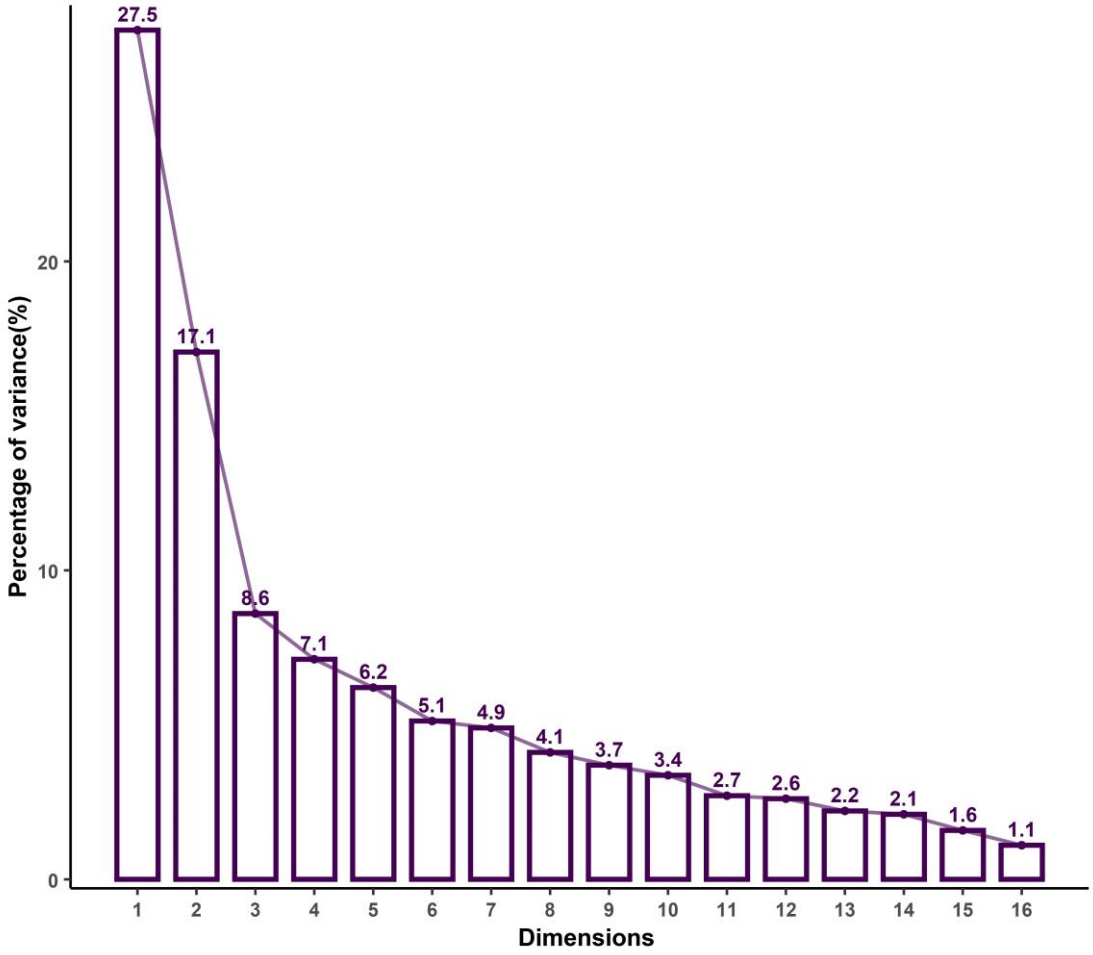


Figure S1 Percentage of variance explained by each MCA dimension. The initial analysis incorporated 16 dietary variables from 1,155 participants.

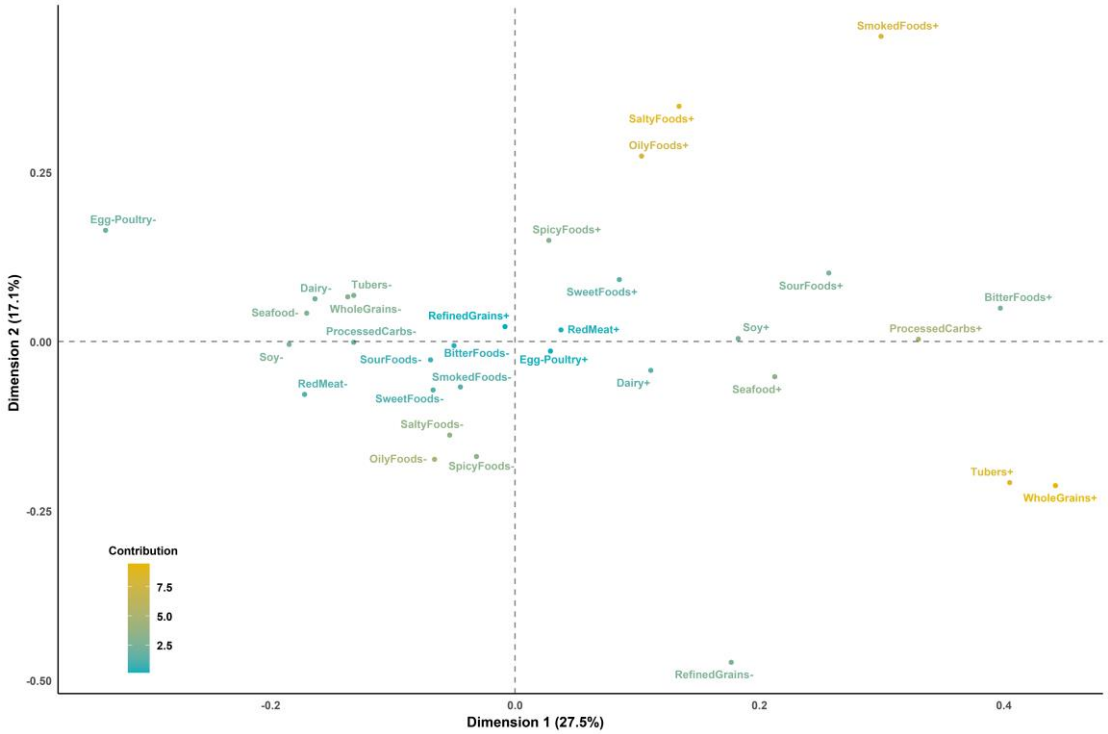


Figure S2 Two-dimensional distribution of dietary categories of the initial MCA. Categories are coloured by their contributions to the first two dimensions.

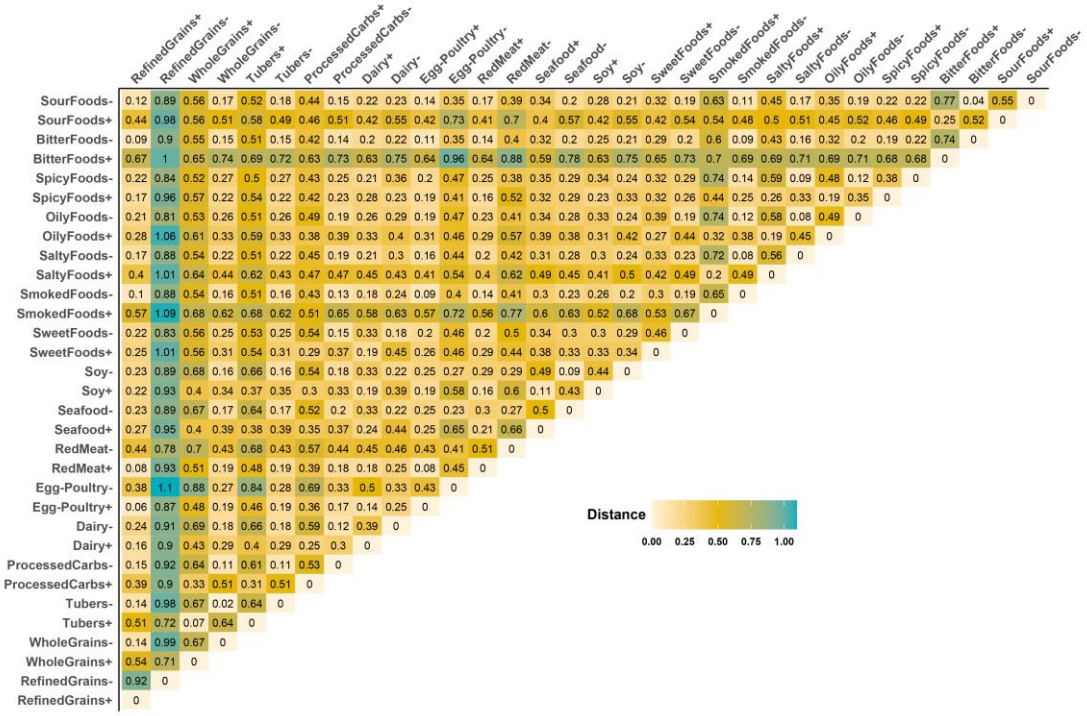


Figure S3 Heatmap of Euclidean distances between dietary categories of the initial MCA. Smaller distances (lighter cells) indicate stronger associations between categories.

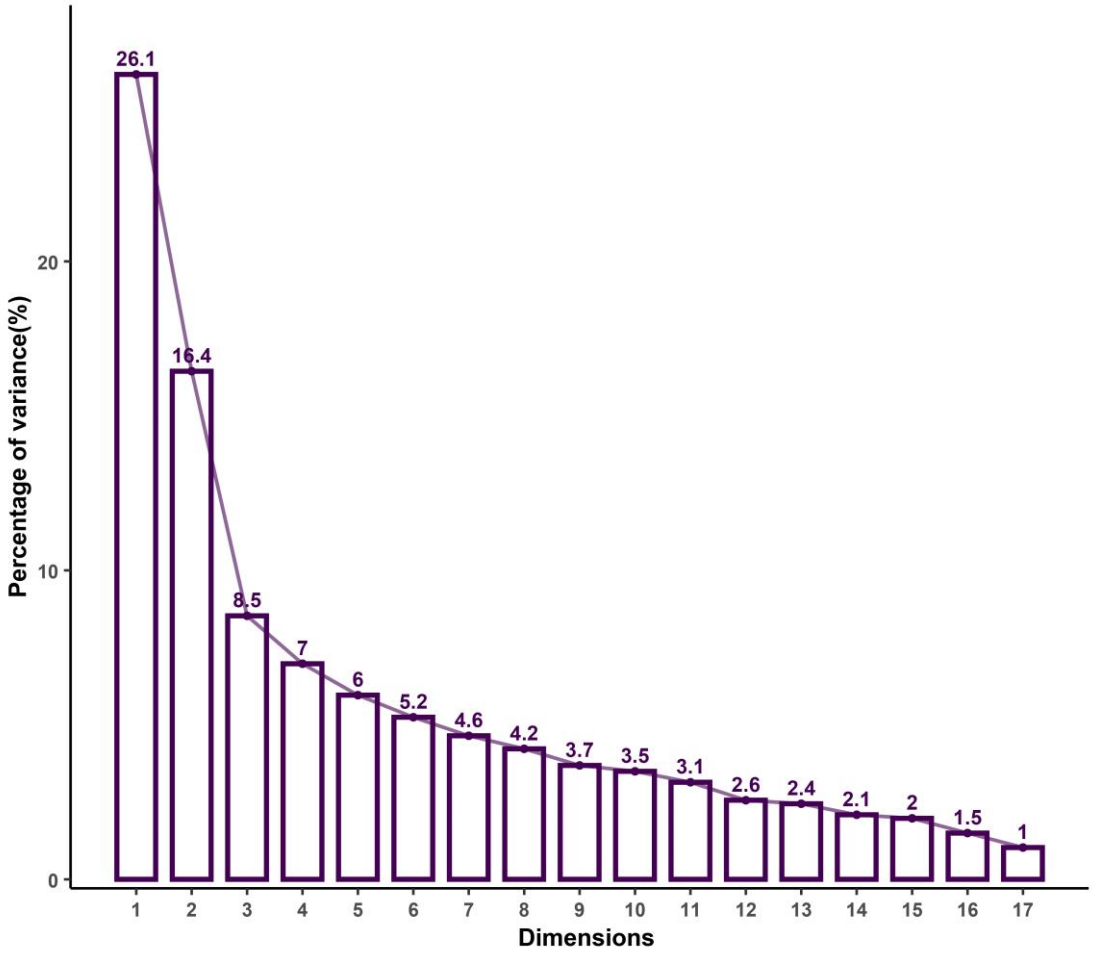
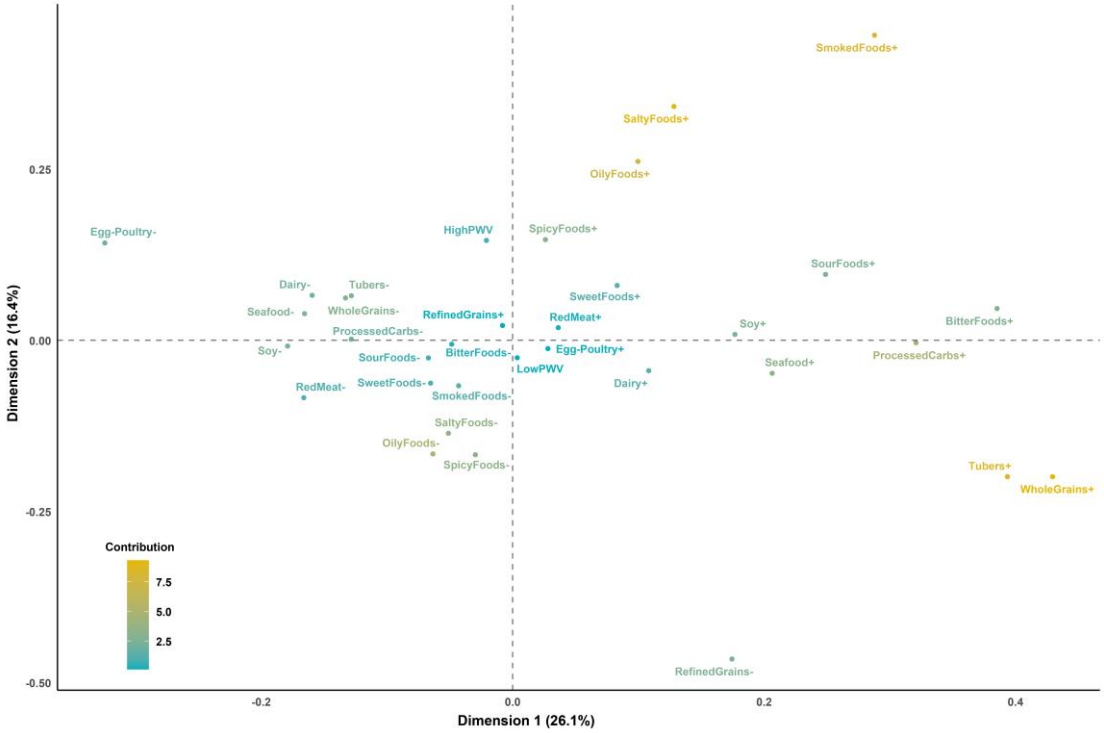
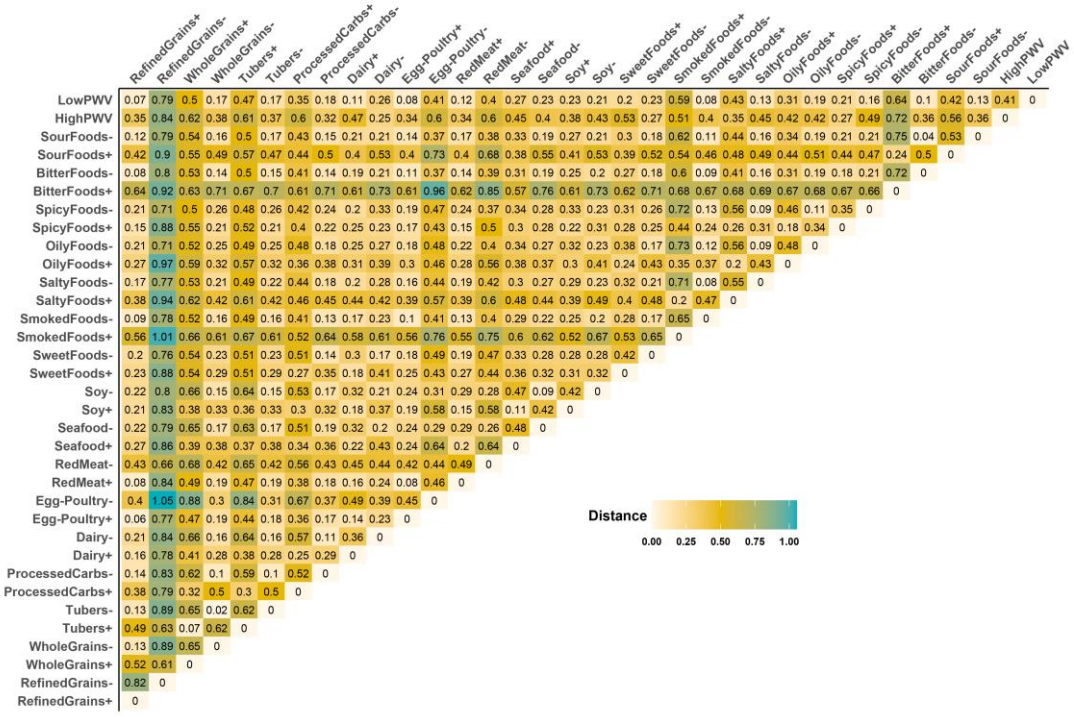


Figure S4 Percentage of variance explained by each MCA dimension. The analysis extended the initial MCA by integrating the PWV variable from 1,155 participants.

Figure S5 Two-dimensional distribution of categories of the extended MCA. Categories are coloured by their contributions to the first two dimensions.





11 Figure S6 Heatmap of Euclidean distances between dietary categories of the extended MCA. Smaller
12 distances (lighter cells) indicate stronger associations between categories.

13 Table S1 Description of the first two dimensions in the initial MCA by variables and their categories.

Variables[a]	Categories	R^2 (P)[b]		Contribution, %[c]	
		Dimension 1	Dimension 2	Dimension 1	Dimension 2
WholeGrains	Yes	0.418	0.123	13.803	5.147
	No	(<0.001)	(<0.001)	4.273	1.593
Tubers	Yes	0.369	0.124	12.029	5.135
	No	(<0.001)	(<0.001)	3.922	1.674
ProcessedCarbs	Yes	0.301	0.000	9.295	0.001
	No	(<0.001)	(0.839)	3.718	0.000
Seafood	Yes	0.251	0.019	6.005	0.581
	No	(<0.001)	(<0.001)	4.815	0.466
Soy	Yes	0.233	0.000	5.008	0.004
	No	(<0.001)	(0.665)	5.069	0.004
BitterFoods	Yes	0.137	0.003	5.260	0.130
	No	(<0.001)	(0.080)	0.661	0.016
Dairy	Yes	0.126	0.024	2.196	0.523
	No	(<0.001)	(0.839)	3.235	0.770
SourFoods	Yes	0.123	0.024	4.176	1.041
	No	(<0.001)	(<0.001)	1.124	0.280
SmokedFoods	Yes	0.093	0.266	3.478	12.672
	No	(<0.001)	(<0.001)	0.519	1.891
Egg-Poultry	Yes	0.067	0.020	0.231	0.089
	No	(<0.001)	(<0.001)	2.670	1.030
SaltyFoods	Yes	0.050	0.421	1.533	16.510
	No	(<0.001)	(<0.001)	0.610	6.576
OilyFoods	Yes	0.047	0.418	1.245	13.998
	No	(<0.001)	(<0.001)	0.792	8.903
RedMeat	Yes	0.045	0.012	0.346	0.115
	No	(<0.001)	(<0.001)	1.587	0.527
SweetFoods	Yes	0.040	0.057	0.957	1.763
	No	(<0.001)	(<0.001)	0.751	1.385
RefinedGrains	Yes	0.010	0.091	0.019	0.220
	No	(<0.001)	(<0.001)	0.413	4.764
SpicyFoods	Yes	0.006	0.222	0.122	5.699
	No	(<0.001)	(<0.001)	0.139	6.490

14 [a]The analysis incorporated 16 dietary variables from 1,155 participants.

15 [b]R^2 was calculated from one-way ANOVA.

16 [c]The contributions (in percentage) of the categories to the definition of the dimensions were estimated.

Table S2 Description of the first two dimensions in the extended MCA by variables and their categories.

Variables[a]	Categories	R^2 (*P*)[b]		Contribution, %[c]	
		Dimension 1	Dimension 2	Dimension 1	Dimension 2
WholeGrains	Yes	0.419	0.114	13.829	4.725
	No	(<0.001)	(<0.001)	4.280	1.462
Tubers	Yes	0.371	0.120	12.079	4.911
	No	(<0.001)	(<0.001)	3.939	1.601
ProcessedCarbs	Yes	0.303	0.000	9.331	0.002
	No	(<0.001)	(0.804)	3.733	0.000
Seafood	Yes	0.251	0.017	6.015	0.523
	No	(<0.001)	(<0.001)	4.823	0.419
Soy	Yes	0.233	0.001	4.990	0.018
	No	(<0.001)	(0.379)	5.051	0.018
BitterFoods	Yes	0.137	0.003	5.261	0.121
	No	(<0.001)	(0.090)	0.661	0.015
Dairy	Yes	0.127	0.027	2.214	0.594
	No	(<0.001)	(0.839)	3.262	0.875
SourFoods	Yes	0.123	0.023	4.168	0.985
	No	(<0.001)	(<0.001)	1.122	0.265
SmokedFoods	Yes	0.091	0.274	3.413	12.954
	No	(<0.001)	(<0.001)	0.509	1.934
Egg-Poultry	Yes	0.067	0.016	0.230	0.070
	No	(<0.001)	(<0.001)	2.658	0.807
SaltyFoods	Yes	0.048	0.429	1.487	16.693
	No	(<0.001)	(<0.001)	0.592	6.649
OilyFoods	Yes	0.046	0.401	1.225	13.332
	No	(<0.001)	(<0.001)	0.779	8.471
RedMeat	Yes	0.044	0.014	0.343	0.139
	No	(<0.001)	(<0.001)	1.569	0.635
SweetFoods	Yes	0.040	0.046	0.964	1.295
	No	(<0.001)	(<0.001)	0.757	1.109
RefinedGrains	Yes	0.010	0.093	0.020	0.222
	No	(<0.001)	(<0.001)	0.426	4.813
SpicyFoods	Yes	0.006	0.227	0.115	5.775
	No	(0.010)	(<0.001)	0.130	6.577
HighPWV	Yes	0.001	0.035	0.021	1.600
	No	(0.421)	(<0.001)	0.004	0.282

[a]The analysis extended the initial analysis by incorporating the PWV variable from 1,155 participants.

[b]R^2 was calculated from one-way ANOVA.

[c]The contributions (in percentage) of the categories to the definition of the dimensions were estimated.

21 Table S3 Characteristics of the study participants divided by clusters.

	Cluster 1	Cluster 2	Cluster 3	*P*
N	254	614	287	
Age, years	32 (28−36)	30 (28−36)	30 (27−35)	0.030
Male, n (%)	77 (30.3)	250 (40.7)	127 (44.3)	0.002
baPWV, m/s	10.96 (10.21−11.99)	11.21 (10.27−12.11)	11.28 (10.31−12.80)	0.015
BMI, kg/m^2	22.86 (20.95−24.51)	22.37 (20.53−24.93)	23.67 (21.16−26.34)	0.001
SBP, mmHg	114 (108−120)	115(107−123)	117(109−124)	0.023
DBP, mmHg	73 (67−78)	73 (68−79)	74 (69−81)	0.070
PP, mmHg	41(36−46)	41 (36−46)	42 (37−47)	0.598
TC, mmol/L	4.92 (4.49−5.35)	4.98 (4.56−5.53)	4.96 (4.54−5.51)	0.192
TG, mmol/L	0.94 (0.68−1.26)	0.95 (0.74−1.32)	1.04 (0.81−1.49)	0.001
Hypertension, n (%)	6 (2.4)	10 (1.6)	4 (1.4)	0.662
Diabetes, n (%)	2 (0.8)	1 (0.2)	4 (1.4)	0.078
Dyslipidemia, n (%)	7 (2.8)	21 (3.4)	8 (2.8)	0.819
Smoking, n (%)				0.582
Never	231 (90.9)	553 (90.1)	250 (80.7)	
Former	12 (4.7)	31 (5.0)	17 (5.9)	
Current	11 (4.3)	30 (4.9)	20 (7.0)	
Alcohol, n (%)				0.011
Never	187 (73.6)	461 (75.1)	184 (64.1)	
Occasionally	12 (4.7)	34 (5.5)	25 (8.7)	
Often	55 (21.7)	119 (19.4)	78 (27.2)	

22 baPWV: brachial-ankle pulse wave velocity; BMI: body mass index; SBP: systolic blood pressure; DBP:
23 diastolic blood pressure; PP: pulse pressure; TC: Total Cholesterol; TG: Triglycerides.
24 Data are represented as medians (interquartile ranges) or n (%). Groups were divided according to the
25 clusters. Cluster 1 to 3: clusters 1, 2 and 3 were identified by hierarchical clustering on principal
26 components derived from the extended MCA. A Shapiro-Wilk test was conducted to determine whether
27 the data followed a normal distribution. One-way ANOVA or the Kruskal-Wallis test was used
28 depending on the normality of the variables. For variables expressed as percentages, the $\chi 2$ test was
29 applied.

Table S4 Generalized linear regression analysis of the associations between dietary patterns and arterial stiffness.

	Chinese-adapted Mediterranean diet	**conventional Chinese urban diet**	**Chinese-adapted Western diet**
baPWV, m/s	10.96 [10.20, 11.99]	11.20 [10.27, 12.10]	11.27 [10.31, 12.79]
Model 1	Ref	0.19 (−0.04, 0.41)	0.47 (0.20, 0.73)
Beta (95%CI) *P*		0.109	<0.001
Model 2	Ref	0.05 (−0.12, 0.23)	0.32 (0.11, 0.52)
Beta (95%CI) *P*		0.535	0.002
Model 3	Ref	0.06 (−0.10, 0.23)	0.30 (0.10, 0.49)
Beta (95%CI) *P*		0.453	0.003

baPWV: brachial-ankle pulse wave velocity; CI: confidential interval.

[a]Model 1 was unadjusted.

[b]Model 2 was adjusted for age and sex.

[c]Model 3 was fully adjusted for age, sex, body mass index, pulse pressure, total cholesterol, triglycerides, smoking status, drinking status, hypertension, diabetes, and dyslipidemia.

[d]The Chinese-adapted Mediterranean diet was considered as the reference group in generalized linear models.

Table S5 Subgroup analyses of the associations between dietary patterns and arterial stiffness.

	Chinese-adapted Mediterranean diet[a]	**conventional Chinese urban diet**	**Chinese-adapted Western diet**
Age, years			
<30	Ref	0.10 (−0.15, 0.33) 0.456[b]	0.01 (−0.26, 0.28) 0.951
30–35	Ref	0.04 (−0.30, 0.35) 0.808	0.30 (−0.07, 0.68) 0.112
>35	Ref	0.11 (−0.30, 0.50) 0.593	0.72 (0.21, 1.23) 0.006
Sex			
Male	Ref	0.10 (−0.25, 0.44) 0.576	0.47 (−0.08, 0.85) 0.017
Female	Ref	0.06 (−0.13, 0.25) 0.522	0.20 (−0.03, 0.43) 0.085
Smoking status			
No	Ref	0.06 (−0.11, 0.23) 0.481	0.27 (0.07, 0.47) 0.009
Yes	Ref	0.25 (−0.58, 1.06) 0.549	0.78 (−0.16, 0.73) 0.111
Drinking status			
No	Ref	0.01 (−0.17, 0.20) 0.892	0.27 (0.05, 0.50) 0.018
Yes	Ref	0.22 (−0.17, 0.60) 0.270	0.40 (−0.01, 0.81) 0.058

[a]The Chinese-adapted Mediterranean diet was considered as the reference group in generalized linear models.

[b]Beta and 95% confidential interval were estimated in generalized linear model. Notes: In addition to the stratification variables themselves, age, sex, body mass index, pulse pressure, total cholesterol, triglycerides, smoking status, drinking status, hypertension, diabetes, and dyslipidemia were adjusted.

Table S6 Feature selection results based on RF-RFE.

Number	Accuracy	Accuracy SD	Cohen's kappa	Cohen's kappa SD
1	0.693	0.024	0.442	0.041
2	0.811	0.020	0.687	0.032
3	0.846	0.036	0.746	0.058
4	0.852	0.033	0.758	0.052
5	0.884	0.022	0.807	0.037
6	0.891	0.022	0.820	0.038
7	0.890	0.012	0.817	0.020
8	0.897	0.016	0.830	0.027
9	0.923	0.014	0.873	0.024
10	0.933	0.020	0.888	0.033
11	0.931	0.021	0.885	0.036
12	**0.934**	**0.016**	**0.890**	**0.027**
13	0.927	0.016	0.877	0.026
14	0.928	0.018	0.881	0.031
15	0.927	0.025	0.877	0.043
16	0.933	0.010	0.889	0.019

The row containing the optimal number of features is bolded.

Table S7 Feature importance results of final RF model.

Features	Class-specific MDA			MDA	MDG
	Chinese-adapted Mediterranean diet	conventional Chinese urban diet	Chinese-adapted Western diet		
SaltyFoods	6.96	72.04	92.11	97.03	118.49
WholeGrains	67.61	63.42	8.78	80.70	111.66
SmokedFoods	5.57	56.21	48.03	63.46	51.40
Tubers	51.25	42.06	13.12	60.80	65.67
OilyFoods	8.69	27.62	52.97	53.36	41.52
ProcessesCarbs	21.46	33.10	15.94	39.96	25.60
SpicyFoods	5.15	16.63	32.22	32.81	22.72
RefinedGrains	26.92	22.44	5.84	29.93	14.80
Soy	24.51	24.97	10.13	32.56	21.48
Dairy	21.34	11.68	4.57	22.42	15.36
Seafood	11.16	2.46	−2.49	6.78	9.36
BitterFoods	13.41	9.34	2.20	15.38	10.36

MDA: mean decrease accuracy; MDG: mean decrease Gini.