Supplementary Information

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Supplementary Methods

List of adverse pregnancy events involved in the present study

The terms and classification of adverse pregnancy events are based on the book of *Obstetrics and Gynecology* (version 9, published by People's Medical Publishing House) in China, as well as clinical practice experience and the results of the pregnant woman cohort.

1. Pregnancy complications and comorbidities:
Gestational diabetes mellitus
Hypertensive disorders of pregnancy
Morning sickness
Thyroid disease (hypothyroidism and hyperthyroidism)

2. Abnormal delivery and its complications:
Delivery mode (cesarean section or natural vaginal delivery)
Birth injury
Fetal distress
Premature rupture of fetal membranes
Postpartum hemorrhage
Preterm birth

3. Fetal and neonatal abnormalities:
Meconium-stained amniotic fluid
Neonatal birth weight (macrosomia or low birth weight)

The multidimensional dietary indexes and conceptions for assessing dietary status

The multidimensional dietary indexes and conceptions for assessing dietary status were selected and calculated referring to *the Dietary Guidelines for Chinese Residents*[1], *the China Food Composition Database*[2], *the Dietary Reference Intakes for China*[3], and previous literature with necessary modifications. In this study, the overall dietary quality and antioxidative property had the most significant results.

(1) **Dietary quality** was reflected by the **Chinese Diet Balance Index for Pregnancy (DBI-P)**[4-6] accompanied with **Diet Quality Distance (DQD)**, **High Bound Score (HBS)**, and **Low Bound Score (LBS)**.

The DBI-P index was the sum of the scores from each component, and the total score (−74 to 54 points) was used to reflect overall dietary quality. The positive score represented excessive intake, and the negative score represented inadequate intake. Besides, the HBS was the sum of absolute values of positive scores, which reflected the degree of excessive food intake. The LBS was the sum of absolute values of negative scores, which reflected the degree of inadequate food intake. At last, the DQD was the sum of absolute values of both positive and negative scores, which reflected the degree of imbalanced food intake. A lower score of DBI-P-based DQD, HBS, and LBS meant better dietary quality.

For HBS, the total score range was 0 to 54 points, in detail, 0 points = no excessive intake; 1 to 11 points = almost no excessive intake; 11 to 22 points = low level of excessive intake; 22 to 32 points = moderate level of excessive intake; >32 points = high level of excessive intake. For LBS, the total score range was 0 to 74 points, 0 points = no inadequate intake; 1 to 15 points = almost no inadequate intake; 15 to 30 points = low level of inadequate intake; 30 to 44 points = moderate level of inadequate intake; >44 points = high level of inadequate intake. For DQD, the total score range was 0 to 94 points, in detail, 0 points = balanced diet; 1 to 19 points = almost no problem (good dietary intake); 20 to 38 points = low level of imbalanced diet (imbalanced dietary intake); 39 to 56 points = middle level of imbalanced diet (poor dietary intake); >56 points = high level of imbalanced diet (very poor dietary intake). The amount and characteristics of daily food intake were classified into 8 categories as follows:

1) *Cereal (involving whole grain) + potato & tuber + mixed bean*
   The score range of this component was −12 to 12 points, which consisted of −1 to 1 point for whole grain and −11 to 11 points for others. Scoring rules were as follows:
   ➢ General cereal intake: 0g = −11 points; 0< ≤25g =−10 points; 25< ≤50g = −9 points; 50< ≤75g = −8 points; 75< ≤100g = −7 points; 100< ≤125g = −6 points; 125< ≤150g = −5 points; 150< ≤175g = −4 points; 175< ≤200g = −3 points; 200< ≤225g = −2 points; 225< ≤250g = −1 point; 250≤ ≤300g = 0 points; 300< ≤325g = 1 point; 325< ≤350g = 2 points; 350< ≤375g = 3 points; 375< ≤400g = 4 points; 400< ≤425g = 5 points; 425< ≤450g = 6 points; 450< ≤475g = 7 points; 475< ≤500g = 8 points; 500< ≤525g = 9 points; 525< ≤550g = 10 points; 550g ≤ = 11 points.
   ➢ Whole grain intake: 0≤ <75g = −1 point; 75≤ ≤100g = 0 points; 100g ≤ = 1 point.

2) *Vegetables + fruits*

The score range of this component was −14 to 0 points, which consisted of −6 to 0 points for vegetables and −8 to 0 points for fruits. Scoring rules were as follows:

➢ Vegetable intake: 0≤ <50g = −6 points; 50≤ <100g = −5 points; 100≤ <150g = −4 points; 150≤ <200g = −3 points; 200≤ <250g = −2 points; 250≤ <300g = −1 point; 300g ≤ = 0 points.

➢ Fruit intake: 0≤ <25g = −8 points; 25≤ <50g = −7 points; 50≤ <75g = −6 points; 75≤ <100g = −5 points; 100≤ <125g = −4 points; 125≤ <150g = −3 points; 150≤ <175g = −2 points; 175≤ <200g = −1 point; 200g≤ = 0 points.

3) Dairy, soybeans, and nuts intake

The score range of this component was −12 to 0 points, which consisted of −6 to 0 points for dairy and −6 to 0 points for soybeans and nuts. Scoring rules were as follows:

➢ Dairy intake: 0≤ <50g = −6 points; 50≤ <100g = −5 points; 100≤ <150g = −4 points; 150≤ <200g = −3 points; 200≤ <250g = −2 points; 250≤ <300g = −1 points; 300g ≤ = 0 points.

➢ Fruit intake: 0g = −6 points; 0< ≤5g = −5 points; 5< ≤10g = −4 points; 10< ≤15g = −3 points; 15< ≤ 20g = −2 points; 20< <25g = −1 point; 25g≤ = 0 points.

4) Animal food (such as meat and poultry, fish and shrimp, and egg)

The score range of this component was −12 to 12 points, which consisted of −4 to 4 points for meat and poultry, −4 to 4 points for fish and shrimp, and −4 to 4 points for egg. Scoring rules were as follows:

➢ Meat and poultry intake: 0≤ <8g = −4 points; 8≤ <16g = −3 points; 16≤ <32g = −2 points; 32≤ <40g = −1 point; 40≤ ≤65g =0 points; 65< ≤80g =1 point; 80< ≤95g =2 points; 95< ≤110g =3 points; 110g< = 4 points.

➢ Fish and shrimp intake: 0≤ <8g = −4 points; 8≤ <16g = −3 points; 16≤ <32g = −2 points; 32≤ <40g = −1 point; 40≤ ≤65g =0 points; 65< ≤80g = 1 point; 80< ≤95g = 2 points; 95< ≤110g = 3 points; 110g < =4 points.

➢ Egg intake: 0≤ <12.5g = −4 points; 12.5≤ <25g = −3 points; 25≤ <37.5g = −2 points; 37.5≤ <50g = −1 point; 50g =0 points; 50< ≤62.5g =1 point; 62.5< ≤75g =2 points; 75< ≤87.5g =3 points; 87.5g < = 4 points.

5) Pure energy food (such as cooking oil, and alcoholic beverages been drunk by mistake)

The score range of this component was 0 to 12 points, which consisted of 0 to 6 points for cooking oil, and 0 to 6 points for alcoholic beverages. Scoring rules were as follows:

➢ Cooking oil intake: ≤25g = 0 points; 25< ≤30g = 1 point; 30< ≤35g = 2 points; 35< ≤40g = 3 points; 40< ≤45g = 4 points; 45< ≤50g = 5 points; 50g< = 6 points.

➢ Alcoholic beverage intake: 0g = 0 points; 0< ≤10g = 1 point; 10< ≤20g = 2 points; 20< ≤30g = 3 points; 30< ≤40g = 4 points; 40< ≤50g = 5 points; 50g < = 6 points.

6) Condiments (like salt)

The score range of this component was 0 to 6 points. Scoring rules were as follows:

➢ Salt intake: ≤5g = 0 points; 5< ≤6g = 1 point; 6< ≤7g = 2 points; 7< ≤8g = 3 points; 8< ≤9g = 4 points; 9< ≤10g = 5 points; 10g< = 6 points.

7) Diet variety (including 12 categories of foods)

The score range of this component was −12 to 0 points. Scoring rules were as follows:

➢ rice and products (<25g = −1 point; 25g ≥ = 0 points);
➢ wheat and products (<25g = −1 point; 25g ≥ = 0 points);
➢ corn, coarse grains and products, starchy roots and products (<25g = −1 point; 25g ≥ = 0 points);
➢ dark-colored vegetables (<25g = −1 point; 25g ≥ = 0 points);
➢ light-colored vegetables (<25g = −1 point; 25g ≥ = 0 points);
➢ fruit (<25g = −1 point; 25g ≥ = 0 points);
➢ soybeans and nuts (soybeans ≥ 5g meanwhile nuts ≥ 25g = 0 points, otherwise = −1 point);
➢ milk and dairy products (<25g = −1 point; 25g ≥ = 0 points);
➢ red meat and products (<25g = −1 point; 25g ≥ = 0 points);
➢ poultry and game (<25g = −1 point; 25g ≥ = 0 points);
➢ egg (<25g = −1 point; 25g ≥ = 0 points);
➢ fish and shellfish (<25g = −1 point; 25g ≥ = 0 points).

8) Drinking water

The score range of this component was −12 to 12 points. Scoring rules were as follows:

➢ Water intake: 0 mL = −12 points; 0< ≤125mL= −11 points; 125< ≤250mL= −10 points; 250< ≤375mL= −9 points; 375< ≤500mL= −8 points; 500< ≤625mL= −7 points; 625< ≤750mL= −6 points; 750< ≤875mL= −5 points; 875< ≤1000mL= −4 points; 1000< ≤1125mL= −3 points; 1125< ≤1250mL= −2 points; 1250< ≤1500mL= −1 point; 1500< ≤1700mL= 0 points; 1700< ≤1900mL= 1 point; 1900< ≤2100mL= 2 points; 2100< ≤2300mL= 3 points; 2300< ≤2500mL= 4 points; 2500< ≤2700mL= 5 points; 2700< ≤2900mL= 6 points; 2900< ≤3100mL= 7 points; 3100< ≤3300mL= 8 points; 3300< ≤3500mL= 9 points; 3500< ≤3700mL= 10 points; 3700< ≤3900mL= 11 points; 3900mL< = 12 points.

(2) **Dietary antioxidative property** was reflected by the **Dietary Antioxidant Quality Score (DAQS)**[7-9].

The DAQS index was the sum of the scores from each component. The daily intake of vitamin A, vitamin C, vitamin E, selenium, zinc, and manganese was calculated. If the intake of these micronutrients was above 2/3 of the dietary reference intakes for Chinese pregnant women, the component would be given 1 point, otherwise, it would be deemed as 0 points. A higher score of DAQS meant a better dietary quality and antioxidative property. The final score was 0 points = very poor quality; 1 to 2 points = low quality; 3 to 4 points = average quality; 5 to 6 points = high quality. The dietary reference intakes of these micronutrients for Chinese pregnant women were as follows:

1) *Vitamin A = 660 µg RAE/d, and the 2/3 of that = 440µg RAE/d.*

2) *Vitamin C = 100 mg/d, and the 2/3 of that = 2/3=66.67 mg/d.*

3) *Vitamin E = 14 mg α-TE/d, and the 2/3 of that = 9.33 mg α-TE/d.*

4) *Selenium = 65 µg/d, and the 2/3 of that = 43.33 µg/d*

5) *Zinc = 10.5 mg/d, and the 2/3 of that = 7 mg/d*

6) *Manganese = 4.0 mg/d, and the 2/3 of that = 2.67 mg/d.*

(3) **Adherence of participants to dietary guidelines** was reflected by the **Chinese Dietary Guidelines Compliance Index for Pregnant Women (CDGCI-PW)**.[10, 11]

The DAQS index was calculated by the sum of the score from 13 questions as follows. A higher CDGCI-PW score meant better compliance with the Chinese dietary guidelines for pregnant women.

1) *How many categories of food do you eat per week on average?*
   ➢ ≤6 categories = 0 points;
   ➢ 7 to 10 categories = 5 to 20 points (5 points for each additional category);
   ➢ ≥11 categories = 25 points.

2) *How many types of foods do you eat per day on average?*
   ➢ ≤4 kinds = 0 points;
   ➢ 5 to 11 kinds = 1 to 7 points (1 point for each additional kind);
   ➢ 11 to 20 kinds = 9 to 25 points (2 points for each additional kind);
   ➢ ≥20 kinds = 25 points.

3) *Does your daily intake of staple food reach 150g on average?*
   ➢ No = 0 points; Yes = 5 points.

4) *Do you take 400µg of folic acid per day on average?*
   ➢ No = 0 points; Yes = 5 points.

5) *Do you eat more than 200g of green-leafy and colored vegetables (red and yellow) per day on average? (raw weight)*
   ➢ No = 0 points; Yes = 5 points.

6) *How often do you drink milk and its products per week on average? (one serving = 250mL)*
   ➢ Less than or equal to once a week (≤250 mL) = 0 points;
   ➢ Range from 2 to 4 times per week (500-1000 mL) = 1 to 3 points (1 point for each additional time per week);
   ➢ More than or equal to 5 times per week (≥1250 mL) = 4 points.

7) *How often do you eat soybeans and soybean products per week on average? (one serving = 15g dry soybeans.*
   ➢ ≤1 time = 0 points;
   ➢ 2 to 4 times = 1 to 3 points (1 point for each additional time per week);
   ➢ ≥5 times per week = 4 points.

8) *Do you eat 100g of lean meat (livestock and poultry meat), aquatic products (fish, shrimp, and shellfish), or eggs per day on average?*
   ➢ No = 0 points; Yes = 4 points

9) *How often do you eat nuts per week on average? (one serving = 10 g dry nuts)*
   ➢ ≤1 time = 0 points;
   ➢ 2 to 4 times per week = 1 to 3 points (1 point for each additional time per week);
   ➢ ≥5 times per week = 4 points.

10) *How often do you eat animal blood and liver per week on average? (one serving = 50g)*
   ➢ Never eat = 0 points;
   ➢ 1 time = 3 points;
   ➢ ≥2 times = 5 points.

11) Do you eat iodized salt every day?
- No = 0 points; Yes = 5 points.

12) How often do you eat iodine-rich seafood per week on average?
- ≤1 time (≤150g) = 0 points;
- 2 to 4 times (300-600g) = 1 to 3 points (1 point for each additional time per week);
- ≥5 times (≥600g) = 4 points.

13) Do you often eat foods high in oil, salt, and sugar?
- Yes = 0 points; No = 5 points.

(4) Eating habit was reflected by the **Chinese Healthy Diet Index for Pregnancy (CHDI-P)**.[12, 13]

The CHDI-P index was calculated by the sum of the scores from each component. A higher CHDI-P score meant a better eating habit with good diet quality and nutritional status.

1) Category of food intake/day (1 point for each species)
- Grains, Tubers and Mixed beans: recommended number of species = 3, score = 0-3 points;
- Vegetables and Fruits: recommended number of species = 4, score = 0-4 points;
- Meat, Poultry, Fish, and Eggs: recommended number of species = 3, score = 0-3 points;
- Dairy, Soybeans and Nuts: recommended number of species = 2, score = 0-2 points;
- Total: recommended number of species = 12, score = 0-12 points.

2) Intake/day of food should be adequacy
- Whole grains/Mixed beans: 0g = 0 points; 0-50g = 3 points; ≥50 = 6 points;
- Tubers: 0g = 0 points; 0-50g = 0.5 point; ≥50 = 1 point;
- Poultry: 0g = 0 points; 0-40g = 1.5 points; ≥40 = 3 points;
- Fish and seafood: 0g = 0 points; 0-40g = 1.5 points; ≥40 = 3 points;
- Eggs: 0g = 0 points; 0-40g = 1.5 points; ≥40 = 3 points;
- Dairy: 0g = 0 points; 0-300g = 1.5 points; ≥300 = 3 points;
- Soybeans: 0g = 0 points; 0-15g = 1.5 points; ≥300 = 3 points;
- Animal liver: 0 or ≥50g = 0 points; 0-25g = 1.5 points; 25≤ ≤50 = 3 points;
- Animal blood: 0 or ≥50g = 0 points; 0-25g = 1.5 points; 25≤ ≤50 = 3 points;
- Red meats: 0 or ≥100g = 0 points; 0-50g = 1.5 points; 50≤ ≤100 = 3 points;
- Dark-colored vegetables: 0g = 0 points; 0-200g = 3 points; ≥200 = 6 points;
- Fruits: 0 or ≥350g = 0 points; 0-200g = 1.5 points; 200≤ ≤350 = 3 points;
- Marine algae: 0g = 0 points; 0-20g = 1.5 points; ≥20 = 3 points;
- Iodized salt: 0 or ≥15g = 0 points; 6-15g = 1.5 points; 0< ≤6 = 3 points;
- Nuts: 0g = 0 points; 0-10g = 1.5 points; ≥10 = 3 points;
- Folic acid supplements: 0g = 0 points; 0-400μg = 3 points; ≥400μg = 6 points.

3) Intake/day of food needs to be limited
- Fried foods: ≥200g = 0 points; 0-200g = 2.75 points; 0g = 5.5 points;
- Sugary beverages: ≥400g = 0 points; 0-400g = 2.75 points; 0g = 5.5 points;
- Alcohol: >0g = 0 points; 0g = 5.5 points;
- Refined grains: 170< or ≥450g = 0 points; 170-450g = 5.5 points;
- Cooking oil: 0 or >50g = 0 points; 25-50g = 2.75 points; 0-25g = 5.5 points.

(5) Consistency of participants' dietary patterns with the DASH model was reflected by the **Dietary Approaches to Stop Hypertension Diet Score (DASH score)**.[14-16]

The DASH score was calculated by the sum of the scores from each component. Based on a 2100 kcal diet, scoring rules were established as follows, and a final score ≥ 4.5 was deemed as good DASH accordant.

1) Energy intake from saturated fat: <6% = 1 point; 6%≤ <11% = 0.5 point; 11%≤ = 0 points;

2) Energy intake from total fat: <27% = 1 point; 27%≤ <32% = 0.5 point; 32%≤ = 0 points;

3) Energy intake from protein: >18% = 1 point; 16.5%< ≤18% = 0.5 point; 16.5%≤ = 0 points;

4) Cholesterol intake: <71.4mg/1000kcal = 1 point; 71.4≤ <107.1mg/1000kcal = 0.5 point; ≥107.1 mg/1000kcal = 0 points;

5) Fiber intake: >14.8g/1000kcal = 1 point; 9.5< ≤14.8g/1000kcal = 0.5 point; 9.5g/1000kcal≤ = 0 points;

6) Magnesium intake: >238mg/1000kcal =1 point; 158< ≤238mg/1000kcal = 0.5 point; 158mg/1000kcal≤ = 0 points;

7) Calcium intake: >590mg/1000kcal =1 point; 402< ≤590 mg/1000kcal = 0.5 point; 402mg/1000kcal≤ = 0 points;

8) *Potassium intake: >2238mg/1000kcal = 1 point; 1534< ≤2238mg/1000kcal = 0.5 point; 1534mg/1000kcal≤ = 0 points;*

9) *Sodium intake: <1143mg/1000kcal = 1 point; 1143≤ <1286mg/1000kcal = 0.5 point; 1286mg/1000kcal≤ = 0 points.*

(6) Dietary anti-inflammatory potential was reflected by the **Energy-Adjusted Dietary Inflammatory Index (E-DII).**[17-19]

The E-DII index was calculated by the sum of the inflammatory effect score from each component. A higher positive score meant a stronger pro-inflammatory potential, while a lower negative score meant a stronger anti-inflammatory potential. Referring to previous literature on E-DII calculation and the China Food Composition Database[2], the inflammatory effect score of 30 types of nutrients and foods were evaluated, including:

1) Alcohol, 2) b-Carotene, 3) Caffeine, 4) Carbohydrate, 5) Cholesterol, 6) Energy, 7) Total fat, 8) Fiber, 9) Folic acid, 10) Garlic, 11) Fe, 12) Mg, 13) MUFA, 14) Niacin, 15) Onion, 16) Protein, 17) PUFA, 18) Riboflavin, 19) Saturated fat, 20) Se, 21) Thiamin, 22) Vitamin A, 23) Vitamin C, 24) Vitamin E, 25) Zn, 26) Green/black tea, 27) Flavones, 28) Flavonols, 29) Anthocyanidins, 30) Isoflavones.

First, the energy-adjusted coefficient of each participant was calculated [energy-adjusted coefficient = total energy intake/1000].

Secondly, the energy-adjusted intake was assessed [energy-adjusted intake = the total intake amount/energy-adjusted coefficient]

Thirdly, the Z-score of nutrients was evaluated [Z-score = (the energy-adjusted intake – global daily mean intake)/its standard deviation]. The global daily mean intake of each nutrient and food, as well as related standard deviation, had been studied and reported in previous literature. [17-19]

Fourthly, the Z-score was converted to a percentile score via the NORMSDIST in Excel software to minimize the effect of the right skewing.

Fifthly, each percentile score was doubled, and then subtracted 1 to achieve a symmetrical distribution with values centered on 0 and bounded between 21 (maximally anti-inflammatory) and 11 (maximally pro-inflammatory).

At last, the nutrient and food-specific DII score was calculated by multiplying the centered percentile score and its respective overall inflammatory effect score. The overall inflammatory effect score of each nutrient and food had been studied and reported in previous literature.[17-19]

(7) Adequacy of micronutrients was reflected by the **Mean Nutrient Adequacy Ratio (MAR)**.[20]

First, the nutrient adequacy ratio (NAR) of each micronutrient was evaluated [NAR = the actual intake of each micronutrient / the dietary reference intakes of each micronutrient for the corresponding pregnancy]. The NARs were truncated at 1 to avoid when the nutrient with a low NAR could be compensated by another nutrient with a high NAR. Then, the MAR was equal to the mean of all NAR. A higher score meant better adequacy.

(8) Dietary diversity was reflected by the **Minimum Dietary Diversity for Women (MDD-W)**.[20, 21]

The MDD-W index was the sum of the scores from each component. A higher score meant better dietary diversity. Food intake was classified into 10 categories: *1) Staple foods (grains, white roots, tubers, and plantains), 2) Pulses (beans, peas and lentils), 3) Nuts and seeds, 4) Dairy, 5) Fleshy foods (meat, poultry, and fish), 6) Eggs, 7) Dark green leafy vegetables, 8) Other vitamin A-rich fruits and vegetables, 9) Other vegetables, 10) Other fruits.* Any kind of food category intake of more than 15g during the last 24 hours was deemed as 1 point, so each participant had a minimum of 0 and a maximum of 10 points could be obtained.

Table S1. The characteristics of dietary status among BMI groups

Dietary characteristics	Normal [as control]	Obesity	*P* value	Overweight	*P* value	Underweight	*P* value
DASH score (n, %)							
Not meeting DASH pattern	416 (37.58%)	45 (33.58%)	>0.05	143 (36.29%)	>0.05	57 (38.00%)	>0.05
Meeting DASH pattern	691 (62.42%)	89 (66.42%)	>0.05	251 (63.71%)	>0.05	93 (62.00%)	>0.05
total	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
CDGCI-PW (median, IQR)	48.00 (42.00-54.00)	47.00 (42.75-53.25)	0.885	48.00 (42.00-53.00)	0.859	47.00 (40.00-53.00)	0.251
CHDI-P (median, IQR)	56.00 (51.25-60.75)	55.63 (51.50-60.25)	0.705	55.88 (50.44-61.00)	0.620	54.25 (49.69-60.50)	0.059
E-DII (median, IQR)	0.30 (-1.47-2.11)	-0.10 (-1.56-1.76)	0.409	0.27 (-1.74-2.34)	0.860	0.61 (-1.58-2.74)	0.341
MDD-W (median, IQR)	8.00 (7.00-9.00)	8.00 (8.00-9.00)	0.572	8.00 (7.00-9.00)	0.996	8.00 (7.00-9.00)	0.010
MAR (median, IQR)	0.89 (0.82-0.93)	0.92 (0.84-0.94)	0.003	0.89 (0.83-0.93)	0.194	0.88 (0.79-0.92)	0.152

Data were presented as median (IQR) or counts with proportion (%). Abbreviations: CDGCI-PW, Chinese dietary guidelines compliance index for pregnant women; CHDI-P, Chinese healthy diet index for pregnancy; DASH score, Dietary approaches to stop hypertension diet score; E-DII, energy-adjusted dietary inflammatory index; MDD-W, minimum dietary diversity for women; MAR, mean of nutrient adequacy ratio.

Table S2. The food source for carbohydrate and protein among BMI groups

Food source	Normal [as control]	Obesity	P value	Overweight	P value	Underweight	P value
Overall high-quality carbohydrate intake (g/day)	84.53 (51.26-137.44)	110.25 (62.36-161.60)	0.006	90.92 (52.85-154.42)	0.087	88.67 (46.53-146.69)	0.728
High-quality carbohydrate from whole grains	10.21 (2.55-25.82)	10.47 (2.99-25.40)	0.878	10.82 (3.11-29.98)	0.288	7.66 (2.38-24.89)	0.355
High-quality carbohydrate from fruits	12.95 (6.01-24.26)	12.71 (6.45-26.06)	0.762	11.60 (5.92-23.27)	0.155	12.48 (5.28-27.93)	0.866
High-quality carbohydrate from legumes	6.89 (2.65-15.18)	7.41 (2.73-18.10)	0.559	6.65 (2.33-15.82)	0.852	5.22 (1.51-12.42)	0.016
High-quality carbohydrate from non-starchy vegetables	39.01 (19.02-70.80)	54.62 (24.07-92.13)	0.001	42.04 (20.42-83.24)	0.051	36.94 (20.26-69.94)	0.655
Overall low-quality carbohydrate intake (g/day)	125.29 (85.59-184.40)	136.67 (81.42-186.49)	0.600	128.50 (83.71-193.50)	0.794	119.39 (82.11-176.09)	0.467
Low-quality carbohydrate from refined grain	80.17 (50.06-117.81)	75.00 (44.54-113.33)	0.387	75.53 (45.50-117.62)	0.312	76.66 (49.54-111.05)	0.490
Low-quality carbohydrate from potato	2.77 (0.69-6.93)	2.37 (1.08-4.68)	0.485	2.31 (0.54-6.93)	0.488	2.31 (0.46-6.93)	0.694
Low-quality carbohydrate from other starchy vegetables	1.48 (0.00-4.76)	0.93 (0.00-4.45)	0.471	1.48 (0.00-3.22)	0.413	1.30 (0.00-3.18)	0.403
Low-quality carbohydrate from added sugars	0.00 (0.00-7.40)	0.00 (0.00-20.09)	0.065	0.00 (0.00-8.46)	0.350	0.00 (0.00-8.87)	0.322
Low-quality carbohydrate from fruit juices	0.00 (0.00-1.06)	0.00 (0.00-1.10)	0.572	0.00 (0.00-0.99)	0.301	0.00 (0.00-1.23)	0.864
Low-quality carbohydrate from residual carbohydrates	20.60 (11.63-35.95)	24.40 (12.09-40.70)	0.223	21.67 (12.92-41.35)	0.220	17.99 (9.14-33.78)	0.121
Overall animal protein intake (g/day)	49.17 (27.32-85.83)	60.35 (33.02-94.18)	0.023	54.50 (29.30-93.97)	0.215	40.63 (21.37-77.81)	0.062
Animal protein from seafood	1.68 (0.58-3.52)	1.68 (0.48-4.52)	0.775	1.75 (0.61-4.13)	0.376	1.51 (0.38-3.96)	0.580
Animal protein from unprocessed red meat	6.50 (2.66-12.76)	7.41 (3.76-18.14)	0.049	7.08 (2.81-14.18)	0.385	5.40 (2.25-11.33)	0.238
Animal protein from processed meat	0.00 (0.00-1.36)	0.00 (0.00-2.72)	0.625	0.00 (0.00-2.72)	0.085	0.00 (0.00-2.72)	0.463
Animal protein from poultry	17.35 (4.35-49.96)	27.79 (8.19-53.18)	0.071	19.90 (5.83-50.79)	0.523	16.65 (3.87-39.34)	0.354
Animal protein from egg	5.85 (3.34-8.19)	5.85 (3.51-8.19)	0.460	5.85 (4.11-8.19)	0.417	4.18 (1.67-6.72)	<0.001
Animal protein from dairy	4.93 (1.91-8.14)	5.94 (2.09-8.58)	0.329	4.78 (2.06-8.03)	0.757	4.25 (1.30-7.71)	0.202
Animal protein from other sources	0.00 (0.00-0.11)	0.00 (0.00-0.12)	0.876	0.00 (0.00-0.16)	0.434	0.00 (0.00-0.13)	0.802
Overall plant protein intake (g/day)	45.36 (30.23-70.52)	50.65 (33.67-72.55)	0.093	46.93 (30.28-76.01)	0.205	43.49 (27.62-66.83)	0.275
Plant protein from whole grain	1.36 (0.34-3.56)	1.39 (0.40-3.55)	0.899	1.47 (0.42-4.09)	0.298	1.02 (0.32-3.40)	0.349
Plant protein from refined grain	9.60 (5.86-14.37)	9.17 (5.20-13.44)	0.367	9.12 (5.39-14.39)	0.349	9.23 (5.93-13.88)	0.489
Plant protein from nuts	0.93 (0.07-2.17)	0.78 (0.00-2.43)	0.537	0.79 (0.04-2.17)	0.644	0.62 (0.00-1.85)	0.056
Plant protein from legumes	6.22 (2.63-11.75)	5.96 (2.75-12.74)	0.954	6.15 (2.33-12.78)	0.871	4.54 (1.49-11.47)	0.023
Plant protein from other sources	20.90 (10.84-36.53)	26.33 (12.97-45.17)	0.019	22.33 (11.16-40.86)	0.096	20.32 (11.06-39.70)	0.982

Data were presented as median (IQR). The categories of food source were referred to previous literature.[22-24]

Table S3. The intake of micronutrients among BMI groups

Micronutrients	Normal [as control]	Obesity	*P* value	Overweight	*P* value	Underweight	*P* value
Vitamins [median (IQR)]							
Vitamin A (μgRE/day)	2074.06 (1090.01-3522.47)	2795.40 (1384.16-5121.40)	0.008	2367.67 (1078.28-4344.68)	0.105	2032.09 (1021.08-3609.55)	0.791
Total carotene (μg/day)	9910.83 (4622.45-18148.01)	14394.1 (5128.62-28552.98)	0.031	11064.93 (4567.87-22244.52)	0.212	10647.98 (4658.02-18162.31)	0.835
Retinol (μg/day)	283.89 (171.48-450.57)	293.40 (205.76-518.42)	0.068	286.43 (167.02-480.85)	0.589	249.135 (114.81-401.94)	0.031
Vitamin B1 (mg/day)	1.12 (0.75-1.59)	1.29 (0.78-1.93)	0.014	1.22 (0.83-1.80)	0.029	0.94 (0.65-1.66)	0.068
Vitamin B2 (mg/day)	1.94 (1.24-2.86)	2.44 (1.41-3.77)	0.001	2.02 (1.30-3.23)	0.044	1.73 (1.06-2.82)	0.142
Vitamin B3 (mg/day)	22.65 (14.23-35.57)	26.90 (17.85-44.04)	0.003	24.98 (16.08-38.82)	0.051	20.27 (12.84-33.13)	0.110
Vitamin B9 (μg/day)	215.34 (132.76-332.73)	256.37 (157.70-380.95)	0.012	232.11 (139.17-388.09)	0.117	211.18 (119.81-323.09)	0.270
Vitamin C (mg/day)	328.75 (171.17-587.96)	446.59 (202.81-828.19)	0.002	361.27 (175.04-688.48)	0.135	342.94 (169.09-614.51)	0.770
Vitamin E (mg/day)	24.07 (15.06-36.96)	29.65 (19.69-42.91)	0.003	25.30 (16.19-40.72)	0.066	21.85 (12.83-35.42)	0.204
α-Vitamin E (mg/day)	12.21 (7.21-19.43)	15.69 (9.38-25.58)	0.000	12.64 (7.60-22.05)	0.063	11.44 (6.88-19.02)	0.398
Minerals [median (IQR)]							
Ca (mg/day)	1156.82 (690.65-1875.36)	1440.89 (810.36-2377.82)	0.005	1192.33 (694.73-2158.92)	0.100	1155.72 (600.70-1811.91)	0.569
P (mg/day)	1565.73 (1052.81-2248.74)	1853.01 (1131.24-2796.67)	0.006	1634.97 (1116.91-2546.29)	0.048	1381.88 (910.44-2369.12)	0.096
K (mg/day)	4183.10 (2561.51-6760.41)	5409.77 (3046.35-7807.33)	0.003	4599.09 (2728.78-7486.89)	0.059	4073.79 (2462.21-6900.21)	0.497
Na (mg/day)	1601.27 (983.35-2693.68)	2127.57 (1067.93-2920.02)	0.025	1882.31 (1051.42-2909.27)	0.035	1494.41 (881.51-2436.26)	0.398
Mg (mg/day)	541.47 (337.24-887.54)	647.83 (421.63-1018.42)	0.011	576.46 (348.58-986.54)	0.073	533.87 (316.35-896.30)	0.539
Fe (mg/day)	34.45 (21.97-50.01)	40.26 (24.63-58.88)	0.007	36.62 (22.54-58.14)	0.028	32.70 (20.00-51.72)	0.331
Zn (mg/day)	15.26 (10.25-22.17)	18.29 (10.93-28.50)	0.004	16.78 (10.95-25.18)	0.022	13.04 (9.45-23.29)	0.133
Se (μg/day)	65.73 (42.20-100.23)	75.31 (48.61-115.36)	0.021	68.94 (45.35-109.81)	0.208	61.61 (34.28-99.68)	0.103
Cu (mg/day)	2.62 (1.82-3.73)	3.00 (1.98-4.45)	0.010	2.85 (1.93-4.17)	0.039	2.28 (1.54-4.12)	0.155
Mn (mg/day)	6.16 (4.12-9.33)	7.25 (4.51-10.58)	0.023	6.64 (4.23-10.50)	0.074	5.99 (3.87-9.59)	0.444
Phytochemicals and other food components [median (IQR)]							
Dietary fiber (g/day)	23.60 (13.21-37.11)	30.03 (15.67-49.58)	0.003	24.85 (13.92-44.28)	0.068	21.45 (12.34-36.92)	0.413
Caffeine (mg/day)	0.00 (0.00-9.40)	0.00 (0.00-19.36)	0.548	0.00 (0.00-10.74)	0.810	0.00 (0.00-6.39)	0.953
Flavones (mg/day)	7.47 (4.47-11.76)	7.89 (4.44-12.14)	0.311	7.09 (4.67-12.13)	0.800	6.87 (4.08-12.45)	0.294
Luteolin (mg/day)	5.92 (3.61-9.69)	6.71 (4.12-9.82)	0.181	5.83 (3.74-9.64)	0.911	5.45 (3.09-9.94)	0.277
Apigenin (mg/day)	8.28 (4.86-13.18)	8.27 (4.97-13.61)	0.478	7.65 (5.14-13.78)	0.602	8.00 (4.32-13.53)	0.348
Flavonols (mg/day)	21.40 (12.96-33.29)	22.45 (14.18-34.70)	0.340	20.63 (13.06-33.06)	0.734	20.08 (11.00-34.01)	0.350
Quercetin (mg/day)	11.80 (7.49-19.30)	14.16 (7.76-21.37)	0.024	12.20 (7.51-20.19)	0.477	11.32 (5.97-18.38)	0.268
Myricetin (mg/day)	45.25 (26.14-69.45)	45.38 (26.00-72.47)	0.678	41.81 (26.49-68.72)	0.411	41.21 (22.82-71.43)	0.401
Kaempferol (mg/day)	4.75 (2.98-7.58)	5.29 (2.91-8.66)	0.227	4.82 (2.83-8.40)	0.900	4.59 (2.50-7.85)	0.355
Anthocyanidins (mg/day)	32.86 (16.82-64.22)	46.51 (22.34-80.04)	0.001	34.72 (16.76-70.99)	0.390	30.16 (16.11-70.78)	0.692
Delphinidin (mg/day)	12.08 (4.56-23.44)	11.56 (3.55-24.49)	0.743	11.31 (5.02-21.88)	0.382	11.70 (3.04-22.91)	0.311
Cyanidin (mg/day)	46.94 (22.12-101.15)	73.35 (30.44-139.23)	0.001	55.19 (22.22-118.63)	0.324	43.27 (19.44-103.76)	0.557
Peonidin (mg/day)	1.15 (0.59-2.32)	1.30 (0.51-2.38)	0.499	1.28 (0.53-2.38)	0.958	1.08 (0.42-2.37)	0.208

Adverse Pregnancy Events	Total (n=1785)	Normal [as control]	Obesity	P value	Overweight	P value	Underweight	P value
Morning sickness (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Severe	79 (4.43%)	54 (4.88%)	5 (3.73%)	>0.05	9 (2.28%)	<0.05	11 (7.33%)	>0.05
Moderate	472 (26.44%)	280 (25.29%)	31 (23.14%)	>0.05	117 (29.7%)	>0.05	44 (29.33%)	>0.05
Mild	1059 (59.33%)	664 (59.98%)	77 (57.46%)	>0.05	231 (58.63%)	>0.05	87 (58.00%)	>0.05
Normal	175 (9.8%)	109 (9.85%)	21 (15.67%)	<0.05	37 (9.39%)	>0.05	8 (5.34%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Gestational diabetes mellitus (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Yes	476 (26.67%)	248 (22.4%)	63 (47.01%)	<0.05	143 (36.29%)	<0.05	22 (14.67%)	<0.05
No	1309 (73.33%)	859 (77.6%)	71 (52.99%)	<0.05	251 (63.71%)	<0.05	128 (85.33%)	<0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Hypertensive disorders of pregnancy (n, %)			☐	☐	☐	☐	☐	☐
Yes	160 (8.96%)	63 (5.69%)	39 (29.1%)	<0.05	55 (13.96%)	<0.05	3 (2.00%)	>0.05
No	1625 (91.04%)	1044 (94.31%)	95 (70.9%)	<0.05	339 (86.04%)	<0.05	147 (98.00%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Thyroid disease (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Yes	302 (16.92%)	192 (17.34%)	25 (18.66%)	>0.05	59 (14.97%)	>0.05	26 (17.33%)	>0.05
No	1483 (83.08%)	915 (82.66%)	109 (81.34%)	>0.05	335 (85.03%)	>0.05	124 (82.67%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Delivery mode (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Cesarean section	784 (43.92%)	452 (40.83%)	82 (61.19%)	<0.05	205 (52.03%)	<0.05	45 (30.00%)	<0.05
Natural vaginal delivery	1001 (56.08%)	655 (59.17%)	52 (38.81%)	<0.05	189 (47.97%)	<0.05	105 (70.00%)	<0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Birth injury (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Yes	687 (38.49%)	455 (41.1%)	39 (29.10%)	<0.05	129 (32.74%)	<0.05	64 (42.67%)	>0.05
No	1098 (61.51%)	652 (58.9%)	95 (70.9%)	<0.05	265 (67.26%)	<0.05	86 (57.33%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Preterm birth (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Yes	95 (5.32%)	44 (3.97%)	13 (9.70%)	<0.05	35 (8.88%)	<0.05	3 (2.00%)	>0.05
No	1690 (94.68%)	1063 (96.03%)	121 (90.30%)	<0.05	359 (91.12%)	<0.05	147 (98.00%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Fetal distress (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Yes	202 (11.32%)	120 (10.84%)	14 (10.45%)	>0.05	52 (13.20%)	>0.05	16 (10.67%)	>0.05
No	1583 (88.68%)	987 (89.16%)	120 (89.55%)	>0.05	342 (86.80%)	>0.05	134 (89.33%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Premature rupture of fetal membranes (n, %)			☐	☐	☐	☐	☐	☐
Yes	402 (22.52%)	248 (22.40%)	29 (21.64%)	>0.05	93 (23.60%)	>0.05	32 (21.33%)	>0.05
No	1383 (77.48%)	859 (77.60%)	105 (78.36%)	>0.05	301 (76.40%)	>0.05	118 (78.67%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Postpartum hemorrhage (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Yes	45 (2.52%)	27 (2.44%)	5 (3.73%)	>0.05	10 (2.54%)	>0.05	3 (2.00%)	>0.05
No	1740 (97.48%)	1080 (97.56%)	129 (96.27%)	>0.05	384 (97.46%)	>0.05	147 (98.00%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Meconium-stained amniotic fluid (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Yes	184 (10.31%)	114 (10.30%)	11 (8.21%)	>0.05	40 (10.15%)	>0.05	19 (12.67%)	>0.05
No	1601 (89.69%)	993 (89.70%)	123 (91.79%)	>0.05	354 (89.85%)	>0.05	131 (87.33%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05
Neonatal birth weight (n, %)	☐	☐	☐	☐	☐	☐	☐	☐
Macrosomia	72 (4.03%)	37 (3.34%)	8 (5.97%)	>0.05	21 (5.33%)	>0.05	6 (4.00%)	>0.05
Low birth weight	69 (3.87%)	37 (3.34%)	8 (5.97%)	>0.05	22 (5.58%)	<0.05	2 (1.33%)	>0.05
Normal birth weight	1644 (92.1%)	1033 (93.32%)	118 (88.06%)	<0.05	351 (89.09%)	<0.05	142 (94.67%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)	>0.05	394 (100%)	>0.05	150 (100%)	>0.05

Data were presented as counts with proportion (%).

Table S5. The proportion of abnormal body weight gain among BMI Groups

Gestational body weight gain	Total	Normal [as control]	Obesity	P value	Overweight	P value	Underweight	P value
Total gain amount (n, %)								
Excessive amount	657 (36.80%)	360 (32.52%)	58 (43.28%)	>0.05	204 (51.78%)	<0.05	35 (23.33%)	>0.05
Inadequate amount	252 (14.12%)	123 (11.11%)	33 (24.63%)	<0.05	66 (16.75%)	<0.05	30 (20.00%)	<0.05
Normal amount	876 (49.08%)	624 (56.37%)	43 (32.09%)	<0.05	124 (31.47%)	<0.05	85 (56.67%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)		394 (100%)		150 (100%)	
Weekly gain rate (n, %)								
Excessive rate	611 (34.23%)	320 (28.91%)	60 (44.77%)	<0.05	201 (51.01%)	<0.05	30 (20.00%)	>0.05
Inadequate rate	282 (15.80%)	145 (13.10%)	33 (24.63%)	<0.05	65 (16.50%)	>0.05	39 (26.00%)	<0.05
Normal rate	892 (49.97%)	642 (57.99%)	41 (30.60%)	<0.05	128 (32.49%)	<0.05	81 (54.00%)	>0.05
total	1785 (100%)	1107 (100%)	134 (100%)		394 (100%)		150 (100%)	

Data were presented as counts with proportion (%). Bonferroni correction was used.

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