Supplemental Methods: principal factor analysis

To adjust for other dietary factors as potential confounders of the associations between rice with diabetes and dyslipidemia measures, we generated factor scores using principal factor analysis (PFA, factormat command in Stata) with rotation, using food groups that the participants consumed other than white rice [wheat products as staple food (noodles, wheat buns etc.), low-sugar wheat products (biscuits, bread, dumplings), whole grains (millet, corn), fruits & vegetables, red meat, poultry, milk, soymilk, dried legumes, cakes & pastries, fish & seafood, eggs, and starchy tubers & starch] [50]. Most food groups had a high proportion of non-consumers (interquartile range: 34.7%-81.2%) during the three days. Thus, we categorized consumption of each food group as two-(non-consumers vs. consumers, for food groups with <25% consumers) or three-level variables (non-consumers, consumers >/< median intake for food groups with \geq 25% consumers) [51]. PFA on ordinal variables was then performed with a polychoric correlation matrix. We used a criterion of eigenvalues above 1 to determine the number of factors. Using this criterion, we retained two patterns with the largest eigenvalues in each region. For every individual, we generated two pattern scores (one for each pattern) by standardizing each food group intake to zero mean and unit variance, and then weighting with factor loadings and summing for each pattern.

	North	Central	South
Food groups, % energy			
Wheat products as staple food ^b	-0.51*	-0.72*	-0.43*
Low-sugar wheat products ^c	-0.21*	-0.20*	-0.17*
Whole grains ^d	-0.24*	-0.24*	-0.19*
Cakes & pastries	-0.16*	-0.01	-0.12*
Starchy tubers & starch	0.15*	-0.20*	-0.08*
Fruits & vegetables	0.02	0.12*	-0.04*
Red meat	-0.10*	0.16*	-0.18*
Poultry	0.00	0.10*	-0.03
Fish & seafood	-0.03	0.32*	-0.13*
Dried legumes	-0.04	0.02	-0.09*
Eggs	0.03	-0.14*	-0.14*
Milk	-0.16*	0.02	-0.15*
Soymilk	-0.22*	-0.05*	-0.11*

Supplement Table 1. Pearson's correlation coefficients between consumption (% energy) of white rice and other food groups by geographic region^a

^aGeographic regions: North: Heilongjiang, Liaoning; Central: Shandong, Henan, Jiangsu; South: Hunan, Hubei, Guangxi, Guizhou.. ^bNoodles, wheat buns etc. ^cBiscuits, bread, dumplings. ^dCorn and millet. *p < 0.05.

Supplement Materials

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Supplement Table 2. ORs (95% CIs) of diabetes according to categories of percent energy from white rice and geographic region^a

	Percent energy from white rice, %			P trond ^b
	Tertile 1	Tertile 2	Tertile 3	- P - trend
North (total prevalence: 5.2%)				
Median intake (range), %	16.2 (0-23.9)	30.1 (23.9-36.9)	45.9 (36.9-86.8)	
Participants, n	504	512	513	
No. (%) of cases	25 (5.0)	28 (5.5)	26 (5.1)	
Age and gender adjusted	1.00 (reference)	1.24 (0.70, 2.21)	1.11 (0.64, 1.95)	0.71
Multivariable adjusted without BMI ^c	1.00 (reference)	1.10 (0.61, 1.99)	1.00 (0.53, 1.87)	0.98
Central (total prevalence: 5.7%)				
Median intake (range), %	0.0 (0-3.5)	13.5 (3.6-24.1)	39.9 (24.2-87.5)	
Participants, n	908	899	912	
No. (%) of cases	57 (6.3)	60 (6.7)	38 (4.2)	
Age and gender adjusted	1.00 (reference)	1.06 (0.72, 1.56)	0.62 (0.41, 0.97)	0.02
Multivariable adjusted without BMI°	1.00 (reference)	0.94 (0.63, 1.42)	0.56 (0.34, 0.94)	0.02
South (total prevalence: 3.7%)				
Median intake (range), %	27.7 (0-36.4)	43.0 (36.4-49.8)	57.9 (49.8-86.6)	
Participants, n	1106	1136	1138	
No. (%) of cases	48 (4.3)	42 (3.7)	35 (3.1)	
Age and gender adjusted	1.00 (reference)	0.88 (0.57, 1.37)	0.75 (0.47, 1.18)	0.21
Multivariable adjusted without BMI ^c	1.00 (reference)	0.94 (0.60, 1.46)	0.88 (0.53, 1.45)	0.62

Diabetes was defined as a fasting blood glucose measurement \geq 7.0 mmol/L. ^a Geographic regions: North: Heilongjiang, Liaoning; Central: Shandong, Henan, Jiangsu; South: Hunan, Hubei, Guangxi, Guizhou. ^b Median values were assigned to each category and the variable was modeled as continuous to test linear trend. ^c Additionally adjusted for age (continuous with linear and quadratic terms), gender, education (below high school/high school/above high school), urbanicity (low/medium/high), hypertension diagnosis (yes/no), total physical activity (METs/week, quartiles), total energy intake (kcal/day, quartiles), fiber intake (g/day, quartiles), magnesium intake (mg/day, quartiles), and dietary pattern scores (quartiles).

Supplement Materials

Supplement Table 3. ORs (95% CIs) of dyslipidemia markers according to categories of percent energy from white rice and geographic region^a

$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$		Percent energy from white rice, %			$- P - trend^b$
High tigberides North (osci prevalence: 37.2%) Median intake (range), % 16.2 (0-23.9) 30.1 (23.9-36.9) 45.9 (36.9-86.8) Participants, n 533 532 532 No. (%) of cases 1182 (34.2) 204 (38.4) 208 (30.1) Age and gender adjusted 1.00 (reference) 1.33 (1.02, 1.72) 1.52 (1.15, 2.01) 0.004 Multivariable adjusted without BMI* 1.00 (reference) 1.33 (1.02, 1.72) 1.52 (1.15, 2.01) 0.004 Median intake (range), % 942 941 941 941 No. (%) of cases 273 (2.5.5) 244 (30.2) 271 (2.8.1) Age and gender adjusted 1.00 (reference) 0.96 (0.77, 1.19) 0.85 (0.66, 1.07) 0.16 South (total prevalence: 31.2%) 1.00 (reference) 0.81 (0.68, 0.97) 0.82 (0.66, 1.04) 0.09 Multivariable adjusted without BMI* 1.00 (reference) 0.81 (0.68, 0.97) 0.82 (0.66, 1.04) 0.09 Multivariable adjusted without BMI* 1.00 (reference) 0.81 (0.68, 1.07) 0.82 (0.66, 1.04) 0.09 No. (%) of cases 1.07 (52.8) 150 (28.2)		Tertile 1	Tertile 2	Tertile 3	- r - trend
North (coal prevalence: 37.2%) Hestian intrake (range), % 10.2 (0-23.9) 4.59 (3.6.9, 36.6.8) Participants, n 533 532 532 No, (%) of cases 183 (3.4.2) 204 (3.8.4) 208 (30.1) Age and gender adjusted 1.00 (reference) 1.23 (1.02, 1.62) 1.52 (1.15, 2.01) 0.004 Median inside (range), % 0.0 (0-3.5) 13.5 (3.6-24.1) 39.9 (24.2-87.5) Participants, n 942 941 941 No, (%) of cases 278 (25.5) 284 (30.2) 271 (28.8) 66.2 Multivirainble adjusted vitimot BMT 1.00 (reference) 0.90 (0.77, 1.19) 0.85 (0.68, 1.07) 0.16 South (total prevalence: 3.2.8) T T 1.03 (reference) 0.81 (0.68, 409, 57, 0.83) -0.001 Median inske (range), % 27.7 (0-36.4) 43.0 (64.49.8) 57.9 (49.8.86.6) 1.00 (reference) 0.81 (0.68, 70, 70.3) 0.82 (0.66, 1.04) 0.091 Median inske (range), % 27.7 (0-36.4) 43.0 (64.49.8) 57.9 (49.8.86.6) 1.00 (reference) 0.81 (0.68, 70, 70.3) 0.82 (0.66, 1.04) 0.091 Median inske (range), % <td>High triglycerides</td> <td></td> <td></td> <td></td> <td></td>	High triglycerides				
	North (total prevalence: 37.2%)				
Participants,n 533 532 532 No. (%) of cases 182 (34.2) 204 (38.4) 208 (39.1) Age and gender adjusted 1.00 (reference) 1.28 (1.0.0, 1.65) 1.31 (1.0.2, 1.69) 0.04 Multivariable adjusted without BMT 1.00 (reference) 1.33 (1.0.2, 1.72) 1.52 (1.5, 2.01) 0.004 Central (otal prevalence: 29.5%) 942 941 941 941 No. (%) of cases 278 (29.5) 2.84 (30.2) 271 (28.8) 0.62 Multivariable adjusted without BMT 100 (reference) 0.40 (0.77, 1.19) 0.85 (0.08, 1.07) 0.16 South (total prevalence: 31.27e) TS2 1152 1152 1152 1152 Median intake (range), % 2.77 (0.36.4) 43.0 (36.4.49.8) 0.87 (0.68, 0.76, 0.3) <0.001	Median intake (range), %	16.2 (0-23.9)	30.1 (23.9-36.9)	45.9 (36.9-86.8)	
	Participants, n	533	532	532	
$\begin{tabular}{l l l l l l l l l l l l l l l l l l l $	No. (%) of cases	182 (34.2)	204 (38.4)	208 (39.1)	
	Age and gender adjusted	1.00 (reference)	1.28 (1.00, 1.65)	1.31 (1.02, 1.69)	0.04
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Multivariable adjusted without BMI ^c	1.00 (reference)	1.33 (1.02, 1.72)	1.52 (1.15, 2.01)	0.004
	Central (total prevalence: 29.5%)				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Median intake (range), %	0.0 (0-3.5)	13.5 (3.6-24.1)	39.9 (24.2-87.5)	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Participants, n	942	941	941	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	No. (%) of cases	278 (29.5)	284 (30.2)	271 (28.8)	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Age and gender adjusted	1.00 (reference)	1.04 (0.84, 1.28)	0.96 (0.78, 1.18)	0.62
	Multivariable adjusted without BMI ^c	1.00 (reference)	0.96 (0.77, 1.19)	0.85 (0.68, 1.07)	0.16
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	South (total prevalence: 31.2%)				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Median intake (range), %	27.7 (0-36.4)	43.0 (36.4-49.8)	57.9 (49.8-86.6)	
No. (%) of cases 407 (35.3) 357 (30.7) 318 (27.6) Age and gender adjusted 1.00 (reference) 0.81 (0.68, 0.97) 0.69 (0.57, 0.83) <0.001	Participants, n	1153	1152	1152	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	No. (%) of cases	407 (35.3)	357 (30.7)	318 (27.6)	
	Age and gender adjusted	1.00 (reference)	0.81 (0.68, 0.97)	0.69 (0.57, 0.83)	< 0.001
$ \begin{array}{l c c c c c c c c c c c c c c c c c c c$	Multivariable adjusted without BMI ^c	1.00 (reference)	0.85 (0.70, 1.03)	0.82 (0.66, 1.04)	0.09
North (total prevalence: 30.8%) No. (%) of cases 175 (32.8) 150 (28.2) 166 (31.2) Age and gender adjusted 1.00 (reference) 0.98 (0.65, 1.13) 0.99 (0.76, 1.30) 0.99 Multivariable adjusted without BMI [¢] 1.00 (reference) 0.91 (0.68, 1.21) 1.20 (0.89, 1.63) 0.23 Central (total prevalence: 32.7%)	High LDL		,	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
No. (%) of cases 175 (32.8) 150 (28.2) 166 (31.2) Age and gender adjusted 1.00 (reference) 0.89 (0.65, 1.13) 0.99 (0.76, 1.30) 0.99 Multivariable adjusted without BMI ^c 1.00 (reference) 0.91 (0.68, 1.21) 1.20 (0.89, 1.63) 0.23 Central (total prevalence: 32.7%)	North (total prevalence: 30.8%)				
Age and gender adjusted 1.00 (reference) 0.86 (0.65, 1.13) 0.99 (0.76, 1.30) 0.99 Multivariable adjusted without BMI ^c 1.00 (reference) 0.91 (0.68, 1.21) 1.20 (0.89, 1.63) 0.23 Central (total prevalence: 32.7%) 348 (36.9) 325 (34.5) 251 (26.7) 0.23 Age and gender adjusted without BMI ^c 1.00 (reference) 0.89 (0.72, 1.09) 0.59 (0.47, 0.73) <0.001	No. (%) of cases	175 (32.8)	150 (28.2)	166 (31.2)	
Multivariable adjusted without BMI ^c 1.00 (reference) 0.91 (0.68, 1.21) 1.20 (0.89, 1.63) 0.23 Central (total prevalence: 32.7%) 348 (36.9) 325 (34.5) 251 (26.7) Age and gender adjusted 1.00 (reference) 0.89 (0.72, 1.09) 0.59 (0.47, 0.73) <0.001	Age and gender adjusted	1.00 (reference)	0.86 (0.65, 1.13)	0.99 (0.76, 1.30)	0.99
$ \begin{array}{c} Central (total prevalence: 32.7%) & Mathematical (total prevalence: 30.4%) & Mathematical (total prevalence: 31.3%) & Mathematical (total prevalence: 26.3%) & Mathematical (total prevalence: 26.3%) & Mathematical (total prevalence: 26.3%) & Mathematical (total prevalence: 23.1%) & Mathematical (total prevalence: 23.5%) & Mathematical (total prevalen$	Multivariable adjusted without BMI ^c	1.00 (reference)	0.91 (0.68, 1.21)	1.20 (0.89, 1.63)	0.23
No. (%) of cases $348 (36.9)$ $325 (34.5)$ $251 (26.7)$ Age and gender adjusted 1.00 (reference) $0.89 (0.72, 1.09)$ $0.59 (0.47, 0.73)$ <0.001 Multivariable adjusted without BMI* 1.00 (reference) $0.76 (0.61, 0.94)$ $0.51 (0.40, 0.65)$ <0.001 South (total prevalence: 30.4%) $No. (\%)$ of cases $352 (30.5)$ $367 (31.9)$ $331 (28.7)$ Age and gender adjusted 1.00 (reference) $1.12 (0.94, 1.34)$ $0.99 (0.82, 1.20)$ 0.92 Multivariable adjusted without BMI* 1.00 (reference) $1.18 (0.97, 1.43)$ $1.17 (0.91, 1.51)$ 0.19 Low HDL North (total prevalence: 31.3%) No. (%) of cases $147 (27.6)$ $176 (33.1)$ $176 (33.1)$ Age and gender adjusted 1.00 (reference) $1.27 (0.98, 1.66)$ $1.31 (1.00, 1.71)$ 0.05 Multivariable adjusted without BMI* 1.00 (reference) $0.96 (0.76, 1.21)$ $1.08 (0.86, 1.35)$ 0.44 Multivariable adjusted without BMI* 1.00 (reference) $0.96 (0.76, 1.21)$ $1.08 (0.86, 1.35)$ 0.44 Multivariable adjusted without BMI* 1.00 (reference) $0.99 (0.70, 1.15)$ $0.96 (0.74, 1.23)$ 0.86 </td <td>Central (total prevalence: 32.7%)</td> <td></td> <td></td> <td></td> <td></td>	Central (total prevalence: 32.7%)				
Age and gender adjusted 1.00 (reference) 0.89 (0.72, 1.09) 0.59 (0.47, 0.73) <0.001	No. (%) of cases	348 (36.9)	325 (34.5)	251 (26.7)	
	Age and gender adjusted	1.00 (reference)	0.89(0.72, 1.09)	0.59(0.47, 0.73)	< 0.001
South (total prevalence: 30.4%)Into (creference) 0.90 (0.01, 0.57) 0.02 (0.01, 0.02)No. (%) of cases 352 (30.5) 367 (31.9) 331 (28.7)Age and gender adjusted 1.00 (reference) 1.12 (0.94, 1.34) 0.99 (0.82, 1.20) 0.92 Multivariable adjusted without BMI° 1.00 (reference) 1.18 (0.97, 1.43) 1.17 (0.91, 1.51) 0.19 Low HDLNorth (total prevalence: 31.3%)No. (%) of cases 147 (27.6) 176 (33.1) 176 (33.1) 0.05 Age and gender adjusted 1.00 (reference) 1.27 (0.98, 1.66) 1.31 (1.00, 1.71) 0.05 Multivariable adjusted without BMI° 1.00 (reference) 1.22 (0.98, 1.66) 1.31 (1.00, 1.71) 0.05 Multivariable adjusted without BMI° 1.00 (reference) 0.96 (0.76, 1.21) 1.08 (0.86, 1.35) 0.44 Multivariable adjusted without BMI° 1.00 (reference) 0.96 (0.76, 1.21) 1.08 (0.86, 1.35) 0.44 Multivariable adjusted without BMI° 1.00 (reference) 0.90 (0.70, 1.15) 0.96 (0.74, 1.23) 0.86 South (total prevalence: 23.1%)No. (%) of cases 282 (24.5) 254 (22.1) 264 (22.9)Age and gender adjusted 1.00 (reference) 0.91 (0.74, 1.11) 0.99 (0.81, 1.22) 0.94 Multivariable adjusted without BMI° 1.00 (reference) 0.91 (0.74, 1.11) 0.99 (0.88, 1.51) 0.32 Atherogenic dyslipidemia 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 10.9	Multivariable adjusted without BMI ^c	1.00 (reference)	0.76(0.61, 0.94)	0.51 (0.40, 0.65)	< 0.001
No. (%) of cases 352 (30.5) 367 (31.9) 331 (28.7) Age and gender adjusted 1.00 (reference) 1.12 (0.94, 1.34) 0.99 (0.82, 1.20) 0.92 Multivariable adjusted without BMI ^c 1.00 (reference) 1.18 (0.97, 1.43) 1.17 (0.91, 1.51) 0.19 Low HDL North (total prevalence: 31.3%) 1.17 (0.91, 1.51) 0.19 North (total prevalence: 31.3%) 1.47 (27.6) 176 (33.1) 176 (33.1) Age and gender adjusted 1.00 (reference) 1.27 (0.98, 1.66) 1.31 (1.00, 1.71) 0.05 Multivariable adjusted without BMI ^c 1.00 (reference) 1.32 (1.01, 1.73) 1.44 (1.08, 1.91) 0.01 Central (total prevalence: 26.3%) No. (%) of cases 244 (25.9) 240 (25.5) 258 (27.4) Age and gender adjusted 1.00 (reference) 0.96 (0.76, 1.21) 1.08 (0.86, 1.35) 0.44 Multivariable adjusted without BMI ^c 1.00 (reference) 0.90 (0.70, 1.15) 0.96 (0.74, 1.23) 0.86 South (total prevalence: 23.1%) No. (%) of cases 282 (24.5) 254 (22.1) 264 (22.9) 44 Multivariable adjusted without BMI ^c 1.00 (reference) 0.91 (0.74, 1.11) 0.99 (0.81,	South (total prevalence: 30.4%)		01/0 (0101, 01) 1)	0.01 (0110, 0100)	(01001
Age and gender adjusted1.00 (reference)1.12 (0.94, 1.34)0.99 (0.82, 1.20)0.92Multivariable adjusted without BMI c 1.00 (reference)1.18 (0.97, 1.43)1.17 (0.91, 1.51)0.19Low HDL </td <td>No. (%) of cases</td> <td>352 (30.5)</td> <td>367 (31.9)</td> <td>331 (28.7)</td> <td></td>	No. (%) of cases	352 (30.5)	367 (31.9)	331 (28.7)	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Age and gender adjusted	1.00 (reference)	1.12 (0.94, 1.34)	0.99(0.82, 1.20)	0.92
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Multivariable adjusted without BMI ^c	1.00 (reference)	1.12(0.97, 1.63) 1.18(0.97, 1.43)	1 17 (0.91, 1.51)	0.19
North (total prevalence: 31.3%) Nort (with (total prevalence: 31.3%) Age and gender adjusted 1.00 (reference) 1.27 (0.98 , 1.66) 1.31 (1.00 , 1.71) 0.05 Multivariable adjusted without BMI ^c 1.00 (reference) 1.32 (1.01 , 1.73) 1.44 (1.08 , 1.91) 0.01 Central (total prevalence: 26.3%) $No. (\%)$ of cases 244 (25.9) 240 (25.5) 258 (27.4) Age and gender adjusted 1.00 (reference) 0.96 (0.76 , 1.21) 1.08 (0.86 , 1.35) 0.44 Multivariable adjusted without BMI ^c 1.00 (reference) 0.90 (0.70 , 1.15) 0.96 (0.74 , 1.23) 0.86 South (total prevalence: 23.1%) No. (%) of cases 282 (24.5) 254 (22.1) 264 (22.9) Age and gender adjusted 1.00 (reference) 0.91 (0.74 , 1.11) 0.99 (0.81 , 1.22) 0.94 Multivariable adjusted without BMI ^c 1.00 (reference) 0.91 (0.74 , 1.11) 0.99 (0.81 , 1.22) 0.94 Multivariable adjusted 1.00 (reference) 0.91 (0.74 , 1.11) 0.99 (0.81 , 1.22) 0.94 Multivariable adjusted without BMI ^c 1.00 (reference) 1.43 (1.05 ,	Low HDL	1100 (101010100)	1110 (01) (1, 1110)	(0), 101)	0.17
No. (%) of cases147 (27.6)176 (33.1)176 (33.1)Age and gender adjusted1.00 (reference)1.27 (0.98, 1.66)1.31 (1.00, 1.71)0.05Multivariable adjusted without BMI °1.00 (reference)1.32 (1.01, 1.73)1.44 (1.08, 1.91)0.01Central (total prevalence: 26.3%) $No. (%)$ of cases244 (25.9)240 (25.5)258 (27.4)Age and gender adjusted1.00 (reference)0.96 (0.76, 1.21)1.08 (0.86, 1.35)0.44Multivariable adjusted without BMI °1.00 (reference)0.90 (0.70, 1.15)0.96 (0.74, 1.23)0.86South (total prevalence: 23.1%) $No. (%)$ of cases282 (24.5)254 (22.1)264 (22.9)Age and gender adjusted1.00 (reference)0.91 (0.74, 1.11)0.99 (0.81, 1.22)0.94Multivariable adjusted without BMI °1.00 (reference)0.98 (0.79, 1.22)1.16 (0.88, 1.51)0.32Atherogenic dyslipidemiaNorth (total prevalence: 19.5%) $No. (%)$ of cases86 (16.1)111 (20.9)114 (21.4)Age and gender adjusted1.00 (reference)1.43 (1.05, 1.95)1.49 (1.10, 2.02)0.01Multivariable adjusted without BMI °1.00 (reference)1.46 (1.06, 2.00)1.69 (1.21, 2.36)0.002Central (total prevalence: 14.0%) $Nc. (%)$ of cases1.33 (14.1)128 (13.6)133 (14.1)Age and gender adjusted1.00 (reference)0.95 (0.72, 1.26)0.99 (0.75, 1.31)0.98Multivariable adjusted without BMI °1.00 (reference)0.95 (0.72, 1.26)0.99 (0.75, 1.31)0.98<	North (total prevalence: 31.3%)				
Age and gender adjusted1.00 (reference)1.27 (0.98, 1.66)1.31 (1.00, 1.71)0.05Multivariable adjusted without BMI °1.00 (reference)1.32 (1.01, 1.73)1.44 (1.08, 1.91)0.01Central (total prevalence: 26.3%)0.01 (reference)0.96 (0.76, 1.21)0.08 (0.86, 1.35)0.44Multivariable adjusted without BMI °1.00 (reference)0.96 (0.76, 1.21)1.08 (0.86, 1.35)0.44Multivariable adjusted without BMI °1.00 (reference)0.90 (0.70, 1.15)0.96 (0.74, 1.23)0.86South (total prevalence: 23.1%)244 (25.9)254 (22.1)264 (22.9)Age and gender adjusted1.00 (reference)0.91 (0.74, 1.11)0.99 (0.81, 1.22)0.94Multivariable adjusted without BMI °1.00 (reference)0.98 (0.79, 1.22)1.16 (0.88, 1.51)0.32Atherogenic dyslipidemia </td <td>No. (%) of cases</td> <td>147 (27.6)</td> <td>176 (33.1)</td> <td>176 (33.1)</td> <td></td>	No. (%) of cases	147 (27.6)	176 (33.1)	176 (33.1)	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Age and gender adjusted	1.00 (reference)	1.27 (0.98, 1.66)	1.31 (1.00, 1.71)	0.05
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Multivariable adjusted without BMI c1.00 (reference)0.90 (0.70, 1.15)0.96 (0.74, 1.23)0.86South (total prevalence: 23.1%)No. (%) of cases282 (24.5)254 (22.1)264 (22.9)Age and gender adjusted1.00 (reference)0.91 (0.74, 1.11)0.99 (0.81, 1.22)0.94Multivariable adjusted without BMI c1.00 (reference)0.98 (0.79, 1.22)1.16 (0.88, 1.51)0.32Atherogenic dyslipidemiaNorth (total prevalence: 19.5%)1.00 (reference)1.43 (1.05, 1.95)1.49 (1.10, 2.02)0.01No. (%) of cases86 (16.1)111 (20.9)114 (21.4)0.0020.01Age and gender adjusted1.00 (reference)1.43 (1.05, 1.95)1.49 (1.10, 2.02)0.01Multivariable adjusted without BMI c1.00 (reference)1.46 (1.06, 2.00)1.69 (1.21, 2.36)0.002Central (total prevalence: 14.0%)No. (%) of cases133 (14.1)128 (13.6)133 (14.1)Age and gender adjusted1.00 (reference)0.95 (0.72, 1.26)0.99 (0.75, 1.31)0.98Multivariable adjusted without BMI c1.00 (reference)0.86 (0.64, 1.15)0.87 (0.64, 1.19)0.49South (total prevalence: 12.8%)No. (%) of cases173 (15.0)137 (11.9)133 (11.6)Age and gender adjusted1.00 (reference)0.79 (0.61, 1.00)0.76 (0.61, 0.99)0.04	Age and gender adjusted	1.00 (reference)	0.96 (0.76, 1.21)	1.08 (0.86, 1.35)	0.44
South (total prevalence: 23.1%)No. (%) of cases282 (24.5)254 (22.1)264 (22.9)Age and gender adjusted1.00 (reference)0.91 (0.74, 1.11)0.99 (0.81, 1.22)0.94Multivariable adjusted without BMI °1.00 (reference)0.98 (0.79, 1.22)1.16 (0.88, 1.51)0.32Atherogenic dyslipidemiaNorth (total prevalence: 19.5%)No. (%) of cases86 (16.1)111 (20.9)114 (21.4)Age and gender adjusted1.00 (reference)1.43 (1.05, 1.95)1.49 (1.10, 2.02)0.01Multivariable adjusted without BMI °1.00 (reference)1.46 (1.06, 2.00)1.69 (1.21, 2.36)0.002Central (total prevalence: 14.0%)No. (%) of cases133 (14.1)128 (13.6)133 (14.1)Age and gender adjusted1.00 (reference)0.95 (0.72, 1.26)0.99 (0.75, 1.31)0.98No. (%) of cases133 (14.1)128 (13.6)133 (14.1)0.49South (total prevalence: 12.8%)No. (%) of cases173 (15.0)137 (11.9)133 (11.6)Age and gender adjusted1.00 (reference)0.79 (0.61, 1.00)0.76 (0.61, 0.99)0.04	Multivariable adjusted without BMI ^c	1.00 (reference)	0.90 (0.70, 1.15)	0.96 (0.74, 1.23)	0.86
No. (%) of cases $282 (24.5)$ $254 (22.1)$ $264 (22.9)$ Age and gender adjusted1.00 (reference) $0.91 (0.74, 1.11)$ $0.99 (0.81, 1.22)$ 0.94 Multivariable adjusted without BMI c1.00 (reference) $0.98 (0.79, 1.22)$ $1.16 (0.88, 1.51)$ 0.32 Atherogenic dyslipidemia1.00 (reference) $0.98 (0.79, 1.22)$ $1.16 (0.88, 1.51)$ 0.32 North (total prevalence: 19.5%)No. (%) of cases $86 (16.1)$ $111 (20.9)$ $114 (21.4)$ Age and gender adjusted 1.00 (reference) $1.43 (1.05, 1.95)$ $1.49 (1.10, 2.02)$ 0.01 Multivariable adjusted without BMI c 1.00 (reference) $1.46 (1.06, 2.00)$ $1.69 (1.21, 2.36)$ 0.002 Central (total prevalence: 14.0%)No. (%) of cases $133 (14.1)$ $128 (13.6)$ $133 (14.1)$ Age and gender adjusted 1.00 (reference) $0.95 (0.72, 1.26)$ $0.99 (0.75, 1.31)$ 0.98 Multivariable adjusted without BMI c 1.00 (reference) $0.86 (0.64, 1.15)$ $0.87 (0.64, 1.19)$ 0.49 South (total prevalence: 12.8%)No. (%) of cases $173 (15.0)$ $137 (11.9)$ $133 (11.6)$ Age and gender adjusted 1.00 (reference) $0.79 (0.61, 1.00)$ $0.76 (0.61, 0.99)$ 0.04	South (total prevalence: 23.1%)				
Age and gender adjusted 1.00 (reference) 0.91 (0.74, 1.11) 0.99 (0.81, 1.22) 0.94 Multivariable adjusted without BMI ° 1.00 (reference) 0.98 (0.79, 1.22) 1.16 (0.88, 1.51) 0.32 Atherogenic dyslipidemia 1.00 (reference) 0.98 (0.79, 1.22) 1.16 (0.88, 1.51) 0.32 North (total prevalence: 19.5%) No. (%) of cases 86 (16.1) 111 (20.9) 114 (21.4) Age and gender adjusted 1.00 (reference) 1.43 (1.05, 1.95) 1.49 (1.10, 2.02) 0.01 Multivariable adjusted without BMI ° 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 14.0%) No. (%) of cases 133 (14.1) 128 (13.6) 133 (14.1) 0.98 Age and gender adjusted 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ° 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) No. (%) of cases 173 (15.0) 137 (11.9) 133 (11.6) 0.49 No. (%) of cases 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	No. (%) of cases	282 (24.5)	254 (22.1)	264 (22.9)	
Multivariable adjusted without BMI c 1.00 (reference) 0.98 (0.79, 1.22) 1.16 (0.88, 1.51) 0.32 Atherogenic dyslipidemia North (total prevalence: 19.5%) 0.00 (reference) 1.43 (1.05, 1.95) 1.49 (1.10, 2.02) 0.01 Multivariable adjusted 1.00 (reference) 1.43 (1.05, 1.95) 1.49 (1.10, 2.02) 0.01 Multivariable adjusted without BMI c 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 14.0%) 133 (14.1) 128 (13.6) 133 (14.1) 0.98 Age and gender adjusted 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	Age and gender adjusted	1.00 (reference)	0.91 (0.74, 1.11)	0.99(0.81, 1.22)	0.94
Atherogenic dyslipidemia North (total prevalence: 19.5%) No. (%) of cases 86 (16.1) 111 (20.9) 114 (21.4) Age and gender adjusted 1.00 (reference) 1.43 (1.05, 1.95) 1.49 (1.10, 2.02) 0.01 Multivariable adjusted without BMI ^c 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 14.0%) 133 (14.1) 128 (13.6) 133 (14.1) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) 0.04	Multivariable adjusted without BMI [°]	1.00 (reference)	0.98 (0.79, 1.22)	1.16(0.88, 1.51)	0.32
North (total prevalence: 19.5%) No. (%) of cases 86 (16.1) 111 (20.9) 114 (21.4) Age and gender adjusted 1.00 (reference) 1.43 (1.05, 1.95) 1.49 (1.10, 2.02) 0.01 Multivariable adjusted without BMI ^c 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 14.0%) 133 (14.1) 128 (13.6) 133 (14.1) Age and gender adjusted 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) 0.04	Atherogenic dyslipidemia		••••• (•••••, ••==)		
No. (%) of cases 86 (16.1) 111 (20.9) 114 (21.4) Age and gender adjusted 1.00 (reference) 1.43 (1.05, 1.95) 1.49 (1.10, 2.02) 0.01 Multivariable adjusted without BMI ^c 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 14.0%) 133 (14.1) 128 (13.6) 133 (14.1) 0.98 No. (%) of cases 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) 0.04	North (total prevalence: 19.5%)				
Age and gender adjusted 1.00 (reference) 1.43 (1.05, 1.95) 1.49 (1.10, 2.02) 0.01 Multivariable adjusted without BMI ^c 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 14.0%) 133 (14.1) 128 (13.6) 133 (14.1) 0.98 No. (%) of cases 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) 0.04	No. (%) of cases	86 (16.1)	111 (20.9)	114 (21.4)	
Multivariable adjusted without BMI ^c 1.00 (reference) 1.46 (1.06, 2.00) 1.69 (1.21, 2.36) 0.002 Central (total prevalence: 14.0%) 133 (14.1) 128 (13.6) 133 (14.1) 0.98 No. (%) of cases 133 (14.1) 128 (13.6) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) No. (%) of cases 173 (15.0) 137 (11.9) 133 (11.6) Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	Age and gender adjusted	1.00 (reference)	1.43 (1.05, 1.95)	1.49 (1.10, 2.02)	0.01
Central (total prevalence: 14.0%) 133 (14.1) 128 (13.6) 133 (14.1) Age and gender adjusted 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	Multivariable adjusted without BMI ^c	1.00 (reference)	1.46 (1.06, 2.00)	1.69 (1.21, 2.36)	0.002
No. (%) of cases 133 (14.1) 128 (13.6) 133 (14.1) Age and gender adjusted 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	Central (total prevalence: 14.0%)				
Age and gender adjusted 1.00 (reference) 0.95 (0.72, 1.26) 0.99 (0.75, 1.31) 0.98 Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	No. (%) of cases	133 (14.1)	128 (13.6)	133 (14.1)	
Multivariable adjusted without BMI ^c 1.00 (reference) 0.86 (0.64, 1.15) 0.87 (0.64, 1.19) 0.49 South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	Age and gender adjusted	1.00 (reference)	0.95 (0.72, 1.26)	0.99(0.75, 1.31)	0.98
South (total prevalence: 12.8%) 173 (15.0) 137 (11.9) 133 (11.6) Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	Multivariable adjusted without BMI ^c	1.00 (reference)	0.86 (0.64, 1.15)	0.87 (0.64, 1.19)	0.49
No. (%) of cases 173 (15.0) 137 (11.9) 133 (11.6) Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	South (total prevalence: 12.8%)	1.00 (101010100)	0.00 (0.0 1, 1.10)	0.07 (0.01, 1.17)	5.17
Age and gender adjusted 1.00 (reference) 0.79 (0.61, 1.00) 0.76 (0.61, 0.99) 0.04	No. (%) of cases	173 (15 0)	137 (11.9)	133 (11.6)	
	Age and gender adjusted	1.00 (reference)	0.79 (0.61, 1.00)	0.76 (0.61 0.99)	0.04
Multivariable adjusted without BMI ^c 1.00 (reference) 0.88 (0.67, 1.14) 1.00 (0.73, 1.37) 0.89	Multivariable adjusted without BMI ^c	1.00 (reference)	0.88 (0.67. 1.14)	1.00 (0.73, 1.37)	0.89

High triglycerides: ≥150 mg/dL or taking lipid lowering medication; high LDL: >130 mg/dL or taking lipid lowering medication; low HDL: Men: <40 mg/dL, women <50 mg/dL; atherogenic dyslipidemia: high total triglycerides *and* low HDL. ^a Geographic regions: North: Heilongjiang, Liaoning; Central: Shandong, Henan, Jiangsu; South: Hunan, Hubei, Guangxi, Guizhou. ^b Median values were assigned to each category and the variable was modeled as continuous to test linear trend. ^c Additionally adjusted for age (continuous with linear and quadratic terms), gender, education (below high school/high school/above high school), urbanicity (low/medium/high), hypertension diagnosis (yes/no), total physical activity (METs/week, quartiles), total energy intake (kcal/day, quartiles), fat intake (% of total energy,

	Percent energy from white rice, %			D turn 1 ^b
	Tertile 1	Tertile 2	Tertile 3	- $P-$ trend ^o
North (total prevalence: 5.2%)				
Median intake (range), %	16.2 (0-23.9)	30.1 (23.9-36.9)	45.9 (36.9-86.8)	
Participants, n	504	512	513	
No. (%) of cases	23 (4.6)	30 (5.9)	27 (5.3)	
Fully adjusted multivariable model ^c	1.00 (reference)	1.16 (0.64, 2.10)	1.07 (0.58, 1.98)	0.94
Central (total prevalence: 5.7%)				
Median intake (range), %	0.0 (0-3.5)	13.5 (3.6-24.1)	39.9 (24.2-87.5)	
Participants, n	908	899	912	
No. (%) of cases	87 (9.7)	90 (10.0)	70 (7.7)	
Fully adjusted multivariable model ^c	1.00 (reference)	0.95 (0.70, 1.29)	0.66 (0.44, 0.99)	0.04
South (total prevalence: 3.7%)				
Median intake (range), %	27.7 (0-36.4)	43.0 (36.4-49.8)	57.9 (49.8-86.6)	
Participants, n	1106	1136	1138	
No. (%) of cases	61 (5.5)	32 (2.8)	27 (2.4)	
Fully adjusted multivariable model ^c	1.00 (reference)	0.60 (0.38, 0.97)	0.80 (0.45, 1.42)	0.27

Supplement Table 4. ORs (95% CIs) of diabetes according to categories of percent energy from white rice and geographic region^a

Diabetes was defined as hemoglobin A1c (HbA1c) measurement $\geq 6.5\%$. ^a Geographic regions: North: Heilongjiang, Liaoning; Central: Shandong, Henan, Jiangsu; South: Hunan, Hubei, Guangxi, Guizhou. ^b Median values were assigned to each category and the variable was modeled as continuous to test linear trend. ^c Adjusted for age (continuous with linear and quadratic terms), gender, education (below high school/high school/above high school), urbanicity (low/medium/high), hypertension diagnosis (yes/no), total physical activity (METs/week, quartiles), total energy intake (kcal/day, quartiles), fiber intake (g/day, quartiles), magnesium intake (mg/day, quartiles), dietary pattern scores (quartiles), and BMI (kg/m², quartiles).

Supplement Materials



Supplement Figure 1. ORs and 95% CIs of diabetes and dyslipidemia markers associated with replacement of 10% energy from wheat products as staple food with 10% energy from white rice in each geographic region^a

Diabetes was defined as a fasting blood glucose measurement \geq 7.0 mmol/L. High triglycerides: \geq 150 mg/dL or taking lipid lowering medication; high LDL: >130 mg/dL or taking lipid lowering medication; low HDL: Men: <40 mg/dL, women <50 mg/dL; atherogenic dyslipidemia: high total triglycerides *and* low HDL. ^a Geographic regions: North: Heilongjiang, Liaoning; Central: Shandong, Henan, Jiangsu; South: Hunan, Hubei, Guangxi, Guizhou. *p<0.05