

Supplementary Table 1. Simplified sPNNS-GS2 components and scoring.

Food components	Recommendation	Servings	Quantity in grams or mL/day or week	Score
Fruit and vegetables	At least 5 per day	(0 – 3.5)	(0 - 280)	0
		(3.5 – 5)	(280 - 400)	0.5
		(5 – 7.5)	(400 – 600)	1
		≥ 7.5	≥ 600	2
Nuts	A handful a day	0	0	0
		(0 – 0.5)	(0 – 15)	0.5
		(0.5 – 1.5)	(15 – 45)	1
		≥ 1.5	≥ 45	0
Legumes	At least 2 times a week	0/week	0	0
		(0 – 2) /week	(0 – 400)	0.5
		≥ 2 /week	≥ 400	1
Whole grain foods	Every day Choose whole grains and whole grain bread preferentially	0	0	0
		(0 – 1)	(0-200) if rice and pasta	0.5
			(0-30) if cereals	
			(0-50) if bread	
		(1 – 2)	(200-400) if rice/pasta	1
			(30-60) if cereals	
			(50-100) if bread	
		≥ 2	≥ 400 if rice/pasta	1.5
			≥ 60 if cereals	
			≥ 100 if bread	
Milk and dairy products	2 per day	(0 – 0.5)	(0-75) if milk (0-62.5) if yogurt (0-15) if cheese	0
		(0.5 – 1.5)	(75-225) milk (62.5-187.5) yogurt (15-45) cheese	0.5
		(1.5 – 2.5)	(225-375) milk (187.5-312.5) yogurt (45-75) cheese	1
		≥ 2.5	≥ 375 milk ≥ 312.5 yogurt ≥ 75 cheese	0
Red meat	Limit consumption	(0 – 500) g/week	(0 – 500) g/week	0
		(500 – 750) g/week	(500 – 750) g/week	-1
		≥ 750 g/week	≥ 750 g/week	-2
Processed meat	Limit consumption	(0 – 150) g/week	(0 – 150) g/week	0
		(150 – 300) g/week	(150 – 300) g/week	-1
		≥ 300 g/week	≥ 300 g/week	-2
Fish and seafood	2 times a week	(0 – 1.5) serving/week	(0 – 150) g/week	0
				1

		(1.5 – 2.5) /week (2.5 – 3.5) /week ≥ 3.5	(150 – 250) /week (250 – 350) /week ≥ 350	0.5 0
Added fat	Limit consumption	Lipids from added fats > 16% EIWA ¹ per day	> 16% EIWA per day	0
		Lipids from added fats ≤ 16% EIWA per day	≤ 16% EIWA per day	1.5
Sweet foods	Limit consumption	Added sugars from sugary foods <10% EIWA per day	< 10% EIWA per day	0
		Added sugars from sugary foods (10 – 15) % EIWA per day	(10 – 15) % EIWA per day	-1
		Added sugars from sugary foods ≥ 15% EIWA per day	≥ 15% EIWA per day	-2
Sugary drinks and soda	Limit sugary drinks: no more than 1 drink a day	0 mL/day	0 mL/day	0
		(0 – 250) mL/day	(0 – 250) mL/day	-0.5
		(250 – 750) mL/day	(250 – 750) mL/day	-1
		≥ 750 mL mL/day	≥ 750 mL mL/day	-2
Alcohol	Limit consumption	0 g/week	0 g/week	0.5
		(0 – 100) g/week	(0 – 100) g/week	0
		(100 – 150) g/week	(100 – 150) g/week	-1
		(150 – 200) g/week	(150 – 200) g/week	-1.5
		> 200 g/week	> 200 g/week	-2
Salt (sodium*2.5)	Limit consumption	< 6 g /day	< 6 g /day	1
		(6 – 8) g /day	(6 – 8) g /day	0
		(8 – 10) g /day	(8 – 10) g /day	-0.5
		(10 – 12) g /day	(10 – 12) g /day	-1
		> 12 g/day	> 12 g/day	-2

¹EIWA: energy intake without alcohol

Supplementary Table 2. Nutrient intake per day in the study population, E3N-EPIC cohort, N=71,450.¹

	Quintile of sPNNS-GS2					
	All (N=71,450)	Q1 (N=14,294)	Q2 (N=14,285)	Q3 (N=14,292)	Q4 (N=14,169)	Q5 (N=14,411)
Alcohol (g ethanol)	11.59 (13.87)	22.93 (18.52)	13.59 (14.24)	9.48 (10.95)	6.94 (7.96)	5.04 (5.66)
Caffeine (mg)	201.77 (149.39)	215.92 (152.45)	208.95 (152.21)	202.28 (150.71)	196.66 (147.06)	185.15 (142.48)
Glucose (g)	234.99 (71.75)	232.10 (73.67)	243.28 (76.98)	240.46 (75.22)	233.86 (70.17)	225.31 (60.13)
Lipids (g)	88.94 (26.98)	95.33 (29.68)	93.93 (28.86)	90.09 (27.05)	85.71 (24.60)	79.68 (20.68)
Protein (g)	97.55 (25.08)	102.31 (27.18)	102.05 (26.96)	99.07 (25.42)	95.07 (23.09)	89.31 (19.56)
Fiber (g)	24.97 (7.83)	21.33 (6.94)	24.30 (7.64)	25.43 (7.89)	26.25 (7.68)	27.54 (7.50)
Iron (mg)	14.58 (3.87)	15.38 (4.25)	15.04 (4.18)	14.60 (3.89)	14.15 (3.58)	13.73 (3.10)
Magnesium (mg)	440.56 (141.89)	452.23 (146.21)	452.04 (147.46)	443.74 (145.45)	434.28 (137.29)	420.63 (129.78)
Mono-unsaturated fatty acids (g)	31.32 (9.87)	33.77 (10.83)	32.98 (10.48)	31.58 (9.88)	30.09 (9.03)	28.19 (7.82)
Omega-3 fatty acids (g)	1.52 (0.54)	1.58 (0.61)	1.58 (0.58)	1.54 (0.55)	1.49 (0.50)	1.41 (0.43)
Omega-6 fatty acids (g)	12.62 (5.02)	12.92 (5.24)	13.07 (5.28)	12.84 (5.08)	12.44 (4.88)	11.86 (4.47)
Polyunsaturated fatty acids (g)	14.16 (5.35)	14.52 (5.67)	14.66 (5.66)	14.41 (5.40)	13.95 (5.16)	13.28 (4.67)
Saturated fatty acids (g)	36.44 (12.95)	39.68 (13.75)	38.93 (13.64)	36.99 (13.02)	34.84 (12.06)	31.80 (10.38)
Unsaturated trans-fatty acids (g)	1.60 (0.67)	1.71 (0.68)	1.70 (0.69)	1.63 (0.68)	1.55 (0.65)	1.42 (0.58)
Vitamin B1 (mg)	1.40 (0.40)	1.41 (0.42)	1.43 (0.43)	1.41 (0.41)	1.38 (0.40)	1.35 (0.36)

Vitamin B2 (mg)	2.38 (0.72)	2.45 (0.75)	2.46 (0.76)	2.41 (0.74)	2.35 (0.69)	2.23 (0.62)
Vitamin B3 (mg)	26.10 (9.68)	27.80 (10.11)	27.00 (9.95)	26.21 (9.69)	25.36 (9.33)	24.15 (8.83)
Vitamin B6 (mg)	1.91 (0.50)	1.89 (0.52)	1.94 (0.53)	1.94 (0.52)	1.91 (0.49)	1.87 (0.43)
Vitamin B9 (µg)	423.30 (121.02)	393.50 (123.78)	423.55 (129.63)	431.14 (125.45)	435.58 (116.63)	432.78 (102.94)
Vitamin B12 (µg)	8.78 (5.27)	10.11 (6.31)	9.43 (5.70)	8.82 (5.03)	8.19 (4.56)	7.38 (4.00)
Retinol (µg)	1222.84 (1169.08)	1490.19 (1412.65)	1342.50 (1256.43)	1210.16 (1111.61)	1100.81 (1020.62)	971.63 (905.56)
Vitamin C (µg)	144.80 (62.31)	122.35 (61.53)	140.52 (64.32)	148.97 (63.41)	154.63 (59.83)	157.52 (55.66)
Vitamin D (µg)	2.60 (1.23)	2.70 (1.30)	2.71 (1.31)	2.66 (1.27)	2.56 (1.18)	2.37 (1.03)
Vitamin E (mg)	13.06 (4.92)	12.04 (4.80)	13.08 (5.10)	13.42 (5.09)	13.45 (4.92)	13.33 (4.52)

¹Mean (SD) and Kruskal-Wallis test for continuous variables

Supplementary Table 3: Baseline characteristics of the study population by type 2 diabetes (N=71,450).¹

	Type 2 Diabetes			P value
	All (N=71,450)	No (N=67,771)	Yes (N=3,679)	
Age, years	52.88 (6.67)	52.81 (6.66)	54.16 (6.66)	
Hypertension (%)	36,826 (51.54)	34,107 (50.33)	2,719 (73.91)	<0.01
Hypercholesterolemia (%)	6,366 (8.91)	5,838 (8.61)	528 (14.35)	<0.01
Family history of diabetes (%)	7,930 (11.10)	7,103 (10.48)	827 (22.48)	<0.01
Educational level (%)				<0.01
Undergraduate or less	7,927 (11.09)	7,391 (10.91)	536 (14.57)	
Graduate	37,959 (53.13)	35,862 (52.92)	2,097 (57.00)	
Postgraduate or more	25,564 (35.78)	24,518 (36.17)	1,046 (28.43)	
BMI, kg/m ²	22.89 (3.18)	22.71 (2.98)	26.23 (4.52)	
BMI				<0.01
< 20 kg/m ²	10,318 (14.44)	10,204 (15.06)	114 (3.10)	
20-24.99 kg/m ²	47,164 (66.01)	45,590 (67.27)	1,574 (42.78)	
≥ 25 kg/m ²	13,968 (19.55)	11,977 (17.67)	1,991 (54.12)	
Smoking status (%)				<0.01
Current	9,597 (13.43)	9,031 (13.33)	566 (15.39)	
Former	23,287 (32.59)	22,164 (32.70)	1,123 (30.52)	
Never	38,566 (53.98)	36,576 (53.97)	1,990 (54.09)	

Physical activity (MET/day or week)	39.94 (27.67)	40.01 (27.59)	38.70 (29.07)	
Energy intake without alcohol	2130.60 (543.67)	2128.81 (541.23)	2163.59 (585.89)	
sPNNS-GS 2	1.40 (2.45)	1.41 (2.45)	1.20 (2.43)	

¹n (%) and P value of the Khi-2 test for categorical variables, and mean (SD) and Student's t-test for continuous variables.

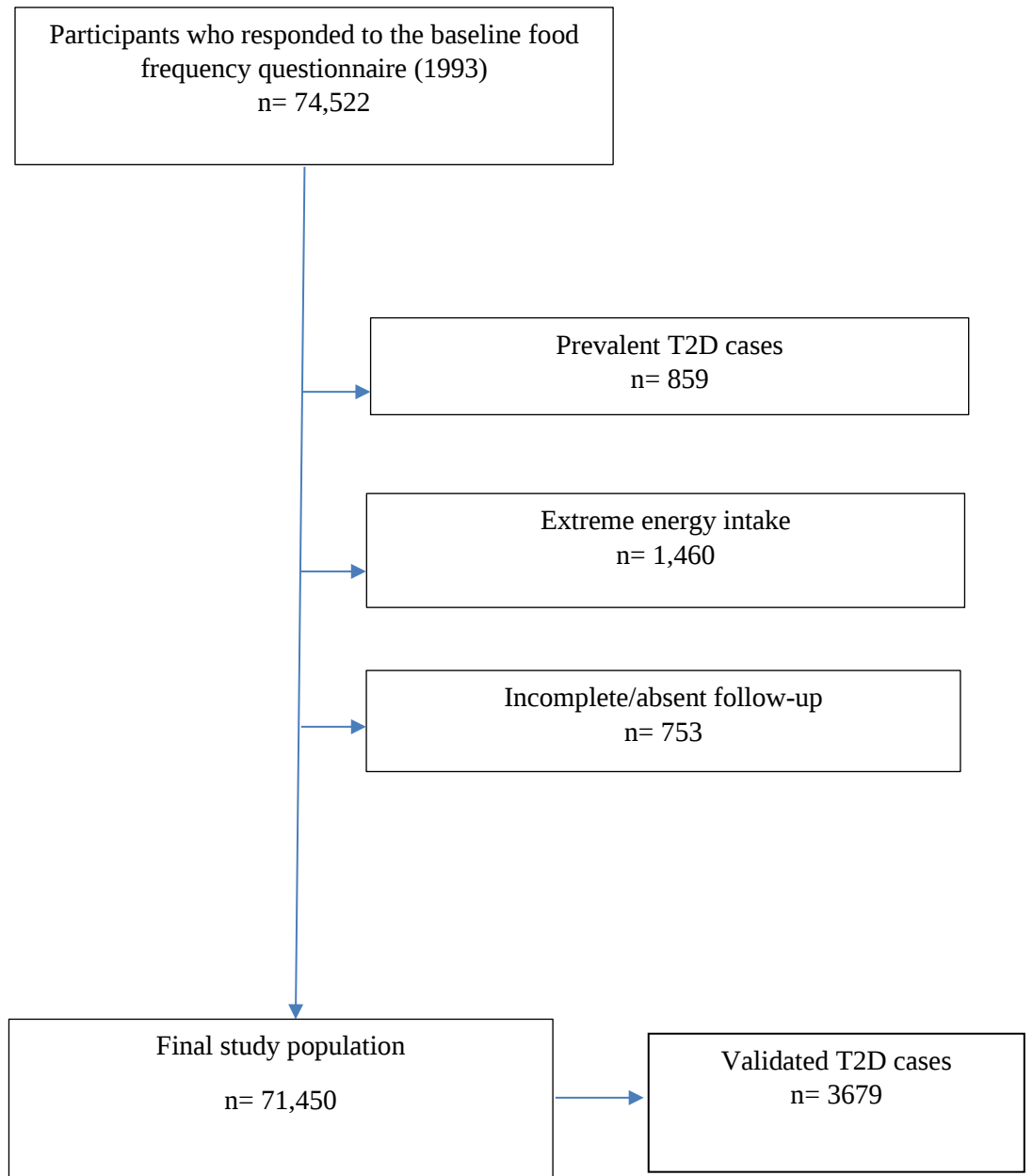
Supplementary Table 4. Risk of type 2 diabetes by quintiles of sPNNS-GS2 stratified according to waist-hip ratio, E3N-EPIC cohort N=71,450.

	Non-cases	Cases	Model 1	Model 2	Model 3
	N=67771	N=3679	HR (95% CI)	HR (95% CI)	HR (95% CI)
<i>P for interaction</i>					0.21
< 0.78 (N= 37155)					
1-SD increase	N=35922	N=1233	0.85 (0.80, 0.89)	0.86 (0.81, 0.91)	0.87 (0.83, 0.93)
Q1	6747 (18.78)	267 (21.65)	Reference	Reference	Reference
Q2	7005 (19.50)	269 (21.82)	0.93 (0.78, 1.10)	0.95 (0.80, 1.12)	0.95 (0.80, 1.12)
Q3	7262 (20.22)	243 (19.71)	0.79 (0.66, 0.94)	0.81 (0.68, 0.96)	0.81 (0.68, 0.97)
Q4	7368 (20.51)	235 (19.06)	0.73 (0.61, 0.87)	0.75 (0.63, 0.89)	0.77 (0.64, 0.92)
Q5	7540 (20.99)	219 (17.76)	0.65 (0.54, 0.78)	0.68 (0.57, 0.82)	0.72 (0.60, 0.87)
<i>P-trend</i>			< 0.01	< 0.01	< 0.01
≥ 0.78 (N= 34295)					
1-SD increase	N=31849	N=2446	0.91 (0.88, 0.95)	0.93 (0.89, 0.96)	0.93 (0.90, 0.97)
Q1	6727 (21.12)	553 (22.61)	Reference	Reference	Reference
Q2	6518 (20.47)	493 (20.16)	0.88 (0.78, 1.00)	0.90 (0.80, 1.02)	0.90 (0.80, 1.02)
Q3	6285 (19.73)	501 (20.48)	0.88 (0.78, 1.00)	0.91 (0.81, 1.03)	0.91 (0.81, 1.03)
Q4	6106 (19.17)	460 (18.81)	0.82 (0.73, 0.93)	0.86 (0.76, 0.97)	0.86 (0.76, 0.97)
Q5	6213 (19.51)	439 (17.95)	0.75 (0.67, 0.86)	0.79 (0.70, 0.90)	0.82 (0.72, 0.93)
<i>P-trend</i>			< 0.01	< 0.01	< 0.01

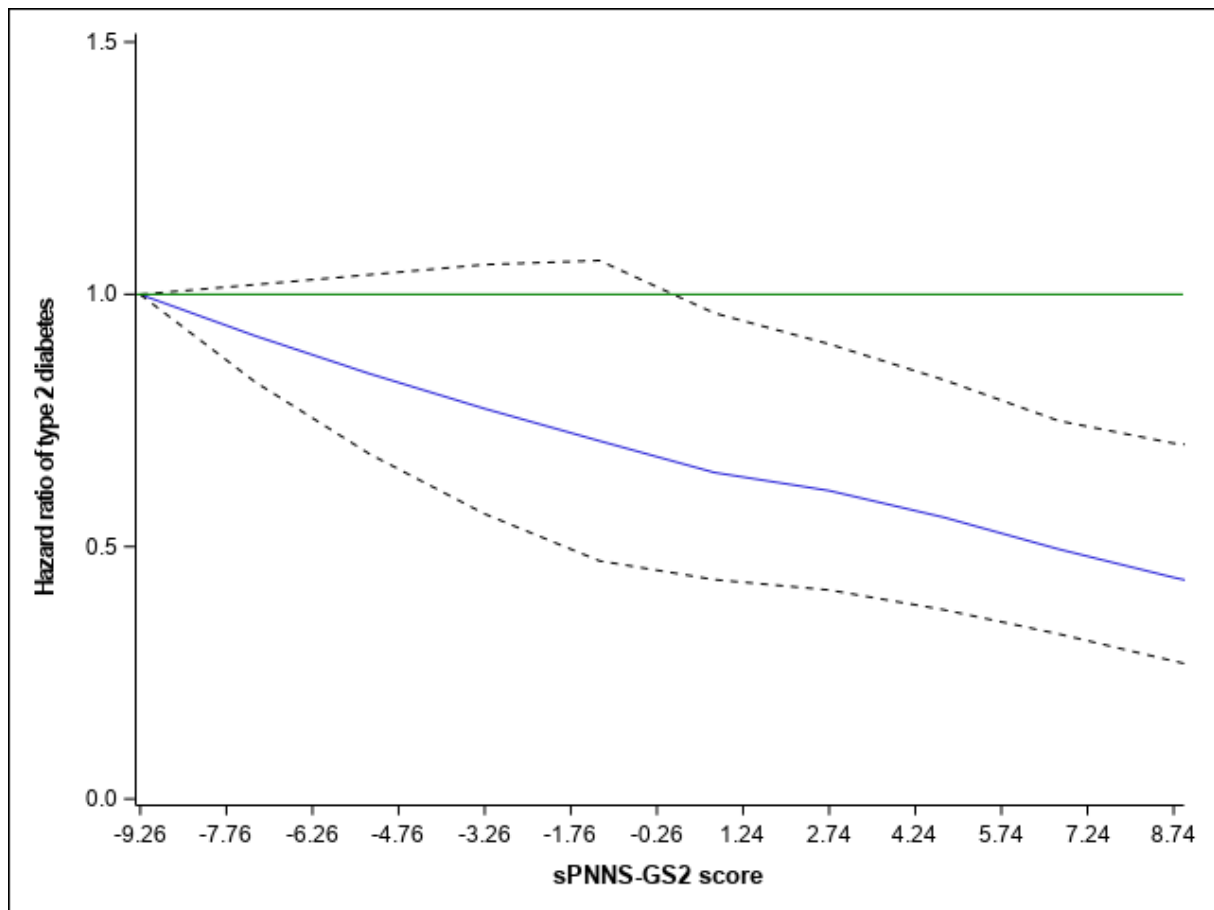
Model 1: Adjusted for age (as the time scale)

Model 2: Model 1 + educational level, smoking status, and physical activity

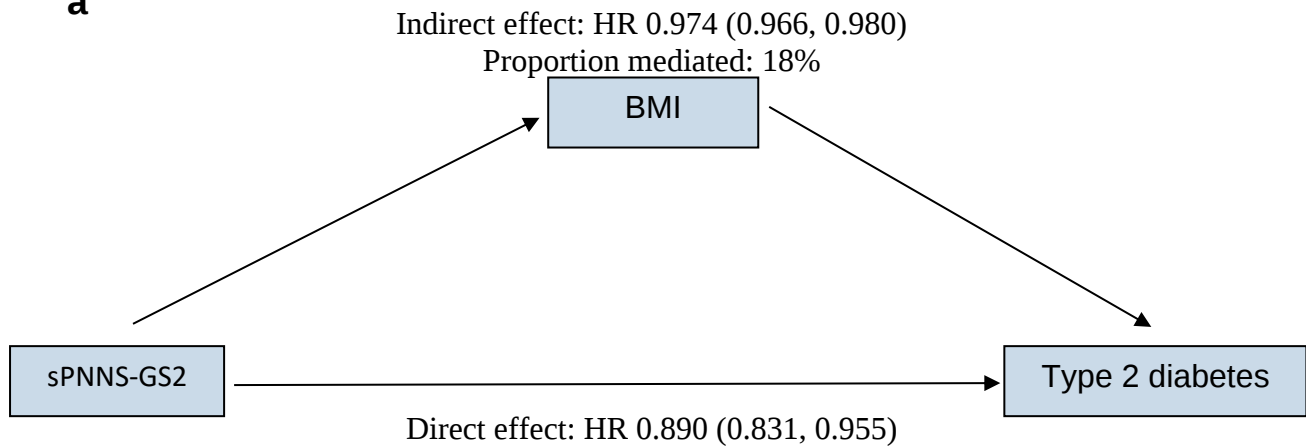
Model 3: Model 2 + family history of diabetes, personal history of hypertension, energy intake without alcohol, and hypercholesterolemia



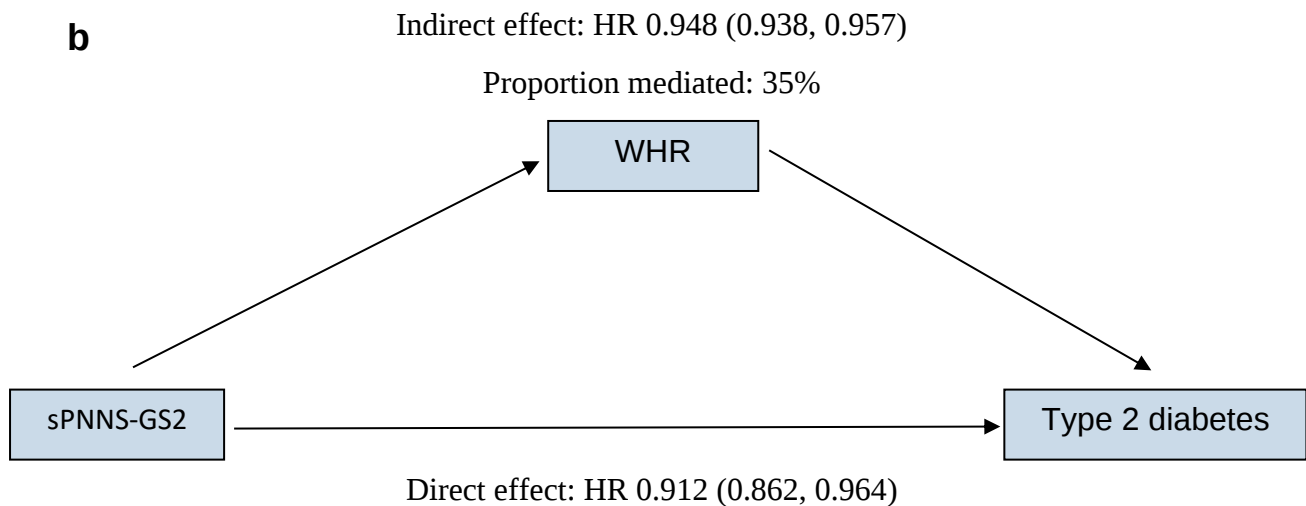
Supplementary Figure 1. Flowchart of the population for analysis.



Supplementary Figure 2. Associations of the sPNNS-GS2 score with T2D fitted with restricted cubic splines (5 knots placed at the 5th, 27.5th, 50th, 72.5th, and 95th percentiles), $P_{\text{nonlinearity}} = 0.92$. Risk estimates were adjusted for age (as the time scale), educational level, physical activity, smoking status, family history of diabetes, personal history of hypertension, energy intake without alcohol, and hypercholesterolemia. The solid blue line represents the hazard ratio, and the dashed lines the lower and upper 95% confidence interval.

a

Effect	Estimate	95% CI
Controlled direct effect	0.878	0.792, 0.961
Natural direct effect	0.890	0.831, 0.955
Natural indirect effect	0.974	0.966, 0.980
Total effect	0.866	0.810, 0.928

b

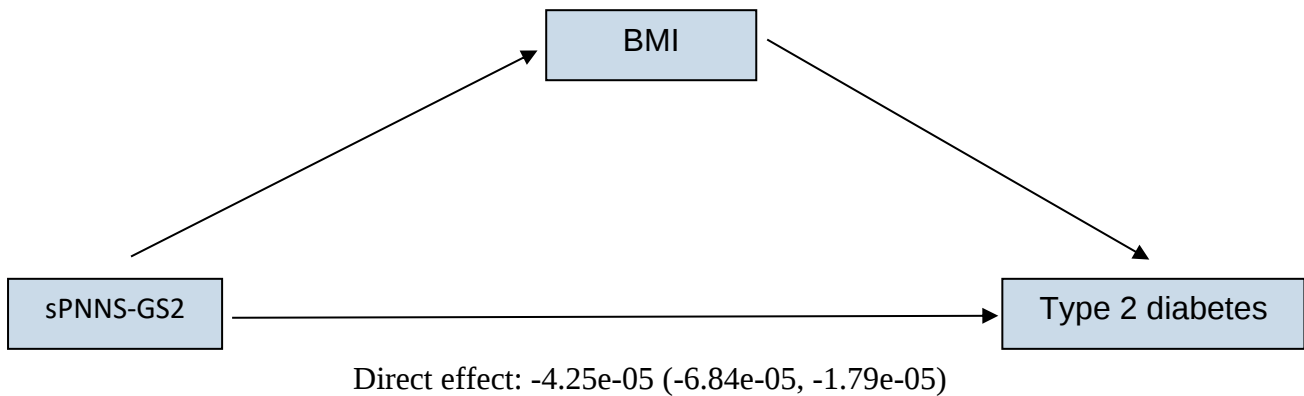
Effect	Estimate	95% CI
Controlled direct effect	0.884	0.822, 0.942
Natural direct effect	0.912	0.862, 0.964
Natural indirect effect	0.948	0.938, 0.957
Total effect	0.864	0.814, 0.915

Supplementary Figure 3. Mediation analyses of the association between sPNNS-GS2 and T2D risk with (a) sPNNS-GS2 x body mass index (BMI) and (b) sPNNS-GS2 x waist-hip ratio (WHR) interactions. Cox model adjusted for age, educational level, physical activity, smoking status, family history of diabetes, personal history of hypertension, energy intake without alcohol, and hypercholesterolemia. Estimates are mean HRs computed for changing the diet scores from 'low' to 'high'; these values are the 25th and 50th percentile of the diet score defined by clinically relevant cut-off (clinically relevant cut-off: 20 for BMI and the

median of the distribution: 0.78 for WHR). Mean HRs below 1 indicate that increasing diet scores from low to high is associated with lower type 2 diabetes risk.

aIndirect effect: $-3.29\text{e-}05$ ($-4.08\text{e-}05$, $-2.55\text{e-}05$)

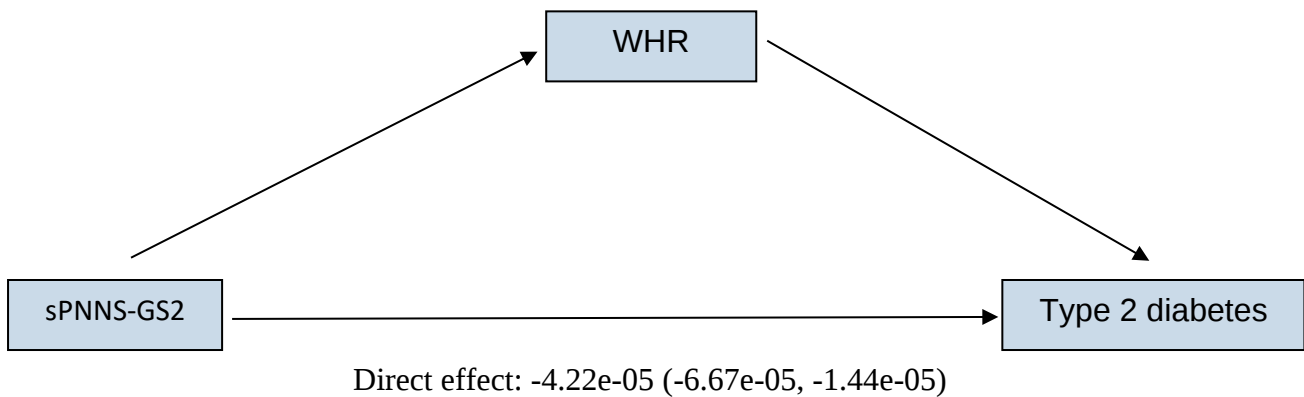
Proportion mediated: 45.2% (31.4%, 68.3%)



Effect	Estimate (mean)	95% CI
Natural direct effect	$-4.25\text{e-}05$	$-6.84\text{e-}05$, $-1.79\text{e-}05$
Natural indirect effect	$-3.29\text{e-}05$	$-4.08\text{e-}05$, $-2.55\text{e-}05$
Total effect	-0.0000754	-0.0001043 , -0.0000507

bIndirect effect: $-3.24\text{e-}05$ ($-3.70\text{e-}05$, $-2.77\text{e-}05$)

Proportion mediated: 45.5% (30.2%, 70.8%)



Effect	Estimate (mean)	95% CI
Natural direct effect	$-4.22\text{e-}05$	$-6.67\text{e-}05$, $-1.44\text{e-}05$
Natural indirect effect	$-3.24\text{e-}05$	$-3.70\text{e-}05$, $-2.77\text{e-}05$
Total effect	$-7.46\text{e-}05$	$-9.90\text{e-}05$, $-4.69\text{e-}05$

Supplementary Figure 4. Mediation analyses of the association between sPNNS-GS2 and T2D risk with (a) sPNNS-GS2 x body mass index (BMI) and (b) sPNNS-GS2 x waist-hip ratio (WHR). These effects were estimated using Aalen additive hazards models adjusted for age, educational level, physical activity, smoking status, family history of diabetes, personal history of hypertension, energy intake without alcohol, and hypercholesterolemia.