

Supplementary Table S3. Basic characteristics of study subjects by quartiles of dietary carotenoids intake from the TMCHC study

(mean or median values; percentages)

	α -carotene				β -carotene				β -cryptoxanthin				Lutein/zeaxanthin			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
N	495	494	494	495	495	494	494	495	495	494	494	495	495	494	494	495
Median intake (mg/d)	0.090	0.190	0.455	1.122	1.523	2.574	3.723	5.879	0.095	0.223	0.373	0.637	1.158	2.077	3.050	4.894
Socioeconomic factors																
Age (y)	28.2	27.9	28.2	28.2	28.0	28.1	28.2	28.2	28.4	28.3	28.0	27.8*	27.8	28.0	28.2	28.5*
Han ethnicity (%)	98.0	98.0	97.0	97.2	98.0	97.0	98.2	97.0	98.2	97.0	96.6	98.4	98.0	97.8	97.2	97.2
Education (≥ 16 y, %)	56.6	55.1	61.7	62.0	56.4	62.3	60.9	55.8	58.2	62.6	58.3	56.5	54.4	64.8	59.3	56.0*
Income (≥ 5000 CNY, %)	60.8	60.9	61.3	60.6	59.8	62.9	62.3	58.6	61.6	63.6	60.1	58.4	60.8	62.1	60.1	60.6
Anthropometry and lifestyle factors																
pre-BMI (kg/m ²)	20.9	20.6	20.6	20.9	20.7	20.5	20.8	20.9	21.0	20.6	20.7	20.7	20.8	20.7	20.4	21.1*
GAE (week)	13.0	12.6	12.6	13.0	13.0	13.0	13.0	12.6	13.0	12.6	12.6	13.0	13.0	13.0	13.0	12.6
FWGR (kg/week)	0.10	0.08	0.07	0.09	0.09	0.08	0.09	0.08	0.09	0.10	0.08	0.07	0.08	0.08	0.09	0.08
SWGR (kg/week)	0.54	0.55	0.50	0.51*	0.54	0.54	0.52	0.51	0.53	0.51	0.54	0.52	0.51	0.54	0.52	0.54
SBP (mmHg)	113.9	113.7	113.4	112.8	113.4	113.5	113.3	113.5	114.6	114.1	112.6	112.5*	113.0	113.3	113.3	114.2
DBP (mmHg)	71.2	70.2	70.2	70.2	70.6	70.6	70.2	70.5	71.3	70.5	70.1	70.1	70.4	70.5	70.3	70.7
Primigravid (%)	53.9	60.1	61.5	57.0	59.4	59.3	55.5	58.4	54.1	60.5	56.3	61.6	61.4	59.1	56.5	55.6

Supplementary Table S3. Continued

	α -carotene				β -carotene				β -cryptoxanthin				Lutein/zeaxanthin			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Primiparity (%)	85.3	84.6	84.8	84.8	87.7	86.2	81.2	84.4*	82.4	86.0	84.4	86.7	89.1	88.1	80.8	81.6*
FHD (%)	7.5	7.3	8.9	11.3	8.1	8.5	6.9	11.5	8.1	8.7	9.5	8.7	7.1	9.1	7.9	10.9
Smoker (%)	13.3	15.2	11.9	11.3	15.8	13.2	11.1	11.7	12.1	12.8	12.1	14.7	17.4	11.5	11.5	11.3*
Alcohol use (%)	10.5	13.0	13.2	13.1	13.3	11.5	11.3	13.5	11.5	12.6	12.1	13.5	13.7	12.6	11.5	11.9
PA (%)	28.9	31.4	33.0	32.3	31.5	31.6	29.6	32.9	32.5	32.2	30.0	30.9	30.9	30.8	31.4	32.5
PSQ (%)	5.9	5.1	5.3	6.3*	6.3	6.1	5.9	4.2	6.9	5.7	4.5	5.5	6.3	5.1	5.1	6.1
Dietary intake†																
Season (Sum+ Aut,%)	58.2	52.4	50.8	46.3*	52.9	54.3	49.0	51.5	55.2	58.1	47.6	46.9*	56.0	52.6	50.2	48.9
GAF (week)	24.4	24.1	23.3	23.2*	24.1	24.0	23.6	23.5	24.1	24.2	23.4	23.2*	24.1	24.1	23.6	23.6
Energy (kcal/d)	2048.4	1985.0	2137.9	2020.1*	2039.8	2042.5	2093.8	1998.3*	2045.8	2086.1	2038.5	1998.3	2022.5	2098.1	2054.2	2014.0*
Total fat (g/d)	76.5	73.7	73.4	72.3*	76.3	74.0	74.8	71.1*	75.5	75.8	74.6	70.1*	74.3	73.8	74.5	73.0
Vitamin C (mg/d)	123.0	187.0	184.7	195.2*	111.1	154.1	184.9	241.0*	116.6	152.9	184.2	229.9*	117.2	159.2	184.1	233.2*
Vitamin E (mg/d)	47.7	48.4	49.3	48.9*	47.5	48.0	49.0	49.3*	48.0	48.5	48.9	48.5	47.2	48.0	49.0	49.9*
Fibre (mg/d)	13.0	15.0	16.1	16.6*	12.8	14.2	15.8	18.2*	13.9	14.6	15.7	16.4*	12.8	14.1	15.8	17.8*
Cholesterol (mg/d)	376.2	375.6	357.6	371.7	365.4	364.0	369.1	385.5	379.9	371.9	373.1	358.0*	357.5	365.6	376.1	385.5*
Retinol (μ g/d)	190.0	194.0	190.4	183.6	189.8	183.2	197.8	189.8	193.7	197.7	192.2	173.0*	182.1	190.2	185.4	200.4*

Supplementary Table S3. Continued

	α -carotene				β -carotene				β -cryptoxanthin				Lutein/zeaxanthin			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Selenium ($\mu\text{g/d}$)	42.7	41.8	42.8	42.4	41.6	42.1	42.7	43.5*	42.2	43.5	42.7	41.4*	41.2	42.4	42.8	43.5*
Zinc (mg/d)	10.1	10.3	10.4	10.5*	9.8	10.1	10.5	11.1*	10.2	10.3	10.5	10.3*	9.7	10.1	10.3	11.2*
Magnesium (mg/d)	302.9	330.8	345.9	351.7*	296.7	318.8	340.7	377.1*	311.7	328.3	338.4	351.9*	296.0	332.5	337.1	376.4*
Iron (mg/d)	17.8	18.9	19.5	19.9*	16.8	18.2	19.7	22.5*	18.2	19.0	19.3	19.5*	16.8	18.1	19.5	22.6*
Copper (mg/d)	2.3	2.5	2.5	2.5*	2.3	2.4	2.5	2.6*	2.3	2.4	2.5	2.5*	2.3	2.4	2.5	2.6*
Supplement use (%)	41.0	40.1	41.1	36.2	40.8	39.5	41.3	36.8	39.2	44.5	35.6	39.0	40.0	40.1	39.9	38.4
OGTT																
GAO (week)	26.1	26.2	26.1	26.3	26.1	26.1	26.2	26.3	26.1	26.1	26.1	26.4	26.2	26.2	26.2	26.2
GDM (%)	8.1	7.5	7.1	8.1	8.9	7.3	6.3	8.3	10.3	6.7	7.7	6.1	8.1	7.1	6.1	9.5
FBG (mmol/L)	4.36	4.40	4.39	4.41	4.39	4.36	4.39	4.42*	4.38	4.38	4.39	4.41	4.37	4.36	4.38	4.45*
1-h PBG (mmol/L)	7.52	7.42	7.39	7.45	7.43	7.37	7.51	7.46	7.54	7.45	7.36	7.42	7.34	7.46	7.42	7.55
2-h PBG (mmol/L)	6.28	6.36	6.31	6.33	6.30	6.29	6.37	6.33	6.40	6.29	6.31	6.27	6.25	6.37	6.26	6.39

Q, quartile; TMCHC: Tongji Maternal and Children Health Cohort; pre-BMI, pre-pregnancy body mass index; GAE, gestational age at enrollment; FWGR, first trimester weight gain rate; SWGR, second trimester weight gain rate; SBP, systolic blood pressure; DBP, diastolic blood pressure; FHD, family history of diabetes; PA, physical exercise; PSQ, poor sleep quality; Sum + Aut, summer and autumn; GAF, gestational age at FFQ survey; OGTT, oral glucose tolerance test; GAO, gestational age at OGTT screening; GDM, gestational diabetes mellitus; FBG, fasting blood glucose; PBG,

postload blood glucose. * $P < 0.05$, ANOVA, chi-square test or the Kruskal - Wallis rank test was used as appropriate. † Values of dietary intake were medians, and were energy-adjusted by residual methods (except for energy).