# SUPPLEMENTAL MATERIAL

**Table S1 Criteria for determining the low-carbohydrate-diet scores.**

| Points | Carbohydrate Intake | Animal-Protein Intake | Animal-Fat Intake | Vegetable-Protein Intake | Vegetable-Fat Intake |
|---|---|---|---|---|---|
| | percentage of energy | | | | |
| 0 | >61.3 | ⩽8.2 | ⩽12.0 | ⩽3.0 | ⩽6.6 |
| 1 | 57.1-61.3 | 8.2-9.7 | 12.0-14.3 | 3.0-3.4 | 6.6-8.3 |
| 2 | 54.0-57.1 | 9.7-10.8 | 14.3-16.0 | 3.4-3.7 | 8.3-9.7 |
| 3 | 51.7-54.0 | 10.8-11.8 | 16.0-17.6 | 3.7-3.9 | 9.7-10.9 |
| 4 | 49.6-51.7 | 11.8-12.7 | 17.6-19.0 | 3.9-4.2 | 10.9-12.0 |
| 5 | 47.6-49.6 | 12.7-13.6 | 19.0-20.3 | 4.2-4.4 | 12.0-13.1 |
| 6 | 45.6-47.6 | 13.6-14.6 | 20.3-21.8 | 4.4-4.7 | 13.1-14.3 |
| 7 | 43.3-45.6 | 14.6-15.7 | 21.8-23.4 | 4.7-5.1 | 14.3-15.6 |
| 8 | 40.6-43.3 | 15.7-17.0 | 23.4-25.3 | 5.1-5.5 | 15.6-17.3 |
| 9 | 36.6-40.6 | 17.0-19.2 | 25.3-28.4 | 5.5-6.1 | 17.3-19.8 |
| 10 | ⩽36.6 | >19.2 | >28.4 | >6.1 | >19.8 |

**Table S2 Time varying sensitivity analysis for risk of incident AF for carbohydrate intake as a percentage of energy, excluding participants with missing dietary data in visit 3.**

| Carbohydrate | Model 1* | | Model 2† | | Model 3‡ | |
|---|---|---|---|---|---|---|
| intake | HR | *P* | HR | *P* | HR | *P* |
| (% of energy) | (95% CI) | | (95% CI) | | (95% CI) | |
| Quartiles | | | | | | |
| Q1 (≤43.90) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (43.90-49.15) | 0.83 (0.73-0.96) | 0.011 | 0.80 (0.69-0.93) | 0.003 | 0.86 (0.74-0.99) | 0.040 |
| Q3 (49.15-54.47) | 0.77 (0.67-0.89) | <0.001 | 0.72 (0.61-0.85) | <0.001 | 0.78 (0.66-0.93) | 0.005 |
| Q4 (≥54.47) | 0.74 (0.64-0.85) | <0.001 | 0.66 (0.53-0.81) | <0.001 | 0.73 (0.60-0.90) | 0.004 |
| Per 1 SD (8.2%) | 0.90 (0.87-0.95) | <0.001 | 0.86 (0.79-0.93) | <0.001 | 0.90 (0.83-0.98) | 0.018 |

*Adjusted for age, sex, race.

†Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

‡Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol,

HDL-c, LDL-c, total triglycerides, creatinine, uric acid, hypertension, stroke, diabetes, coronary artery disease, heart failure.

AF = atrial fibrillation

**Table S3 Time varying sensitivity analysis for risk of incident AF for carbohydrate intake as a percentage of energy, replacing missing dietary information in visit 3 by data from visit 1.**

| Carbohydrate | Model 1* | | Model 2† | | Model 3‡ | |
|---|---|---|---|---|---|---|
| intake | HR | *P* | HR | *P* | HR | *P* |
| (% of energy) | (95% CI) | | (95% CI) | | (95% CI) | |
| Quartiles | | | | | | |
| Q1 (≤43.69) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (43.69-49.03) | 0.85 (0.75-0.97) | 0.014 | 0.81 (0.71-0.93) | 0.003 | 0.88 (0.77-1.01) | 0.070 |
| Q3 (49.03-54.58) | 0.80 (0.71-0.91) | 0.001 | 0.74 (0.63-0.87) | <0.001 | 0.83 (0.71-0.97) | 0.017 |
| Q4 (≥54.58) | 0.76 (0.67-0.87) | <0.001 | 0.67 (0.56-0.82) | <0.001 | 0.75 (0.62-0.92) | 0.006 |
| Per 1 SD (8.6%) | 0.91 (0.87-0.96) | <0.001 | 0.86 (0.79-0.93) | <0.001 | 0.90 (0.83-0.98) | 0.017 |

*Adjusted for age, sex, race.

†Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

‡Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol,

HDL-c, LDL-c, total triglycerides, creatinine, uric acid, hypertension, stroke, diabetes, coronary artery disease, heart failure.

AF = atrial fibrillation

**Table S4 Risk of incident AF for carbohydrate intake as a percentage of energy, stratified by race**

| Carbohydrate intake (% of energy) | Model 1[†] HR (95% CI) | *P* | Model 2[‡] HR (95% CI) | *P* | Model 3[§] HR (95% CI) | *P* |
|---|---|---|---|---|---|---|
| | | | Black | | | |
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.83 (0.61-1.13) | 0.24 | 0.77 (0.53-1.11) | 0.16 | 0.79 (0.55-1.15) | 0.79 |
| Q3 (48.56-54.74) | 0.94 (0.70-1.26) | 0.68 | 0.84 (0.54-1.32) | 0.45 | 0.89 (0.57-1.41) | 0.62 |
| Q4 (≥54.75) | 0.73 (0.54-0.99) | 0.04 | 0.60 (0.32-1.14) | 0.12 | 0.67 (0.34-1.29) | 0.23 |
| | | | While | | | |
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.84 (0.73-0.97) | 0.015 | 0.77 (0.65-0.91) | 0.002 | 0.79 (0.67-0.93) | 0.005 |
| Q3 | 0.82 | 0.007 | 0.71 | 0.001 | 0.74 | 0.005 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (48.56-54.74) | (0.72-0.95) | | | (0.58-0.87) | | | (0.60-0.91) | |
| Q4 (⩾54.75) | 0.81 (0.70-0.94) | | 0.004 | 0.63 (0.47-0.83) | | 0.001 | 0.64 (0.48-0.85) | 0.003 |
| P for interaction | 0.628 | | | 0.643 | | | 0.735 | |

[†]Adjusted for age, sex.

[‡]Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

[§]Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol, HDL-c, LDL-c, triglycerides, creatinine, uric acid, hypertension, stroke, diabetes, coronary artery disease, heart failure.

AF = atrial fibrillation

**Table S5 Risk of incident AF for coronary intake as a percentage of energy, stratified by sex**

| Carbohydrate intake (% of energy) | Model 1[†] HR (95% CI) | *P* | Model 2[‡] HR (95% CI) | *P* | Model 3[§] HR (95% CI) | *P* |
|---|---|---|---|---|---|---|
| | | | female | | | |
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.73 (0.60-0.90) | 0.003 | 0.67 (0.53-0.85) | 0.001 | 0.67 (0.53-0.85) | 0.001 |
| Q3 (48.56-54.74) | 0.87 (0.71-1.05) | 0.137 | 0.74 (0.52-0.97) | 0.030 | 0.76 (0.57-1.00) | 0.050 |
| Q4 (≥54.75) | 0.78 (0.64-0.94) | 0.010 | 0.59 (0.40-0.86) | 0.007 | 0.59 (0.40-0.88) | 0.010 |
| | | | male | | | |
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.92 (0.78-1.09) | 0.335 | 0.86 (0.70-1.04) | 0.116 | 0.88 (0.73-1.08) | 0.223 |
| Q3 | 0.82 | 0.023 | 0.72 | 0.010 | 0.75 | 0.027 |

| | | | | | | |
|---|---|---|---|---|---|---|
| (48.56-54.74) | (0.69-0.97) | | (0.56-0.92) | | (0.58-0.97) | |
| Q4 (⩾54.75) | 0.79 (0.66-0.95) | 0.013 | 0.64 (0.45-0.91) | 0.013 | 0.65 (0.45-0.94) | 0.022 |
| P for interaction | 0.162 | | 0.154 | | 0.075 | |

[†]Adjusted for age, race.

[‡]Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

[§]Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol, HDL-c, LDL-c, triglycerides, creatinine, uric acid, hypertension, stroke, diabetes, coronary artery disease, heart failure.

AF = atrial fibrillation

**Table S6 Risk of incident AF for coronary intake as a percentage of energy, stratified by age**

| Carbohydrate intake (% of energy) | Model 1† HR (95% CI) | *P* | Model 2† HR (95% CI) | *P* | Model 3§ HR (95% CI) | *P* |
|---|---|---|---|---|---|---|
| | | | Age <51 | | | |
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.88 (0.64-1.21) | 0.43 | 0.90 (0.62-1.31) | 0.58 | 0.94 (0.64-1.38) | 0.74 |
| Q3 (48.56-54.74) | 0.96 (0.71-1.31) | 0.80 | 1.04 (0.65-1.65) | 0.88 | 1.09 (0.67-1.77) | 0.73 |
| Q4 (≥54.75) | 0.84 (0.61-1.17) | 0.30 | 1.00 (0.52-1.94) | 1.00 | 0.97 (0.49-1.91) | 0.92 |
| | | | 51 ≤ Age <57 | | | |
| Quartiles | | | | | | |
| Q1 ≤ 42.70 | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 42.71-48.55 | 0.84 (0.66-1.07) | 0.158 | 0.86 (0.65-1.15) | 0.314 | 0.85 (0.64-1.13) | 0.267 |
| Q3 48.56- | 0.97 (0.77- | 0.798 | 1.03 (0.73- | 0.850 | 1.12 (0.79- | 0.522 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 54.74 | | 1.23) | | | 1.46) | | | 1.59) | |
| Q4 (≥ 54.75 | | 0.81 | (0.63-1.03) | 0.087 | 0.86 | (0.53-1.42) | 0.562 | 0.95 | (0.57-1.58) | 0.841 |
| Age ≥ 57 | | | | | | | | | |
| Quartiles | | | | | | | | | |
| Q1 (≤42.70) | | 1.00 (reference) | | - | 1.00 (reference) | | - | 1.00 (reference) | | - |
| Q2 (42.71-48.55) | | 0.84 (0.71-1.00) | | 0.043 | 0.70 (0.58-0.86) | | <0.001 | 0.73 (0.60-0.89) | | 0.002 |
| Q3 (48.56-54.74) | | 0.78 (0.66-0.93) | | 0.005 | 0.58 (0.45-0.73) | | <0.001 | 0.59 (0.46-0.76) | | <0.001 |
| Q4 (≥54.75) | | 0.78 (0.65-0.93) | | 0.005 | 0.47 (0.33-0.66) | | <0.001 | 0.47 (0.33-0.67) | | <0.001 |
| P for interaction | | 0.778 | | | 0.777 | | | 0.578 | | |

[†]Adjusted for gender, race.

[‡]Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

[§]Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol, HDL-c, LDL-c, triglycerides, creatinine, uric acid, hypertension, stroke, diabetes, coronary artery disease, heart failure.

AF = atrial fibrillation

**Table S7 Risk of incident AF for coronary intake as a percentage of energy, stratified by hypertension.**

| Carbohydrate intake (% of energy) | Model 1[†] HR (95% CI) | *P* | Model 2[‡] HR (95% CI) | *P* | Model 3[§] HR (95% CI) | *P* |
|---|---|---|---|---|---|---|
| Hypertension | | | | | | |
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.88 (0.73-1.06) | 0.17 | 0.80 (0.64-0.99) | 0.043 | 0.76 (0.61-0.96) | 0.018 |
| Q3 (48.56-54.74) | 0.77 (0.64-0.94) | 0.009 | 0.66 (0.50-0.87) | 0.003 | 0.64 (0.48-0.85) | 0.002 |
| Q4 (≥54.75) | 0.69 (0.56-0.83) | <0.001 | 0.52 (0.35-0.78) | 0.001 | 0.49 (0.33-0.73) | <0.001 |
| Free from hypertension | | | | | | |
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.82 (0.68-0.97) | 0.022 | 0.77 (0.63-0.94) | 0.012 | 0.79 (0.65-0.97) | 0.026 |
| Q3 | 0.90 | 0.250 | 0.83 | 0.135 | 0.89 | 0.367 |

| | | | | | | |
|---|---|---|---|---|---|---|
| (48.56-54.74) | (0.76-1.07) | | (0.65-1.00) | | (0.69-1.15) | |
| Q4 (⩾54.75) | 0.87 (0.73-1.04) | 0.134 | 0.76 (0.54-1.08) | 0.121 | 0.82 (0.57-1.17) | 0.261 |
| P for interaction | 0.098 | | 0.098 | | 0.094 | |

[†]Adjusted for gender, race, age

[‡]Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

[§]Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol, HDL-c, LDL-c, triglycerides, creatinine, uric acid, stroke, diabetes, coronary artery disease, heart failure.

AF = atrial fibrillation

**Table S8 Risk of incident AF for carbohydrate intake as a percentage of energy, excluded of patients with cardiovascular disease or diabetes.**

| Carbohydrate intake (% of energy) | Model 1[†] HR (95% CI) | *P* | Model 2[‡] HR (95% CI) | *P* | Model 3[§] HR (95% CI) | *P* |
|---|---|---|---|---|---|---|
| Quartiles | | | | | | |
| Q1 (≤42.70) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (42.71-48.55) | 0.84 (0.72-0.97) | 0.021 | 0.77 (0.65-0.92) | 0.003 | 0.79 (0.66-0.94) | 0.009 |
| Q3 (48.56-54.74) | 0.84 (0.72-0.98) | 0.024 | 0.73 (0.59-0.91) | 0.005 | 0.76 (0.61-0.94) | 0.013 |
| Q4 (≥54.75) | 0.78 (0.67-0.91) | 0.002 | 0.61 (0.45-0.83) | 0.002 | 0.64 (0.46-0.87) | 0.005 |
| Per 1 SD (9.3%) | 0.92 (0.87-0.98) | 0.006 | 0.77 (0.66-0.89) | 0.001 | 0.79 (0.68-0.93) | 0.005 |

[†]Adjusted for age, sex, race.

[‡]Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

[§]Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol, HDL-c, LDL-c, triglycerides, creatinine, uric acid, hypertension.

AF = atrial fibrillation

**Table S9 Risk of incident AF for animal-based low-carbohydrate diet scores**

| Low-carbohydrate diet scores | Model 1[†] HR (95% CI) | *P* | Model 2[‡] HR (95% CI) | *P* | Model 3[§] HR (95% CI) | *P* |
|---|---|---|---|---|---|---|
| Quartiles | | | | | | |
| Q1 (≤9) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (10-15) | 1.05 (0.92-1.19) | 0.472 | 1.04 (0.89-1.22) | 0.631 | 1.05 (0.89-1.24) | 0.563 |
| Q3 (16-21) | 0.94 (0.82-1.07) | 0.340 | 0.93 (0.75-1.16) | 0.531 | 0.94 (0.76-1.16) | 0.543 |
| Q4 (22-30) | 1.18 (1.04-1.33) | 0.011 | 1.17 (0.87-1.58) | 0.295 | 1.17 (0.87-1.58) | 0.302 |
| Continuous | 1.01 (1.00-1.01) | 0.051 | 1.01 (0.98-1.04) | 0.984 | 1.01 (0.99-1.04) | 0.442 |

[†]Adjusted for age, sex, race.

[‡]Further adjusted for total energy intake, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

[§]Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol, HDL-c, LDL-c, triglycerides, creatinine, uric acid, hypertension.

AF = atrial fibrillation

**Table S10 Risk of incident AF for plant-based low-carbohydrate diet scores**

| Low-carbohydrate diet scores | Model 1[†] | | Model 2[‡] | | Model 3[§] | |
|---|---|---|---|---|---|---|
| | HR (95% CI) | *P* | HR (95% CI) | *P* | HR (95% CI) | *P* |
| Quartiles | | | | | | |
| Q1 (≤11) | 1.00 (reference) | - | 1.00 (reference) | - | 1.00 (reference) | - |
| Q2 (12-15) | 0.95 (0.83-1.09) | 0.460 | 0.91 (0.77-1.06) | 0.220 | 0.92 (0.79-1.08) | 0.319 |
| Q3 (16-19) | 1.05 (0.93-1.20) | 0.437 | 0.99 (0.82-1.20) | 0.939 | 1.01 (0.83-1.22) | 0.949 |
| Q4 (20-30) | 1.14 (1.00-1.30) | 0.049 | 1.05 (0.81-1.37) | 0.700 | 1.04 (0.80-1.35) | 0.792 |
| Continuous | 1.01 (1.00-1.01) | 0.026 | 1.00 (0.97-1.03) | 0.987 | 1.00 (0.98-1.03) | 0.772 |

[†]Adjusted for age, sex, race.

[‡]Further adjusted for total energy intake, carbohydrate intake as a percentage of energy, total fat intake as a percentage of energy, animal fat intake as a percentage of energy, total protein intake as a percentage of energy, animal protein intake as a percentage of energy, dietary fiber intake, glycemic index, glycemic load.

[§]Further adjusted for BMI, smoking, drinking, education level, sport, physical activity, total cholesterol,

HDL-c, LDL-c, triglycerides, creatinine, uric acid, hypertension.

AF = atrial fibrillation