 (49.0) |  |  | 123 (49.0) |  |  | 158 (56.4) |  |  |

GDM, gestational diabetes mellitus; BMI, body mass index; MET, metabolic equivalent; FPG, fasting plasma glucose; OGTT, oral Glucose Tolerance Test; HOMA-IR, homeostasis model assessment-insulin resistance; CNY, China yuan (1 China yuan = 0.14 US dollar).

\* gestational weight gain until the glucose screening test

**Table S3**. The mediated effect, direct effect and total effect of HOMA-IR on the association between Overall and animal LCD score with OGTT 1-h glucose

|  |  |  |
| --- | --- | --- |
| Effect | Coefficient | 95% Bootstrap CI |
| Overall LCD score |  |  |
| Mediated | -0.002 | (-0.003, 0.001) |
| Direct | 0.013 | (-0.002, 0.028) |
| Total | 0.013 | (-0.003, 0.028) |
| Animal LCD score |  |  |
| Mediated | <0.001 | (-0.002, 0.002) |
| Direct | 0.017 | (0.002, 0.032) |
| Total | 0.018 | (0.002, 0.033) |

Model: adjusted for age, parity, gestational weeks, monthly household income and education level, family history of diabetes, pre-pregnancy BMI, physical activity, total energy intakes, passive smoking and pregnancy alcohol intake.

# Table S4. multivariable linear regression of LCD scores during pregnancy with glucose metabolism

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Model 1\* |  |  | Model 2† |  |
| Variable | Beta | SE | *P*‡ | *PFDR*§ | Adjusted R2|| |  | Beta | SE | *P*‡ | *PFDR*§ | Adjusted R2|| |
| **LCD score** |  |  |  |
| FPG | -0.002 | 0.002 | 0.27 | 0.36 | 0.002 |  | -0.003 | 0.002 | 0.16 | 0.21 | 0.44 |
| OGTT-1h glucose | 0.024 | 0.007 | 0.001 | 0.002 | 0.012 |  | 0.024 | 0.008 | 0.004 | 0.02 | 0.70 |
| OGTT-2h glucose | 0.018 | 0.005 | 0.001 | 0.002 | 0.011 |  | 0.010 | 0.006 | 0.10 | 0.20 | 0.66 |
| HOMA-IR | < -0.001 | 0.003 | 0.93 | 0.93 | < 0.001 |  | -0.001 | 0.003 | 0.66 | 0.66 | 0.41 |
| **Animal LCD score** |  |  |
| FPG | -0.001 | 0.002 | 0.46 | 0.61 | 0.001 |  | -0.002 | 0.002 | 0.26 | 0.35 | 0.44 |
| OGTT-1h glucose | 0.023 | 0.007 | 0.001 | 0.004 | 0.011 |  | 0.023 | 0.008 | 0.004 | 0.02 | 0.701 |
| OGTT-2h glucose | 0.013 | 0.006 | 0.016 | 0.03 | 0.006 |  | 0.007 | 0.006 | 0.25 | 0.35 | 0.66 |
| HOMA-IR | < 0.001 | 0.003 | 0.80 | 0.80 | < 0.001 |  | 0.001 | 0.003 | 0.82 | 0.82 | 0.40 |
| **Vegetable LCD score** |  |  |
| FPG | -0.002 | 0.002 | 0.40 | 0.53 | 0.001 |  | -0.002 | 0.002 | 0.29 | 0.47 | 0.44 |
| OGTT-1h glucose | 0.014 | 0.008 | 0.09 | 0.18 | 0.003 |  | 0.006 | 0.010 | 0.56 | 0.56 | 0.69 |
| OGTT-2h glucose | 0.016 | 0.006 | 0.008 | 0.03 | 0.007 |  | 0.007 | 0.007 | 0.34 | 0.47 | 0.66 |
| HOMA-IR | < -0.001 | 0.003 | 0.83 | 0.83 | <0.001 |  | -0.004 | 0.004 | 0.35 | 0.47 | 0.41 |

FPG, fasting plasma glucose; OGTT, oral Glucose Tolerance Test; HOMA-IR, homeostasis model assessment-insulin resistance; CI, confidence interval.

\*Model 1: Unadjusted;

†Model 2: adjusted for survey year, age, parity, gestational weeks, monthly household income and education level, family history of diabetes, pre-pregnancy BMI, gestational weight gains, physical activity, total energy intakes, passive smoking and pregnancy alcohol intake.

‡P value thresholds for generalized linear mixed regression.

§correct *P*value thresholds for false discovery rate.

|| Adjusted R-square values for generalized linear mixed regression.

**Table S5**. Risk of GDM according to quartile of pregnancy LCD scores

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 　 |  |  | Model 1\* |  | 　 |  |  | Model 2† |  |
| Variable | Beta | SE | OR (95% CI) | *P*‡ | Adjusted R2§ |  | Beta | SE | OR (95% CI) | *P*‡ | Adjusted R2§ |
| LCD Score |  |  |  |  | 0.014 |  |  |  |  |  | 0.39 |
| Q1 | 0 | - | reference |  |  |  | 0 | - | reference |  |  |
| Q2 | 0.56 | 0.25 | 1.75 (1.08, 2.85) | 0.024 |  |  | 0.47 | 0.30 | 1.61 (0.89, 2.89) | 0.11 |  |
| Q3 | 0.59 | 0.24 | 1.81 (1.13, 2.90) | 0.014 |  |  | 0.45 | 0.29 | 1.57 (0.89, 2.77) | 0.12 |  |
| Q4 | 0.61 | 0.24 | 1.84 (1.14, 2.95) | 0.012 |  |  | 0.39 | 0.30 | 1.48 (0.82, 2.69) | 0.19 |  |
| *P* for trend |  |  | 0.02 |  |  |  |  |  | 0.20 |  |  |
| Animal LCD Score |  |  |  |  | 0.011 |  |  |  |  |  | 0.39 |
| Q1 | 0 | - | reference |  |  |  | 0 | - | reference |  |  |
| Q2 | -0.01 | 0.25 | 0.99 (0.61, 1.61) | 0.97 |  |  | -0.40 | 0.31 | 0.67 (0.37, 1.23) | 0.19 |  |
| Q3 | 0.41 | 0.24 | 1.51 (0.95, 2.39) | 0.08 |  |  | 0.18 | 0.28 | 1.20 (0.69, 2.07) | 0.52 |  |
| Q4 | 0.45 | 0.23 | 1.56 (1.00, 2.45) | 0.052 |  |  | 0.25 | 0.27 | 1.28 (0.75, 2.19) | 0.26 |  |
| *P* for trend |  |  | 0.02 |  |  |  |  |  | 0.11 |  |  |
| Vegetable LCD Score |  |  |  |  | 0.001 |  |  |  |  |  | 0.38 |
| Q1 | 0 | - | reference |  |  |  | 0 | - | reference |  |  |
| Q2 | -0.14 | 0.24 | 0.87 (0.55, 1.37) | 0.54 |  |  | -0.51 | 0.30 | 0.60 (0.34, 1.09) | 0.09 |  |
| Q3 | -0.06 | 0.23 | 0.95 (0.61, 1.48) | 0.80 |  |  | -0.23 | 0.28 | 0.80 (0.46, 1.38) | 0.41 |  |
| Q4 | 0.07 | 0.22 | 1.07 (0.69, 1.65) | 0.76 |  |  | -0.40 | 0.29 | 0.67 (0.38, 1.18) | 0.17 |  |
| *P* for trend |  |  | 0.62 |  |  |  |  |  | 0.41 |  |  |

OR, odds ratio; CI, confidence interval; Q, quartile.

\*Model 1: Unadjusted;

†Model 2: adjusted for survey year, age, parity, gestational weeks, monthly household income and education level, family history of diabetes, pre-pregnancy BMI, gestational weight gains, physical activity, total energy intakes, passive smoking and pregnancy alcohol intake.

‡P value thresholds for linear mixed regression.

§Adjusted R-square values for linear mixed regression.