Table S1. Characteristics of 4800 participants.

	Baseline $(n = 4800)$	Non-CVD ^a $(n = 3987)$	$CVD^a (n = 813)$	P value
Gender				
Female	2651 (55.23%)	2174 (54.53%)	477 (58.67%)	0.033
Male	2149 (44.77%)	1813 (45.47%)	336 (41.33%)	
Age	57.00 (51.00, 63.00)	57.00 (51.00, 63.00)	60.00 (54.00, 65.00)	< 0.001
BMI	23.16 (21.01, 25.66)	23.02 (20.89, 25.47)	23.89 (21.55, 26.45)	< 0.001
Hukou ^b				
Agricultural	4160 (86.70%)	3469 (87.03%)	691 (85.10%)	0.155
Others	638 (13.30%)	517 (12.97%)	121 (14.90%)	
Education ^b	, ,	, ,	,	
Primary school or	3362 (70.06%)	2760 (69.24%)	602 (74.05%)	0.007
lower	,	,	,	
Middle school or	1437 (29.94%)	1226 (30.76%)	211 (25.95%)	
higher	,	,	,	
Current Married	4348 (90.58)	3632 (91.10%)	716 (88.07%)	0.009
Smoke ^b	1785 (37.22%)	1497 (37.58%)	288 (35.42%)	0.262
Current drinking ^b	1606 (33.49%)	1359 (34.12%)	247 (30.38%)	0.044
Health Status	,	,		
Hypertension	1003 (20.90%)	745 (18.69%)	258 (31.73%)	< 0.001
Dyslipidemia	484 (10.08%)	349 (8.75%)	135 (16.61%)	< 0.001
Diabetes or High	264 (5.50%)	200 (5.02%)	64 (7.87%)	0.002
Blood Sugar	,	,	,	
Kidney Disease	303 (6.31%)	238 (5.97%)	65 (8.00%)	0.037
SBP ^b	126.00 (113.67,	125.00 (113.33,	131.00 (117.00,	< 0.001
	140.67)	139.00)	146.67)	
DBPb	74.33 (67.00, 82.67)	74.00 (66.67, 82.33)	76.67 (69.00, 85.67)	< 0.001
Pulse ^b	71.33 (65.00, 78.00)	71.33 (65.00, 78.00)	71.67 (65.00, 77.67)	0.622
BUN	15.04 (12.52, 17.98)	15.07 (12.52, 18.04)	14.99 (12.49, 17.81)	0.736
FPG	102.24 (94.32,	101.88 (94.32,	103.32 (95.22,	
	112.19)	111,78)	114.12)	
Creatine ^b	0.75 (0.64, 0.87)	0.75 (0.64, 0.86)	0.76 (0.66, 0.88)	0.071
TC	190.98 (167.78,	190.21 (167.01,	195.62 (171.65,	< 0.001
	215.34)	214.56)	219.20)	
TG	103.55 (74.34,	103.55 (73.46,	110.63 (80.54,	< 0.001
	153.11)	152.22)	158.42)	
HDL	49.68 (40.59, 60.31)	<i>'</i>	49.10 (40.98, 58.76)	0.556
LDL ^b	114.05 (93.94,	113.66 (92.98,	118.69 (97.81,	< 0.001
	136.86)	136.08)	139.76)	, <u>.</u>
CRP	0.96 (0.53, 1.95)	0.92 (0.52, 1.92)	1.12 (0.59, 2.15)	< 0.001
HbA1c ^b	5.10 (4.90, 5.40)	5.10 (4.90, 5.40)	5.20 (4.90, 5.50)	< 0.001
Uric acid	4.21 (3.51, 5.06)	4.21 (3.50, 5.04)	4.25 (3.56, 5.12)	0.129
Cystatin C ^b	0.96 (0.85, 1.09)	0.95 (0.85, 1.08)	0.97 (0.87, 1.12)	0.006
TyG	8.59 (8.22, 9.03)	8.57 (8.20, 9.01)	8.68 (8.30, 9.13)	< 0.001

TyG-BMI	199.13	(176.53,	197.64	(175.51,	209.57	(184.94,	< 0.001
	228.60)		225.27)		236.79)		
Cumulative TyG	25.84 (24.	86, 27.09)	25.80 (24.8	1, 27.04)	26.08 (25.	< 0.001	
Cumulative TyG-BMI	606.42	(535.07,	601.68	(532.45,	633.83	(558.61,	< 0.001
	689.23)		684.41)		712.25)		

- a. Cardiovascular disease is defined as heart problems and stroke. The CVD and non-CVD groups were based on the result of a 9-year follow-up
- b. Missing data: 2 for Hukou status, 1 for education, 4 for current drinking, 4 for smoking, 19 for SBP, 19 for DBP, 19 for pulse, 10 for LDL, 2 for creatine, 27 for HbA1c, 1254 for cystatin C.
- c. current drinking is considered any drinking in the last year.
- d. Abbreviations: BMI, body mass index; SBP, systolic blood pressure; DBP, diastolic blood pressure; BUN, blood urea nitrogen; FPG, fasting plasma glucose; TC, total cholesterol; TG, triglycerides; HDL, high-density lipoprotein cholesterol; LDL, low-density lipoprotein cholesterol; CRP, C-reaction protein; HbA1c, glycosylated Hemoglobin A1c; TyG, triglyceride-glucose.

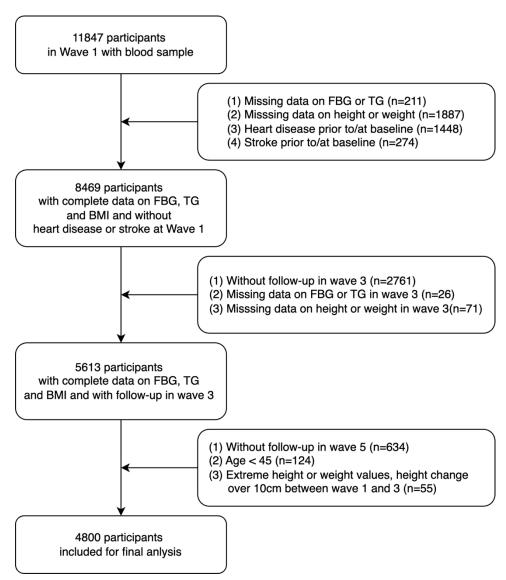


Figure S1: Study population selection flowchart.

Variable	Model 1			Variable	Model 2			Variable	Model 3		
TyG wave1	Harzard Ratio (95%CI)	p-value		TyG wave1	Harzard Ratio (95%CI)	p-value		TyG wave1	Harzard Ratio (95%CI)	p-value	
9-year	1.192 (1.081-1.315)	p<0.001	-	9-year	1.192 (1.081-1.316)	p<0.001	-	9-year	1.134 (1.026-1.253)	p=0.014	-
Q1	1 [Reference]			Q1	1 [Reference]			Q1	1 [Reference]		
Q2	1.301 (1.059-1.598)	p=0.012		Q2	1.297 (1.055-1.593)	p=0.013		Q2	1.268 (1.032-1.558)	p=0.024	
Q3	1.316 (1.072-1.616)	p=0.009		Q3	1.310 (1.067-1.609)	p=0.010		Q3	1.254 (1.021-1.541)	p=0.031	
Q4	1.459 (1.192-1.785)	p<0.001	-	Q4	1.450 (1.185-1.775)	p<0.001		Q4	1.325 (1.080-1.625)	p=0.007	-
4-year	1.100 (0.965-1.254)	p=0.153	-	4-year	1.096 (0.961-1.251)	p=0.171	-	4-year	1.019 (0.891-1.165)	p=0.785	-
Q1	1 [Reference]			Q1	1 [Reference]			Q1	1 [Reference]		
Q2	1.315 (1.009-1.714)	p=0.043		Q2	1.311 (1.006-1.709)	p=0.045		Q2	1.272 (0.976-1.658)	p=0.075	
Q3	1.291 (0.991-1.683)	p=0.059	-	Q3	1.273 (0.976-1.660)	p=0.074	-	Q3	1.193 (0.914-1.556)	p=0.194	
Q4	1.294 (0.992-1.687)	p=0.058	15 15 Hazard Ratio (HR)	Q4	1.277 (0.979-1.666)	p=0.071	15 Hazard Ratio (HR)	Q4	1.119 (0.855-1.464)	p=0.413	1.5 Hazard Ratio (HR)

Figure S2: Relationships between TyG index and CVD. Model 1 was adjusted for age and gender. Model 2 included additional adjustments for residence, educational level, marital status, smoking status, and current drinking status. Model 3 incorporated adjustments as model 2 plus hypertension and kidney disease. TyG, triglyceride-glucose; CVD, cardiovascular diseases, HR, hazard ratio; CI, confidence interval; Q, quartile.

Variable	Model 1		Variable	Model 2		Variable	Model 3		
TyG-BMI wave1	Harzard Ratio (95%CI)	p-value	TyG-BMI wave1	Harzard Ratio (95%CI)	p-value	TyG-BMI wave1	Harzard Ratio (95%CI)	p-value	
9-year	1.006 (1.004-1.007)	p<0.001	9-year	1.006 (1.004-1.007)	p<0.001	9-year	1.004 (1.002-1.006)	p<0.001	+
Q1	1 [Reference]		Q1	1 [Reference]		Q1	1 [Reference]		
Q2	1.198 (0.964-1.490)	p=0.103	Q2	1.199 (0.964-1.490)	p=0.103	Q2	1.172 (0.943-1.457)	p=0.153	
Q3	1.640 (1.332-2.018)	p<0.001	Q3	1.641 (1.332-2.022)	p<0.001	Q3	1.543 (1.250-1.905)	p<0.001	
Q4	1.933 (1.575-2.373)	p<0.001	Q4	1.938 (1.576-2.382)	p<0.001	—— Q4	1.693 (1.367-2.095)	p<0.001	
4-year	1.005 (1.003-1.007)	p<0.001	4-year	1.005 (1.003-1.007)	p<0.001	4-year	1.003 (1.000-1.005)	p=0.037	-
Q1	1 [Reference]		Q1	1 [Reference]		Q1	1 [Reference]		
Q2	1.167 (0.878-1.552)	p=0.288	Q2	1.156 (0.869-1.537)	p=0.321	Q2	1.111 (0.835-1.479)	p=0.469	-
Q3	1.629 (1.244-2.133)	p<0.001	Q3	1.587 (1.210-2.082)	p<0.001	Q3	1.430 (1.088-1.880)	p=0.010	-
Q4	1.818 (1.390-2.376)	p<0.001	Q4	1.768 (1.350-2.316)	p<0.001	Q4	1.423 (1.075-1.882)	p=0.014	
			1 1.5 2 2.5 Hazard Ratio (HR)			1 1.5 2 2.5 Hazard Ratio (HR)			1 1.5 2 Hazard Ratio (HR)

Figure S3: Relationships between TyG-BMI and CVD. Model 1 was adjusted for age and gender. Model 2 included additional adjustments for residence, educational level, marital status, smoking status, and current drinking status. Model 3 incorporated adjustments as model 2 plus hypertension and kidney disease. TyG, triglyceride-glucose; BMI, body mass index; CVD, cardiovascular diseases; HR, hazard ratio; CI, confidence interval; Q, quartile.

Variable	Model 1			Variable	Model 2			Variable	Model 3		
Cumulative TyG	Harzard Ratio (95%CI)	p-value		Cumulative TyG	Harzard Ratio (95%CI)	p-value		Cumulative TyG	Harzard Ratio (95%CI)	p-value	
9-year	1.083 (1.042-1.125)	p<0.001	•	9-year	1.082 (1.041-1.125)	p<0.001	•	9-year	1.059 (1.019-1.102)	p=0.004	•
Q1	1 [Reference]			Q1	1 [Reference]			Q1	1 [Reference]		
Q2	1.438 (1.166-1.772)	p<0.001		Q2	1.421 (1.152-1.753)	p=0.001		Q2	1.396 (1.132-1.723)	p=0.002	-
Q3	1.515 (1.230-1.865)	p<0.001		Q3	1.515 (1.230-1.865)	p<0.001		Q3	1.436 (1.165-1.771)	p<0.001	
Q4	1.588 (1.291-1.954)	p<0.001		Q4	1.572 (1.277-1.935)	p<0.001	-	Q4	1.435 (1.163-1.771)	p<0.001	
4-year	1.050 (0.998-1.105)	p=0.062	•	4-year	1.021 (0.994-1.102)	p=0.081	•	4-year	1.014 (0.962-1.068)	p=0.607	•
Q1	1 [Reference]			Q1	1 [Reference]			Q1	1 [Reference]		
Q2	1.420 (1.080-1.865)	p=0.012		Q2	1.380 (1.050-1.815)	p=0.021		Q2	1.342 (1.021-1.766)	p=0.035	-
Q3	1.689 (1.296-2.202)	p<0.001	-	— Q3	1.657 (1.271-2.162)	p<0.001	-	- Q3	1.542 (1.180-2.013)	p=0.001	-
Q4	1.330 (1.007-1.756)	p=0.045	1.5 2 Hazard Ratio (HR)	Q4	1.294 (0.980-1.710)	p=0.070	1 1.5 Page 1 1.5 Hazard Ratio (HR)	Q4	1.130 (0.852-1.498)	p=0.395	1.5 Hazard Ratio (HR)

Figure S4: Relationships between cumulative TyG index and CVD. Model 1 was adjusted for age and gender. Model 2 included additional adjustments for residence, educational level, marital status, smoking status, and current drinking status. Model 3 incorporated adjustments as model 2 plus hypertension and kidney disease. TyG, triglyceride-glucose; CVD, cardiovascular diseases, HR, hazard ratio; CI, confidence interval; Q, quartile.

Variable	Model 1			Variable	Model 2			Variable	Model 3		
Cumulative TyG-BMI	Harzard Ratio (95%CI)	p-value		Cumulative TyG-BMI	Harzard Ratio (95%CI)	p-value		Cumulative TyG-BMI	Harzard Ratio (95%CI)	p-value	
9-year	1.002 (1.001-1.003)	p<0.001		9-year	1.002 (1.001-1.003)	p<0.001	+	9-year	1.002 (1.001-1.002)	p<0.001	
Q1	1 [Reference]			Q1	1 [Reference]			Q1	1 [Reference]		
Q2	1.279 (1.031-1.588)	p=0.026		Q2	1.279 (1.030-1.588)	p=0.026	-	Q2	1.237 (0.996-1.536)	p=0.055	
Q3	1.657 (1.345-2.040)	p<0.001	-	Q3	1.659 (1.346-2.046)	p<0.001	-	Q3	1.544 (1.249-1.907)	p<0.001	
Q4	1.914 (1.556-2.355)	p<0.001	-	Q4	1.915 (1.554-2.360)	p<0.001		Q4	1.658 (1.336-2.058)	p<0.001	-
4-year	1.002 (1.001-1.003)	p<0.001	•	4-year	1.002 (1.001-1.003)	p<0.001	•	4-year	1.001 (1.000-1.002)	p=0.022	•
Q1	1 [Reference]			Q1	1 [Reference]			Q1	1 [Reference]		
Q2	1.239 (0.932-1.647)	p=0.140	-	Q2	1.225 (0.921-1.629)	p=0.163	-	Q2	1.155 (0.868-1.537)	p=0.323	
Q3	1.738 (1.328-2.274)	p<0.001	-	Q3	1.700 (1.296-2.229)	p<0.001		Q3	1.509 (1.147-1.984)	p=0.003	
Q4	1.763 (1.342-2.316)	p<0.001	1.5 2 2.1 Hazard Ratio (HR)	Q4	1.712 (1.301-2.254)	p<0.001	1.5 2 2 Hazard Ratio (HR)	Q4	1.356 (1.019-1.805)	p=0.036	Hazard Ratio (HR)

Figure S5: Relationships between cumulative TyG-BMI and CVD. Model 1 was adjusted for age and gender. Model 2 included additional adjustments for residence, educational level, marital status, smoking status, and current drinking status. Model 3 incorporated adjustments as model 2 plus hypertension and kidney disease. TyG, triglyceride-glucose; BMI, body mass index; CVD, cardiovascular diseases; HR, hazard ratio; CI, confidence interval; Q, quartile.

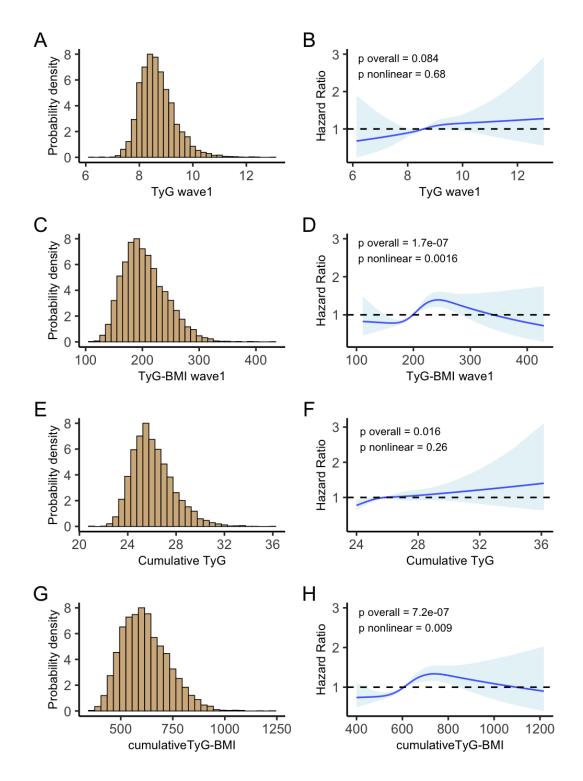


Figure S6: Nonlinear associations of TyG indices family with CVD. A, C, E, G Distribution for TyG, TyG-BMI, cumulative TyG, and cumulative TyG-BMI; B, D, F, H Graphs show HR for CVD adjusted for age, gender, residence, education level, marital status, smoking status, current drinking status, hypertension, and kidney disease. Data was analyzed using Cox proportional hazards regression models. Solid lines represent the HRs, and shaded areas show the 95% CI. TyG, triglyceride-glucose; BMI, body mass index; CVD, cardiovascular diseases; HR, hazard ratio; CI, confidential interval.