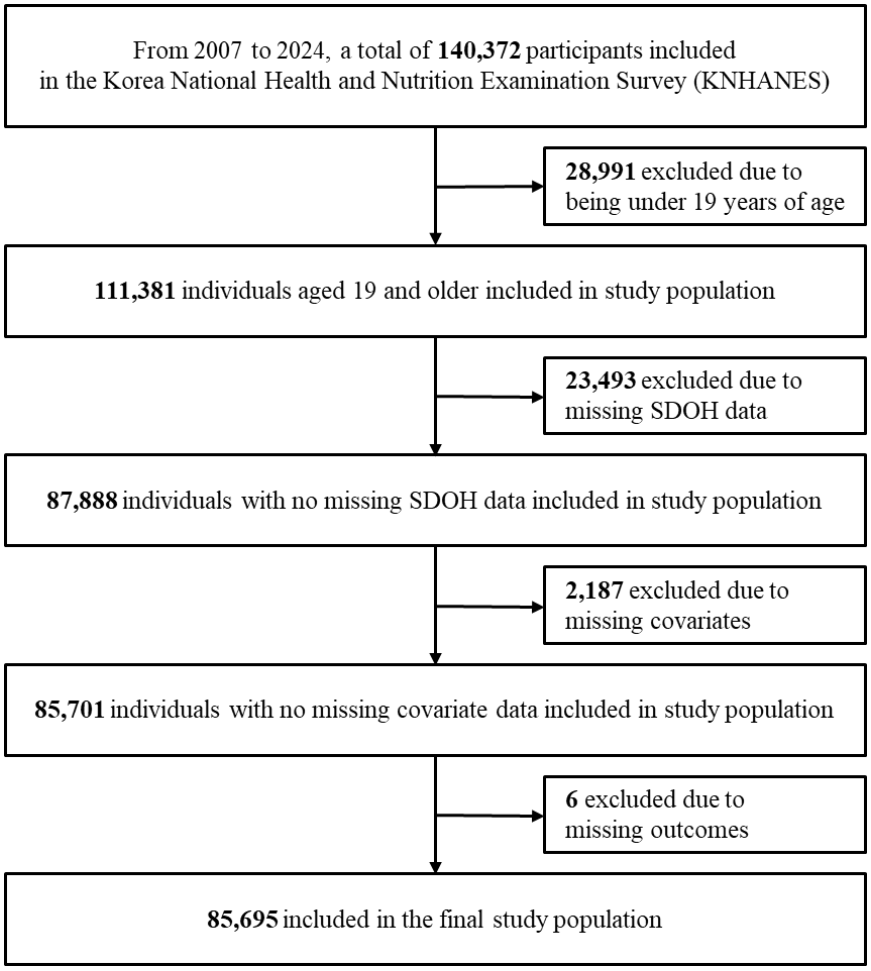


Supplementary Figure S1. Study population flow chart. Abbreviation: SDOH, social determinants of health.

Supplementary Table S1. Baseline characteristics of included and excluded participants based on data obtained from the KNHANES, 2007–2024 (included: *n*=85,695; excluded: 25,686)

Characteristic	Total included	Total excluded
Overall, *n* (%)	85,695	25,686
Crude rate, *n* (%)		
Sex, *n* (%)		
Male	35,392 (41.30)	13,193 (51.36)
Female	50,303 (58.70)	12,493 (48.64)
Age group, *n* (%)		
19–39	23,460 (27.38)	8,143 (31.70)
40–59	31,300 (36.52)	9,213 (35.87)
60–69	16,076 (18.76)	3,662 (14.26)
≥ 70	14,859 (17.34)	4,668 (18.17)
Region of residence, *n* (%)		
Urban	38,840 (45.32)	11,687 (45.50)
Rural	46,855 (54.68)	13,999 (54.50)
BMI group, *n* (%)*		
Underweight	3,673 (4.29)	910 (4.50)
Normal	33,254 (38.81)	7,653 (37.83)
Overweight	19,902 (23.22)	4,636 (22.91)
Obese	28,866 (33.68)	7,033 (34.76)
Smoking status, *n* (%)		
Never smoker	52,753 (61.56)	9,624 (52.80)
Ex-smoker	18,259 (21.31)	3,943 (21.63)
Current smoker	14,683 (17.13)	4,662 (25.57)
Drinking status, *n* (%)		
Never drinker	10,895 (12.71)	2,316 (12.74)
Ex-drinker	14,619 (17.06)	2,716 (14.94)
Current drinker	60,181 (70.23)	13,149 (72.32)
Blood pressure, *n* (%)		
Normal	37,774 (44.08)	7,392 (41.01)
Elevated	5,409 (6.31)	1,145 (6.35)
Stage 1 hypertension	14,831 (17.31)	3,471 (19.26)
Stage 2 hypertension	27,681 (32.30)	6,016 (33.38)
Physical activity, *n* (%)		
Insufficient	38,895 (45.39)	6,624 (44.97)
Sufficient	46,800 (54.61)	8,107 (55.03)
Education level, *n* (%)		
High	60,323 (70.39)	11,114 (73.02)
Low	25,372 (29.61)	4,107 (26.98)
Marital status, *n* (%)		
Married	60,567 (70.68)	16,251 (64.78)
Single, separated, widowed, or divorced	25,128 (29.32)	8,836 (35.22)
Household income, *n* (%)		
High	47,576 (55.52)	13,201 (53.95)
Low	38,119 (44.48)	11,270 (46.05)
Food security, *n* (%)		
Full security	45,951 (53.62)	6,980 (50.23)
Marginal, low, or very low security	39,744 (46.38)	6,917 (49.77)
Type of health insurance, *n* (%)		

Private	64,538 (75.31)	17,250 (72.53)
Government or none	21,157 (24.69)	6,532 (27.47)
Employment status, *n* (%)		
Employed, student, or retired	50,525 (58.96)	9,437 (63.81)
Unemployed	35,170 (41.04)	5,353 (36.19)
Home ownership, *n* (%)		
Own home	60,394 (70.48)	17,418 (68.45)
Rent home or other arrangement	25,301 (29.52)	8,028 (31.55)
SDOH burden score, *n* (%)		
0	10,037 (11.71)	201 (9.17)
1	18,739 (21.87)	440 (20.06)
2	19,216 (22.42)	429 (19.56)
3	15,138 (17.67)	377 (17.19)
4	11,300 (13.19)	307 (14.00)
5	6,693 (7.81)	235 (10.72)
≥ 6	4,572 (5.34)	204 (9.30)
Cumulative unfavorable SDOH, *n* (%)		
Low-burden (≤ 2)	47,992 (56.00)	1,070 (48.79)
High-burden (> 2)	37,703 (44.00)	1,123 (51.21)

Note. Abbreviations: BMI, body mass index; KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus. *According to Asian-Pacific guidelines, BMI is divided into four groups: underweight (< 18.5 kg/m^2), normal weight (18.5–22.9 kg/m^2), overweight (23.0–24.9 kg/m^2), and obese (≥ 25.0 kg/m^2).

Supplementary Table S2. Adjusted odds ratios for vulnerable groups with T2DM estimated using inverse probability weighting (IPW-OR [95% *CI*]) based on data obtained from the KNHANES

Variables	Overall (2007–2024)		Pre-pandemic (2007–2019)		Intra-pandemic (2020–2022)		Preliminary post-pandemic (2023–2024)	
	IPW-OR (95% *CI*)	*P*-value	IPW-OR (95% *CI*)	*P*-value	IPW-OR (95% *CI*)	*P*-value	IPW-OR (95% *CI*)	*P*-value
Sex								
Female	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Male	**1.36 (1.30 to 1.43)**	**< 0.001**	**1.29 (1.22 to 1.37)**	**< 0.001**	**1.40 (1.30 to 1.51)**	**< 0.001**	**1.54 (1.39 to 1.71)**	**< 0.001**
Age group								
19–39	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
40–59	**6.28 (5.60 to 7.04)**	**< 0.001**	**6.14 (5.38 to 7.01)**	**< 0.001**	**6.54 (5.45 to 7.84)**	**< 0.001**	**5.81 (4.46 to 7.57)**	**< 0.001**
60–69	**15.19 (13.55 to 17.01)**	**< 0.001**	**15.28 (13.37 to 17.46)**	**< 0.001**	**14.41 (12.06 to 17.22)**	**< 0.001**	**12.83 (9.88 to 16.67)**	**< 0.001**
≥ 70	**18.83 (16.82 to 21.09)**	**< 0.001**	**18.63 (16.32 to 21.27)**	**< 0.001**	**20.02 (16.78 to 23.87)**	**< 0.001**	**16.10 (12.33 to 21.02)**	**< 0.001**
Region of residence								
Urban	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Rural	**1.14 (1.08 to 1.20)**	**< 0.001**	**1.11 (1.04 to 1.19)**	**0.002**	**1.16 (1.06 to 1.26)**	**< 0.001**	1.12 (0.99 to 1.25)	0.067
BMI group*								
Underweight	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Normal	**2.21 (1.81 to 2.71)**	**< 0.001**	**2.21 (1.72 to 2.84)**	**< 0.001**	**2.57 (1.80 to 3.68)**	**< 0.001**	**1.71 (1.17 to 2.50)**	**0.006**
Overweight	**3.70 (3.02 to 4.54)**	**< 0.001**	**3.70 (2.87 to 4.77)**	**< 0.001**	**4.27 (2.98 to 6.11)**	**< 0.001**	**2.85 (1.95 to 4.16)**	**< 0.001**
Obese	**5.96 (4.88 to 7.28)**	**< 0.001**	**6.05 (4.73 to 7.74)**	**< 0.001**	**6.91 (4.85 to 9.85)**	**< 0.001**	**4.40 (3.03 to 6.40)**	**< 0.001**
Smoking status								
Never smoker	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Ex-smoker	**1.63 (1.54 to 1.73)**	**< 0.001**	**1.61 (1.50 to 1.72)**	**< 0.001**	**1.66 (1.53 to 1.80)**	**< 0.001**	**1.65 (1.47 to 1.85)**	**< 0.001**
Current smoker	**1.24 (1.16 to 1.32)**	**< 0.001**	**1.17 (1.09 to 1.26)**	**< 0.001**	**1.34 (1.22 to 1.48)**	**< 0.001**	**1.54 (1.34 to 1.78)**	**< 0.001**
Drinking status								
Never drinker	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Ex-drinker	**0.81 (0.75 to 0.87)**	**< 0.001**	**0.78 (0.71 to 0.85)**	**< 0.001**	**0.74 (0.65 to 0.83)**	**< 0.001**	**0.83 (0.70 to 1.00)**	**0.044**
Current drinker	**0.45 (0.42 to 0.48)**	**< 0.001**	**0.43 (0.40 to 0.47)**	**< 0.001**	**0.42 (0.38 to 0.46)**	**< 0.001**	**0.47 (0.40 to 0.55)**	**< 0.001**

Blood pressure								
Normal	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Elevated	**2.77 (2.49 to 3.07)**	**< 0.001**	**3.12 (2.73 to 3.55)**	**< 0.001**	**2.68 (2.29 to 3.13)**	**< 0.001**	**2.07 (1.68 to 2.55)**	**< 0.001**
Stage 1 hypertension	**2.05 (1.89 to 2.23)**	**< 0.001**	**2.04 (1.84 to 2.25)**	**< 0.001**	**1.91 (1.68 to 2.17)**	**< 0.001**	**2.21 (1.84 to 2.66)**	**< 0.001**
Stage 2 hypertension	**6.61 (6.20 to 7.04)**	**< 0.001**	**6.51 (6.02 to 7.03)**	**< 0.001**	**6.57 (5.96 to 7.25)**	**< 0.001**	**6.83 (5.98 to 7.81)**	**< 0.001**
Physical activity								
Sufficient	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Insufficient	**1.56 (1.49 to 1.64)**	**< 0.001**	**1.47 (1.38 to 1.55)**	**< 0.001**	**1.56 (1.45 to 1.68)**	**< 0.001**	**1.72 (1.54 to 1.91)**	**< 0.001**
Education level								
High	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Low	**3.47 (3.31 to 3.65)**	**< 0.001**	**3.70 (3.48 to 3.93)**	**< 0.001**	**3.56 (3.31 to 3.84)**	**< 0.001**	**3.18 (2.85 to 3.54)**	**< 0.001**
Marital status								
Married	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Single, separated, widowed, or divorced	**0.66 (0.62 to 0.70)**	**< 0.001**	**0.67 (0.63 to 0.72)**	**< 0.001**	**0.66 (0.60 to 0.71)**	**< 0.001**	**0.62 (0.55 to 0.70)**	**< 0.001**
Household income								
High	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Low	**1.99 (1.89 to 2.09)**	**< 0.001**	**2.04 (1.92 to 2.16)**	**< 0.001**	**2.16 (2.00 to 2.32)**	**< 0.001**	**1.79 (1.61 to 2.00)**	**< 0.001**
Food security								
Full security	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Marginal, low, or very low security	**1.15 (1.10 to 1.21)**	**< 0.001**	**1.19 (1.12 to 1.26)**	**< 0.001**	**1.27 (1.18 to 1.36)**	**< 0.001**	**1.35 (1.20 to 1.52)**	**< 0.001**
Type of health insurance								
Private	1.00 (ref)		1.00 (ref)		**1.00 (ref)**		1.00 (ref)	
Government or none	**2.43 (2.31 to 2.56)**	**< 0.001**	**2.66 (2.50 to 2.83)**	**< 0.001**	**2.56 (2.37 to 2.76)**	**< 0.001**	**2.08 (1.85 to 2.34)**	**< 0.001**
Employment status								
Employed, student, or retired	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Unemployed	**1.52 (1.45 to 1.60)**	**< 0.001**	**1.55 (1.45 to 1.64)**	**< 0.001**	**1.55 (1.44 to 1.67)**	**< 0.001**	**1.49 (1.34 to 1.65)**	**< 0.001**
Home ownership								
Own home	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Rent home or other arrangement	**0.85 (0.81 to 0.90)**	**< 0.001**	**0.83 (0.78 to 0.89)**	**< 0.001**	0.93 (0.86 to 1.01)	0.101	**0.85 (0.76 to 0.96)**	**0.008**

SDOH burden score								
0	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
1	**0.90 (0.82 to 0.99)**	**0.032**	0.93 (0.82 to 1.06)	0.301	0.95 (0.82 to 1.10)	0.486	0.90 (0.75 to 1.07)	0.230
2	**0.90 (0.81 to 0.99)**	**0.027**	0.91 (0.80 to 1.04)	0.163	0.98 (0.84 to 1.13)	0.754	1.03 (0.85 to 1.24)	0.776
3	**1.17 (1.06 to 1.29)**	**0.002**	**1.19 (1.04 to 1.35)**	**0.009**	**1.29 (1.11 to 1.50)**	**< 0.001**	**1.26 (1.05 to 1.52)**	**0.015**
4	**1.68 (1.52 to 1.86)**	**< 0.001**	**1.82 (1.60 to 2.07)**	**< 0.001**	**1.85 (1.59 to 2.15)**	**< 0.001**	**1.59 (1.29 to 1.96)**	**< 0.001**
5	**2.32 (2.08 to 2.58)**	**< 0.001**	**2.47 (2.16 to 2.84)**	**< 0.001**	**2.61 (2.22 to 3.06)**	**< 0.001**	**2.41 (1.92 to 3.02)**	**< 0.001**
≥ 6	**3.53 (3.16 to 3.94)**	**< 0.001**	**3.90 (3.40 to 4.49)**	**< 0.001**	**4.24 (3.60 to 5.00)**	**< 0.001**	**3.32 (2.57 to 4.31)**	**< 0.001**
Continuous value	**1.25 (1.23 to 1.27)**	**< 0.001**	**1.28 (1.26 to 1.30)**	**< 0.001**	**1.27 (1.24 to 1.30)**	**< 0.001**	**1.20 (1.16 to 1.25)**	**< 0.001**
Cumulative unfavorable SDOH								
Low-burden (≤2)	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
High-burden (>2)	**1.83 (1.74 to 1.92)**	**< 0.001**	**1.93 (1.81 to 2.04)**	**< 0.001**	**1.92 (1.78 to 2.07)**	**< 0.001**	**1.67 (1.50 to 1.87)**	**< 0.001**

Note. BMI, body mass index; CI, confidence interval; IPW-OR, inverse probability weighted odds ratio; KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus. *According to Asian-Pacific guidelines, BMI is divided into four groups: underweight (< 18.5 kg/m^2), normal weight (18.5–22.9 kg/m^2), overweight (23.0–24.9 kg/m^2), and obese (≥ 25.0 kg/m^2). The figures in bold indicate statistical significance (*P*-value < 0.05).

Supplementary Table S3. Weighted odds ratios for vulnerable groups with T2DM (weighted % [95% *CI*]) based on data obtained from the KNHANES

Variables	2010–2012 versus 2007–2009 (reference)		2013–2015 versus 2010–2012 (reference)		2016–2019 versus 2013–2015 (reference)		2020 versus 2016–2019 (reference)		2021 versus 2020 (reference)		2022 versus 2021 (reference)		2023 versus 2022 (reference)		2024 versus 2023 (reference)	
	wOR (95% *CI*)	*P*-value	wOR (95% *CI*)	*P*-value	wOR (95% *CI*)	*P*-value	wOR (95% *CI*)	*P*-value	wOR (95% *CI*)	*P*-value	wOR (95% *CI*)	*P*-value	wOR (95% *CI*)	*P*-value	wOR (95% *CI*)	*P*-value
Overall	**1.15 (1.04 to 1.27)**	**0.008**	**1.15 (1.04 to 1.27)**	**0.005**	1.07 (0.98 to 1.17)	0.118	**1.18 (1.04 to 1.35)**	**0.011**	1.01 (0.85 to 1.20)	0.890	0.92 (0.79 to 1.07)	0.275	0.99 (0.85 to 1.15)	0.870	1.15 (0.99 to 1.34)	0.061
Sex																
Male	1.15 (1.00 to 1.32)	0.058	**1.17 (1.03 to 1.33)**	**0.018**	1.08 (0.96 to 1.21)	0.195	**1.24 (1.05 to 1.45)**	**0.010**	1.01 (0.81 to 1.25)	0.967	0.95 (0.78 to 1.17)	0.649	0.99 (0.82 to 1.19)	0.924	1.11 (0.94 to 1.33)	0.226
Female	**1.15 (1.00 to 1.31)**	**0.044**	1.13 (0.99 to 1.28)	0.065	1.06 (0.95 to 1.19)	0.318	1.12 (0.94 to 1.33)	0.214	1.03 (0.82 to 1.29)	0.832	0.87 (0.71 to 1.08)	0.198	0.99 (0.80 to 1.22)	0.909	1.20 (0.98 to 1.47)	0.084
Age group																
19–39	1.08 (0.75 to 1.56)	0.675	0.84 (0.58 to 1.22)	0.367	1.23 (0.88 to 1.72)	0.223	1.04 (0.65 to 1.67)	0.856	0.85 (0.42 to 1.73)	0.654	1.20 (0.59 to 2.46)	0.615	0.97 (0.53 to 1.81)	0.934	1.25 (0.67 to 2.32)	0.481
40–59	1.13 (0.97 to 1.31)	0.133	1.06 (0.91 to 1.23)	0.453	1.02 (0.90 to 1.17)	0.759	**1.28 (1.05 to 1.56)**	**0.015**	0.89 (0.69 to 1.15)	0.367	1.04 (0.81 to 1.33)	0.780	0.88 (0.69 to 1.11)	0.270	1.05 (0.86 to 1.29)	0.613
60–69	0.96 (0.82 to 1.12)	0.591	**1.23 (1.06 to 1.44)**	**0.008**	**0.83 (0.72 to 0.96)**	**0.013**	**1.27 (1.02 to 1.58)**	**0.034**	0.94 (0.72 to 1.22)	0.625	0.81 (0.64 to 1.03)	0.080	1.10 (0.88 to 1.38)	0.390	1.15 (0.94 to 1.42)	0.178
≥ 70	**1.29 (1.07 to 1.55)**	**0.008**	**1.26 (1.08 to 1.48)**	**0.004**	1.04 (0.90 to 1.20)	0.589	1.04 (0.85 to 1.28)	0.708	1.12 (0.87 to 1.45)	0.383	**0.73 (0.58 to 0.92)**	**0.008**	1.02 (0.82 to 1.27)	0.846	1.19 (0.96 to 1.48)	0.104
Region of residence																
Urban	0.93 (0.80 to 1.09)	0.367	**1.40 (1.21 to 1.62)**	**< 0.001**	1.02 (0.90 to 1.16)	0.749	1.09 (0.87 to 1.36)	0.452	1.03 (0.77 to 1.38)	0.834	0.95 (0.74 to 1.21)	0.655	1.00 (0.80 to 1.25)	0.996	1.19 (0.95 to 1.49)	0.125
Rural	**1.36 (1.19 to 1.56)**	**< 0.001**	0.98 (0.86 to 1.11)	0.758	1.12 (1.00 to 1.26)	0.056	**1.26 (1.08 to 1.47)**	**0.003**	1.01 (0.82 to 1.24)	0.962	0.89 (0.73 to 1.08)	0.226	0.98 (0.80 to 1.20)	0.855	1.12 (0.92 to 1.37)	0.247
BMI group*																
Underweight	1.33 (0.69 to 2.58)	0.399	0.76 (0.38 to 1.51)	0.427	1.16 (0.58 to 2.32)	0.667	0.94 (0.23 to 3.83)	0.929	0.75 (0.16 to 3.41)	0.705	2.16 (0.79 to 5.90)	0.135	1.57 (0.63 to 3.89)	0.330	0.45 (0.17 to 1.19)	0.105

Normal	**1.33 (1.10 to 1.60)**	**0.004**	1.15 (0.97 to 1.36)	0.116	0.96 (0.83 to 1.12)	0.589	1.17 (0.92 to 1.48)	0.195	1.18 (0.87 to 1.60)	0.280	0.90 (0.68 to 1.17)	0.421	0.90 (0.69 to 1.17)	0.432	1.12 (0.87 to 1.45)	0.386
Overweight	1.17 (0.97 to 1.42)	0.102	**1.25 (1.04 to 1.49)**	**0.015**	1.01 (0.86 to 1.17)	0.923	**1.30 (1.03 to 1.64)**	**0.025**	0.81 (0.60 to 1.09)	0.157	0.92 (0.69 to 1.23)	0.587	1.19 (0.90 to 1.56)	0.229	1.15 (0.91 to 1.47)	0.245
Obese	1.05 (0.91 to 1.21)	0.534	1.11 (0.96 to 1.27)	0.152	**1.13 (1.01 to 1.27)**	**0.041**	1.07 (0.91 to 1.26)	0.412	1.07 (0.86 to 1.32)	0.566	0.92 (0.75 to 1.14)	0.444	0.94 (0.78 to 1.14)	0.552	1.17 (0.98 to 1.40)	0.077
Smoking status																
Never smoker	1.08 (0.94 to 1.23)	0.277	**1.16 (1.02 to 1.32)**	**0.021**	1.06 (0.94 to 1.18)	0.353	1.16 (0.98 to 1.37)	0.077	0.98 (0.79 to 1.23)	0.879	0.89 (0.73 to 1.10)	0.277	1.03 (0.84 to 1.27)	0.750	1.13 (0.92 to 1.38)	0.239
Ex-smoker	1.14 (0.95 to 1.38)	0.168	1.07 (0.89 to 1.28)	0.468	1.15 (0.99 to 1.34)	0.076	1.09 (0.89 to 1.35)	0.403	1.11 (0.86 to 1.44)	0.412	0.81 (0.63 to 1.04)	0.092	1.03 (0.80 to 1.32)	0.834	**1.27 (1.01 to 1.60)**	**0.045**
Current smoker	**1.31 (1.06 to 1.60)**	**0.011**	**1.25 (1.03 to 1.51)**	**0.022**	1.00 (0.84 to 1.18)	0.951	**1.36 (1.06 to 1.75)**	**0.017**	0.96 (0.67 to 1.37)	0.807	1.15 (0.81 to 1.62)	0.441	0.87 (0.66 to 1.15)	0.315	1.05 (0.79 to 1.40)	0.743
Drinking status																
Never drinker	**1.28 (1.04 to 1.57)**	**0.018**	**1.23 (1.01 to 1.50)**	**0.037**	1.12 (0.94 to 1.34)	0.218	1.07 (0.78 to 1.47)	0.684	0.96 (0.65 to 1.40)	0.824	0.97 (0.68 to 1.39)	0.863	0.85 (0.60 to 1.20)	0.356	1.35 (0.97 to 1.87)	0.073
Ex-drinker	0.92 (0.75 to 1.13)	0.415	1.07 (0.87 to 1.31)	0.526	1.13 (0.96 to 1.35)	0.145	1.12 (0.90 to 1.41)	0.315	1.14 (0.85 to 1.52)	0.385	0.91 (0.69 to 1.21)	0.520	1.05 (0.81 to 1.38)	0.707	0.99 (0.78 to 1.27)	0.964
Current drinker	**1.20 (1.05 to 1.37)**	**0.007**	**1.15 (1.02 to 1.30)**	**0.021**	1.07 (0.96 to 1.18)	0.220	**1.21 (1.04 to 1.41)**	**0.013**	0.95 (0.78 to 1.17)	0.631	0.95 (0.78 to 1.15)	0.577	0.99 (0.82 to 1.20)	0.937	1.19 (1.00 to 1.42)	0.054
Blood pressure																
Normal	1.20 (0.98 to 1.48)	0.081	1.14 (0.94 to 1.38)	0.185	1.06 (0.89 to 1.26)	0.500	1.22 (0.94 to 1.58)	0.138	0.97 (0.70 to 1.36)	0.874	0.92 (0.69 to 1.25)	0.600	0.95 (0.72 to 1.25)	0.715	1.15 (0.87 to 1.52)	0.339
Elevated	1.00 (0.69 to 1.47)	0.988	1.38 (0.99 to 1.94)	0.059	1.11 (0.84 to 1.47)	0.476	0.98 (0.67 to 1.43)	0.918	0.79 (0.49 to 1.28)	0.339	0.77 (0.47 to 1.26)	0.295	1.30 (0.82 to 2.07)	0.268	0.96 (0.62 to 1.49)	0.862
Stage 1 hypertension	1.12 (0.87 to 1.44)	0.372	1.23 (0.98 to 1.55)	0.073	**0.79 (0.64 to 0.96)**	**0.020**	**1.39 (1.06 to 1.82)**	**0.019**	1.09 (0.76 to 1.57)	0.637	1.06 (0.71 to 1.57)	0.780	0.83 (0.57 to 1.21)	0.322	0.98 (0.70 to 1.37)	0.906

Stage 2 hypertension	1.07 (0.94 to 1.21)	0.324	**1.26 (1.12 to 1.42)**	**< 0.001**	1.05 (0.94 to 1.18)	0.380	**1.18 (1.01 to 1.39)**	**0.043**	1.04 (0.85 to 1.26)	0.736	0.84 (0.69 to 1.01)	0.066	1.10 (0.92 to 1.32)	0.299	1.12 (0.95 to 1.32)	0.185
Physical activity																
Insufficient	**1.29 (1.10 to 1.52)**	**0.002**	**1.20 (1.05 to 1.37)**	**0.008**	1.04 (0.93 to 1.16)	0.505	1.09 (0.93 to 1.28)	0.281	1.17 (0.95 to 1.42)	0.134	0.90 (0.75 to 1.09)	0.279	0.99 (0.83 to 1.18)	0.901	**1.18 (1.00 to 1.38)**	**0.049**
Sufficient	1.07 (0.95 to 1.21)	0.259	1.06 (0.93 to 1.20)	0.394	0.99 (0.88 to 1.12)	0.882	**1.32 (1.09 to 1.59)**	**0.004**	0.81 (0.63 to 1.04)	0.092	1.01 (0.80 to 1.28)	0.931	0.98 (0.78 to 1.23)	0.843	1.09 (0.87 to 1.38)	0.461
Education level																
College or higher education	0.97 (0.84 to 1.12)	0.659	**1.26 (1.10 to 1.44)**	**0.001**	1.11 (0.99 to 1.25)	0.063	**1.31 (1.13 to 1.51)**	**< 0.001**	0.99 (0.82 to 1.20)	0.892	0.98 (0.81 to 1.17)	0.805	0.97 (0.81 to 1.16)	0.723	1.15 (0.97 to 1.36)	0.110
High school or lower	1.04 (0.91 to 1.19)	0.564	**1.21 (1.07 to 1.37)**	**0.002**	**1.15 (1.02 to 1.29)**	**0.018**	1.18 (0.99 to 1.41)	0.061	1.03 (0.83 to 1.27)	0.823	0.84 (0.68 to 1.04)	0.105	1.02 (0.83 to 1.26)	0.826	1.15 (0.94 to 1.40)	0.183
Marital status																
Married	1.12 (1.00 to 1.26)	0.053	**1.14 (1.02 to 1.27)**	**0.020**	1.09 (0.99 to 1.20)	0.094	**1.25 (1.07 to 1.45)**	**0.004**	0.99 (0.81 to 1.21)	0.916	0.90 (0.75 to 1.08)	0.265	1.03 (0.86 to 1.23)	0.750	1.18 (1.00 to 1.40)	0.052
Single, separated, widowed, or divorced	**1.26 (1.04 to 1.53)**	**0.018**	1.19 (1.00 to 1.43)	0.051	1.05 (0.90 to 1.23)	0.543	1.08 (0.87 to 1.33)	0.480	1.08 (0.83 to 1.41)	0.573	0.96 (0.74 to 1.25)	0.756	0.90 (0.69 to 1.18)	0.443	1.10 (0.84 to 1.43)	0.501
Household income																
High	**1.22 (1.05 to 1.42)**	**0.011**	1.06 (0.92 to 1.22)	0.432	1.08 (0.96 to 1.22)	0.210	**1.33 (1.13 to 1.56)**	**< 0.001**	0.83 (0.67 to 1.03)	0.097	1.05 (0.85 to 1.30)	0.646	1.05 (0.86 to 1.28)	0.664	**1.21 (1.01 to 1.46)**	**0.041**
Low	1.07 (0.95 to 1.21)	0.284	**1.30 (1.16 to 1.46)**	**< 0.001**	1.08 (0.97 to 1.20)	0.172	1.11 (0.94 to 1.31)	0.215	1.23 (1.00 to 1.51)	0.051	**0.78 (0.65 to 0.94)**	**0.009**	0.94 (0.78 to 1.13)	0.519	1.09 (0.89 to 1.33)	0.432
Food security																
Full security	**1.21 (1.03 to 1.41)**	**0.019**	**1.16 (1.01 to 1.34)**	**0.041**	1.05 (0.93 to 1.18)	0.435	**1.25 (1.06 to 1.47)**	**0.008**	0.96 (0.78 to 1.19)	0.723	0.91 (0.76 to 1.10)	0.340	1.01 (0.85 to 1.20)	0.900	**1.19 (1.01 to 1.40)**	**0.041**
Marginal, low, or very low security	1.12 (0.99 to 1.27)	0.084	**1.16 (1.03 to 1.31)**	**0.019**	**1.13 (1.01 to 1.27)**	**0.037**	1.15 (0.97 to 1.36)	0.117	1.11 (0.90 to 1.38)	0.321	0.96 (0.77 to 1.22)	0.756	0.95 (0.74 to 1.22)	0.688	1.18 (0.92 to 1.51)	0.194

Type of health insurance																
Private	1.12 (0.98 to 1.29)	0.093	**1.21 (1.06 to 1.37)**	**0.004**	**1.14 (1.03 to 1.27)**	**0.014**	**1.30 (1.13 to 1.49)**	**< 0.001**	0.95 (0.79 to 1.14)	0.561	1.00 (0.84 to 1.19)	0.986	0.99 (0.84 to 1.17)	0.910	1.17 (1.00 to 1.37)	0.057
Government or none	**1.28 (1.11 to 1.48)**	**< 0.001**	**1.25 (1.09 to 1.44)**	**0.002**	1.06 (0.93 to 1.21)	0.356	1.07 (0.87 to 1.31)	0.544	1.11 (0.85 to 1.45)	0.442	0.78 (0.61 to 1.00)	0.052	1.00 (0.78 to 1.29)	0.978	1.18 (0.92 to 1.51)	0.202
Employment status																
Employed, student, or retired	**1.18 (1.02 to 1.37)**	**0.026**	1.11 (0.97 to 1.26)	0.138	1.11 (0.99 to 1.24)	0.083	**1.21 (1.03 to 1.41)**	**0.022**	0.98 (0.80 to 1.20)	0.821	0.91 (0.74 to 1.12)	0.379	1.09 (0.89 to 1.32)	0.413	1.11 (0.93 to 1.31)	0.246
Unemployed	**1.15 (1.01 to 1.32)**	**0.042**	**1.19 (1.04 to 1.35)**	**0.009**	1.05 (0.93 to 1.18)	0.467	1.15 (0.97 to 1.37)	0.112	1.07 (0.85 to 1.34)	0.578	0.94 (0.76 to 1.16)	0.555	0.88 (0.71 to 1.09)	0.227	**1.24 (1.00 to 1.54)**	**0.046**
Home ownership																
Own home	**1.12 (1.00 to 1.26)**	**0.050**	**1.15 (1.04 to 1.29)**	**0.009**	1.04 (0.94 to 1.14)	0.484	**1.23 (1.06 to 1.41)**	**0.005**	0.90 (0.73 to 1.11)	0.315	0.97 (0.80 to 1.18)	0.749	1.07 (0.90 to 1.28)	0.447	1.11 (0.95 to 1.31)	0.194
Rent home or other arrangement	1.19 (0.98 to 1.44)	0.079	1.16 (0.97 to 1.39)	0.102	1.15 (0.98 to 1.34)	0.079	1.09 (0.86 to 1.38)	0.472	1.29 (0.99 to 1.70)	0.064	0.83 (0.66 to 1.05)	0.113	0.81 (0.63 to 1.05)	0.107	1.25 (0.95 to 1.63)	0.112
Cumulative unfavorable SDOH																
Low-burden (≤ 2)	1.11 (0.95 to 1.31)	0.190	**1.16 (1.00 to 1.34)**	**0.049**	1.12 (1.00 to 1.26)	0.057	**1.30 (1.10 to 1.53)**	**0.002**	0.87 (0.70 to 1.09)	0.222	1.06 (0.86 to 1.31)	0.582	1.04 (0.86 to 1.26)	0.675	1.12 (0.94 to 1.34)	0.202
High-burden (> 2)	**1.17 (1.04 to 1.33)**	**0.013**	**1.20 (1.07 to 1.34)**	**0.003**	1.08 (0.97 to 1.21)	0.157	1.12 (0.95 to 1.33)	0.170	1.19 (0.97 to 1.46)	0.100	**0.80 (0.66 to 0.97)**	**0.022**	0.93 (0.76 to 1.14)	0.494	**1.25 (1.00 to 1.55)**	**0.049**
SDOH burden score																
0	1.13 (0.78 to 1.63)	0.533	0.99 (0.69 to 1.42)	0.946	1.18 (0.89 to 1.58)	0.247	**1.50 (1.09 to 2.06)**	**0.012**	0.69 (0.45 to 1.05)	0.085	1.03 (0.65 to 1.61)	0.913	1.21 (0.83 to 1.74)	0.320	1.21 (0.91 to 1.61)	0.196
1	0.99 (0.78 to 1.25)	0.900	1.22 (0.97 to 1.54)	0.091	1.13 (0.92 to 1.37)	0.244	**1.33 (1.05 to 1.69)**	**0.020**	0.84 (0.59 to 1.19)	0.314	0.98 (0.69 to 1.39)	0.899	1.02 (0.74 to 1.41)	0.899	1.27 (0.95 to 1.71)	0.106
2	1.24 (0.98 to 1.57)	0.072	1.19 (0.96 to	0.112	1.09 (0.92 to	0.324	1.13 (0.85 to	0.403	1.09 (0.77 to 1.56)	0.626	1.17 (0.86 to	0.326	0.96 (0.72 to 1.29)	0.799	0.91 (0.68 to 1.21)	0.513

			1.46)		1.30)		1.51)				1.60)					
3	1.11 (0.88 to 1.39)	0.383	1.18 (0.96 to 1.45)	0.118	1.06 (0.89 to 1.27)	0.496	**1.31 (0.98 to 1.75)**	**0.066**	1.20 (0.84 to 1.73)	0.312	0.85 (0.62 to 1.19)	0.346	0.88 (0.65 to 1.20)	0.419	1.26 (0.92 to 1.72)	0.151
4	**1.32 (1.05 to 1.65)**	**0.018**	1.18 (0.95 to 1.45)	0.133	1.11 (0.92 to 1.35)	0.281	1.12 (0.84 to 1.49)	0.460	1.07 (0.74 to 1.54)	0.721	0.69 (0.47 to 1.01)	0.055	1.21 (0.83 to 1.76)	0.334	1.38 (0.97 to 1.97)	0.074
5	1.10 (0.85 to 1.43)	0.456	**1.42 (1.11 to 1.82)**	**0.006**	0.99 (0.80 to 1.23)	0.915	0.98 (0.70 to 1.37)	0.915	**1.55 (1.01 to 2.38)**	**0.043**	0.73 (0.47 to 1.11)	0.141	1.04 (0.68 to 1.58)	0.870	1.10 (0.70 to 1.73)	0.686
≥6	1.19 (0.90 to 1.57)	0.227	1.10 (0.84 to 1.44)	0.477	1.26 (1.00 to 1.59)	0.053	1.18 (0.80 to 1.75)	0.403	0.82 (0.50 to 1.33)	0.409	1.46 (0.93 to 2.30)	0.096	**0.53 (0.32 to 0.88)**	**0.014**	1.05 (0.61 to 1.83)	0.851

Note. Abbreviations: BMI, body mass index; CI, confidence interval; KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus; wOR, weighted odds ratio. *According to Asian-Pacific guidelines, BMI is divided into four groups: underweight (< 18.5 kg/m^2), normal weight (18.5–22.9 kg/m^2), overweight (23.0–24.9 kg/m^2), and obese (≥ 25.0 kg/m^2). The figures in bold indicate statistical significance (*P*-value < 0.05).

Supplementary Table S4. β–coefficients and β–difference in the weighted trend of T2DM between pre-, intra-, and preliminary post-pandemic with 95% *CI* based on data obtained from the KNHANES.

Group	Trends in the pre-pandemic, β (95% *CI*)	Trends in intra-pandemic, β (95% *CI*)	Trends in the preliminary post-pandemic, β (95% *CI*)	β_{diff} between pre- and intra-pandemic (95% *CI*)	β_{diff} between intra- and preliminary post-pandemic (95% *CI*)
Overall	**0.104 (0.078 to 0.130)**	**0.054 (0.015 to 0.092)**	0.075 (-0.011 to 0.162)	**-0.051 (-0.097 to -0.004)**	0.022 (-0.073 to 0.116)
Sex					
Male	**0.124 (0.085 to 0.163)**	**0.089 (0.030 to 0.147)**	0.066 (-0.055 to 0.187)	-0.035 (-0.106 to 0.035)	-0.023 (-0.158 to 0.112)
Female	**0.084 (0.053 to 0.115)**	0.018 (-0.029 to 0.064)	0.083 (-0.022 to 0.187)	**-0.066 (-0.122 to -0.011)**	0.065 (-0.050 to 0.179)
Age group					
19–39	0.005 (-0.016 to 0.025)	0.000 (-0.031 to 0.032)	0.023 (-0.053 to 0.100)	-0.004 (-0.041 to 0.033)	0.023 (-0.060 to 0.106)
40–59	**0.056 (0.015 to 0.097)**	**0.065 (0.002 to 0.129)**	-0.045 (-0.169 to 0.080)	0.009 (-0.067 to 0.085)	-0.110 (-0.250 to 0.030)
60–69	0.011 (-0.069 to 0.092)	0.019 (-0.083 to 0.122)	**0.219 (0.013 to 0.425)**	0.008 (-0.122 to 0.138)	0.200 (-0.030 to 0.430)
≥ 70	**0.315 (0.221 to 0.408)**	-0.036 (-0.151 to 0.079)	0.208 (-0.016 to 0.431)	**-0.351 (-0.499 to -0.203)**	0.244 (-0.007 to 0.495)
Region of residence					
Urban	**0.106 (0.068 to 0.144)**	0.033 (-0.024 to 0.090)	0.098 (-0.036 to 0.233)	**-0.074 (-0.142 to -0.005)**	0.066 (-0.080 to 0.212)
Rural	**0.103 (0.067 to 0.139)**	**0.068 (0.014 to 0.121)**	0.058 (-0.053 to 0.170)	-0.035 (-0.100 to 0.029)	-0.009 (-0.133 to 0.115)
BMI group*					
Underweight	0.004 (-0.057 to 0.065)	0.024 (-0.073 to 0.122)	-0.070 (-0.275 to 0.136)	0.020 (-0.094 to 0.135)	-0.094 (-0.322 to 0.133)
Normal	**0.063 (0.034 to 0.093)**	**0.070 (0.024 to 0.116)**	0.003 (-0.095 to 0.102)	0.007 (-0.048 to 0.061)	-0.067 (-0.175 to 0.042)
Overweight	**0.118 (0.072 to 0.165)**	0.003 (-0.065 to	**0.178 (0.025 to 0.331)**	**-0.115 (-0.198 to -**	**0.175 (0.007 to 0.342)**

		0.072)		**0.032)**	
Obese	**0.127 (0.075 to 0.178)**	0.045 (-0.029 to 0.118)	0.082 (-0.066 to 0.231)	-0.082 (-0.172 to 0.008)	0.037 (-0.128 to 0.203)
Smoking status					
Never smoker	**0.079 (0.049 to 0.110)**	0.023 (-0.021 to 0.068)	0.076 (-0.025 to 0.178)	**-0.056 (-0.110 to -0.002)**	0.053 (-0.058 to 0.164)
Ex-smoker	**0.128 (0.069 to 0.187)**	0.029 (-0.049 to 0.108)	**0.186 (0.022 to 0.350)**	**-0.099 (-0.197 to -0.001)**	0.157 (-0.025 to 0.339)
Current smoker	**0.142 (0.090 to 0.195)**	**0.165 (0.070 to 0.261)**	-0.065 (-0.259 to 0.130)	0.023 (-0.086 to 0.132)	**-0.230 (-0.447 to -0.014)**
Drinking status					
Never drinker	**0.270 (0.186 to 0.354)**	0.005 (-0.136 to 0.145)	0.120 (-0.192 to 0.432)	**-0.265 (-0.429 to -0.102)**	0.115 (-0.227 to 0.457)
Ex-drinker	0.062 (-0.010 to 0.133)	**0.099 (0.000 to 0.198)**	0.034 (-0.162 to 0.230)	0.038 (-0.084 to 0.160)	-0.065 (-0.285 to 0.155)
Current drinker	**0.097 (0.069 to 0.124)**	0.040 (-0.001 to 0.082)	0.084 (-0.006 to 0.175)	**-0.056 (-0.106 to -0.007)**	0.044 (-0.055 to 0.144)
Blood pressure					
Normal	**0.048 (0.025 to 0.071)**	0.023 (-0.011 to 0.058)	0.022 (-0.051 to 0.096)	-0.025 (-0.066 to 0.017)	-0.001 (-0.083 to 0.080)
Elevated	**0.178 (0.070 to 0.287)**	**-0.170 (-0.290 to -0.051)**	0.104 (-0.113 to 0.322)	**-0.349 (-0.511 to -0.187)**	**0.275 (0.027 to 0.523)**
Stage 1 hypertension	0.021 (-0.030 to 0.073)	**0.159 (0.068 to 0.251)**	-0.104 (-0.296 to 0.088)	**0.138 (0.033 to 0.243)**	**-0.263 (-0.476 to -0.051)**
Stage 2 hypertension	**0.217 (0.155 to 0.278)**	0.066 (-0.022 to 0.155)	**0.210 (0.023 to 0.396)**	**-0.150 (-0.258 to -0.043)**	0.143 (-0.063 to 0.350)
Physical activity					
Insufficient	**0.143 (0.102 to 0.185)**	**0.085 (0.029 to 0.141)**	0.105 (-0.013 to 0.224)	-0.058 (-0.128 to 0.011)	0.021 (-0.110 to 0.151)
Sufficient	**0.032 (0.002 to 0.062)**	0.025 (-0.022 to 0.072)	0.029 (-0.077 to 0.135)	-0.007 (-0.063 to 0.048)	0.005 (-0.111 to 0.120)
Education level					

College or higher education	**0.077 (0.053 to 0.102)**	**0.077 (0.040 to 0.114)**	0.050 (-0.028 to 0.128)	0.000 (-0.045 to 0.044)	-0.027 (-0.113 to 0.059)
High school or lower	**0.234 (0.168 to 0.299)**	0.066 (-0.032 to 0.164)	0.159 (-0.062 to 0.380)	**-0.167 (-0.285 to -0.050)**	0.093 (-0.148 to 0.335)
Marital status					
Married	**0.110 (0.077 to 0.142)**	**0.066 (0.016 to 0.116)**	**0.127 (0.018 to 0.235)**	-0.044 (-0.103 to 0.016)	0.061 (-0.059 to 0.180)
Single, separated, widowed, or divorced	**0.105 (0.066 to 0.143)**	0.043 (-0.014 to 0.100)	-0.005 (-0.129 to 0.119)	-0.062 (-0.131 to 0.007)	-0.048 (-0.185 to 0.089)
Household income					
High	**0.069 (0.040 to 0.097)**	**0.044 (0.003 to 0.085)**	**0.115 (0.024 to 0.205)**	-0.025 (-0.074 to 0.025)	0.071 (-0.028 to 0.170)
Low	**0.180 (0.137 to 0.223)**	**0.085 (0.019 to 0.150)**	0.015 (-0.136 to 0.166)	**-0.096 (-0.174 to -0.018)**	-0.069 (-0.234 to 0.095)
Food security					
Full security	**0.100 (0.066 to 0.134)**	**0.046 (0.002 to 0.090)**	**0.101 (0.012 to 0.189)**	-0.054 (-0.110 to 0.001)	0.055 (-0.044 to 0.153)
Marginal, low, or very low security	**0.129 (0.092 to 0.165)**	**0.107 (0.037 to 0.177)**	0.068 (-0.114 to 0.250)	-0.021 (-0.100 to 0.057)	-0.039 (-0.234 to 0.156)
Type of health insurance					
Private	**0.108 (0.083 to 0.134)**	**0.076 (0.037 to 0.115)**	0.078 (-0.008 to 0.165)	-0.032 (-0.079 to 0.014)	0.002 (-0.092 to 0.097)
Government or none	**0.269 (0.206 to 0.332)**	0.018 (-0.083 to 0.120)	0.141 (-0.087 to 0.369)	**-0.251 (-0.371 to -0.131)**	0.123 (-0.127 to 0.372)
Employment status					
Employed, student, or retired	**0.092 (0.062 to 0.123)**	0.039 (-0.007 to 0.085)	0.093 (-0.004 to 0.189)	-0.054 (-0.109 to 0.002)	0.054 (-0.053 to 0.161)
Unemployed	**0.133 (0.089 to 0.176)**	**0.083 (0.018 to 0.149)**	0.059 (-0.089 to 0.207)	-0.049 (-0.128 to 0.029)	-0.025 (-0.187 to 0.137)
Home ownership					
Own home	**0.094 (0.063 to 0.125)**	0.035 (-0.012 to 0.082)	**0.104 (0.005 to 0.204)**	**-0.059 (-0.115 to -0.002)**	0.069 (-0.041 to 0.179)

Rent home or other arrangement	**0.125 (0.081 to 0.169)**	**0.092 (0.028 to 0.156)**	0.004 (-0.138 to 0.145)	-0.033 (-0.110 to 0.045)	-0.089 (-0.244 to 0.067)
SDOH burden score					
0	0.064 (-0.004 to 0.132)	0.015 (-0.073 to 0.104)	**0.189 (0.017 to 0.360)**	-0.049 (-0.161 to 0.062)	0.174 (-0.019 to 0.367)
1	**0.082 (0.036 to 0.127)**	0.033 (-0.033 to 0.099)	0.126 (-0.008 to 0.260)	-0.049 (-0.129 to 0.031)	0.093 (-0.056 to 0.243)
2	**0.104 (0.062 to 0.146)**	**0.109 (0.038 to 0.180)**	-0.068 (-0.224 to 0.088)	0.005 (-0.077 to 0.087)	**-0.177 (-0.348 to -0.006)**
3	**0.097 (0.043 to 0.152)**	**0.151 (0.060 to 0.242)**	0.062 (-0.144 to 0.267)	0.054 (-0.052 to 0.160)	-0.089 (-0.314 to 0.135)
4	**0.202 (0.127 to 0.277)**	-0.023 (-0.144 to 0.097)	**0.364 (0.085 to 0.643)**	**-0.226 (-0.367 to -0.084)**	**0.388 (0.084 to 0.691)**
5	**0.240 (0.136 to 0.345)**	0.155 (-0.023 to 0.333)	0.116 (-0.304 to 0.537)	-0.086 (-0.292 to 0.121)	-0.038 (-0.495 to 0.418)
≥ 6	**0.310 (0.163 to 0.457)**	0.157 (-0.079 to 0.394)	-0.660 (-1.258 to -0.062)	-0.153 (-0.432 to 0.126)	**-0.818 (-1.461 to -0.175)**
Cumulative unfavorable SDOH					
Low-burden (≤ 2)	**0.088 (0.059 to 0.117)**	**0.056 (0.014 to 0.098)**	0.078 (-0.010 to 0.167)	-0.032 (-0.083 to 0.019)	0.022 (-0.076 to 0.120)
High-burden (> 2)	**0.166 (0.123 to 0.209)**	**0.083 (0.016 to 0.150)**	0.107 (-0.059 to 0.273)	**-0.083 (-0.163 to -0.003)**	0.024 (-0.155 to 0.203)

Note. Abbreviations: BMI, body mass index; *CI*, confidence interval; KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus. *According to Asian-Pacific guidelines, BMI is divided into four groups: underweight (< 18.5 kg/m^2), normal weight (18.5–22.9 kg/m^2), overweight (23.0–24.9 kg/m^2), and obese (≥ 25.0 kg/m^2). The figures in bold indicate statistical significance (*P*-value < 0.05). P for interaction (period × pandemic phase) = 0.034

Supplementary Table S5. Age-standardized weighted trends in the prevalence of T2DM by SDOH pre-, intra-, preliminary post-pandemic (weighted % [95% *CI*]) based on data obtained from the KNHANES

Group	Pre-pandemic				Intra-pandemic			Preliminary post-pandemic	
	2007–2009	2010–2012	2013–2015	2016–2019	2020	2021	2022	2023	2024
Overall	8.78 (8.18 to 9.37)	9.46 (8.86 to 10.06)	10.31 (9.68 to 10.95)	10.26 (9.74 to 10.77)	11.79 (10.61 to 12.97)	11.30 (10.03 to 12.57)	10.41 (9.45 to 11.37)	10.17 (9.16 to 11.18)	11.25 (10.18 to 12.32)
Education level									
High	6.34 (5.78 to 6.91)	5.88 (5.30 to 6.46)	6.98 (6.38 to 7.57)	7.34 (6.86 to 7.82)	9.14 (8.08 to 10.21)	8.69 (7.52 to 9.86)	8.46 (7.47 to 9.45)	8.08 (7.10 to 9.07)	9.06 (8.10 to 10.02)
Low	19.02 (17.39 to 20.64)	19.49 (18.18 to 20.79)	22.70 (21.12 to 24.28)	24.77 (23.43 to 26.12)	28.39 (25.10 to 31.68)	28.60 (25.50 to 31.70)	24.87 (21.84 to 27.89)	25.77 (22.99 to 28.56)	28.07 (24.98 to 31.16)
Marital status									
Married	9.79 (9.03 to 10.55)	10.44 (9.70 to 11.17)	11.28 (10.51 to 12.04)	11.59 (10.95 to 12.24)	13.89 (12.21 to 15.57)	13.06 (11.26 to 14.86)	11.78 (10.41 to 13.15)	12.06 (10.68 to 13.44)	13.85 (12.46 to 15.23)
Single, separated, widowed, or divorced	6.44 (5.57 to 7.31)	7.39 (6.48 to 8.29)	8.38 (7.42 to 9.34)	7.78 (7.05 to 8.52)	8.41 (7.00 to 9.82)	8.55 (6.95 to 10.14)	8.28 (6.79 to 9.77)	7.40 (6.07 to 8.73)	7.52 (6.07 to 8.97)
Household income									
High	6.37 (5.71 to 7.03)	7.31 (6.59 to 8.04)	7.39 (6.74 to 8.04)	7.54 (7.00 to 8.08)	9.40 (8.16 to 10.65)	7.82 (6.58 to 9.05)	7.84 (6.79 to 8.88)	8.24 (7.14 to 9.34)	9.59 (8.44 to 10.74)
Low	12.16 (11.17 to 13.15)	12.32 (11.45 to 13.19)	15.00 (13.91 to 16.10)	14.97 (14.08 to 15.85)	16.56 (14.36 to 18.76)	18.56 (16.41 to 20.72)	15.34 (13.52 to 17.16)	14.11 (12.37 to 15.85)	14.56 (12.32 to 16.80)
Food security									
Full security	7.65 (6.87 to 8.43)	8.63 (7.75 to 9.50)	9.54 (8.73 to 10.34)	9.33 (8.69 to 9.97)	11.08 (9.66 to 12.50)	10.18 (8.70 to 11.65)	9.27 (8.25 to 10.30)	9.38 (8.27 to 10.50)	10.63 (9.56 to 11.70)
Marginal, low, or very low security	9.58 (8.78 to 10.38)	10.09 (9.30 to 10.88)	11.07 (10.17 to 11.97)	11.52 (10.77 to 12.27)	13.16 (11.30 to 15.02)	13.72 (11.93 to 15.51)	13.34 (11.13 to 15.56)	12.26 (10.43 to 14.10)	13.95 (11.48 to 16.42)

Type of health insurance									
Private	6.42 (5.85 to 7.00)	6.84 (6.23 to 7.45)	7.82 (7.20 to 8.44)	8.39 (7.89 to 8.89)	10.34 (9.26 to 11.41)	9.57 (8.36 to 10.77)	9.36 (8.34 to 10.37)	9.16 (8.14 to 10.18)	10.31 (9.24 to 11.39)
Government or none	14.70 (13.36 to 16.05)	17.40 (16.00 to 18.81)	20.46 (18.81 to 22.11)	20.40 (18.97 to 21.83)	21.46 (18.10 to 24.81)	21.77 (18.45 to 25.09)	18.22 (15.47 to 20.98)	18.06 (15.40 to 20.73)	20.25 (16.70 to 23.79)
Employment status									
Employed, student, or retired	7.27 (6.53 to 8.01)	8.16 (7.42 to 8.90)	8.60 (7.88 to 9.32)	9.00 (8.41 to 9.59)	10.34 (9.00 to 11.69)	9.83 (8.44 to 11.22)	8.80 (7.55 to 10.05)	9.41 (8.32 to 10.50)	10.25 (9.10 to 11.39)
Unemployed	11.03 (10.04 to 12.03)	11.77 (10.82 to 12.72)	13.22 (12.15 to 14.30)	12.62 (11.75 to 13.49)	14.38 (12.57 to 16.19)	14.13 (12.02 to 16.24)	13.76 (11.95 to 15.56)	11.88 (10.25 to 13.51)	13.61 (11.66 to 15.57)
Home ownership									
Own home	9.41 (8.68 to 10.14)	9.99 (9.28 to 10.70)	10.98 (10.24 to 11.72)	10.63 (10.03 to 11.22)	12.52 (11.15 to 13.89)	10.82 (9.25 to 12.39)	10.42 (9.21 to 11.64)	11.03 (9.81 to 12.26)	11.91 (10.79 to 13.02)
Rent home or other arrangement	7.53 (6.57 to 8.49)	8.30 (7.29 to 9.31)	9.07 (8.08 to 10.06)	9.53 (8.64 to 10.42)	10.38 (8.38 to 12.39)	12.20 (10.32 to 14.08)	10.39 (8.72 to 12.06)	8.47 (6.93 to 10.01)	9.84 (7.81 to 11.87)
SDOH burden score									
0	7.06 (5.38 to 8.74)	7.72 (5.79 to 9.65)	7.25 (5.61 to 8.90)	8.45 (7.23 to 9.66)	11.87 (8.91 to 14.83)	8.17 (5.56 to 10.78)	7.83 (5.49 to 10.17)	9.69 (7.64 to 11.74)	11.47 (9.38 to 13.56)
1	6.76 (5.68 to 7.84)	6.41 (5.40 to 7.42)	7.53 (6.41 to 8.65)	8.05 (7.15 to 8.94)	9.71 (7.84 to 11.58)	8.32 (6.00 to 10.64)	7.79 (6.11 to 9.47)	7.93 (6.14 to 9.71)	9.93 (8.16 to 11.69)
2	5.85 (4.88 to 6.82)	6.81 (5.80 to 7.81)	7.62 (6.64 to 8.60)	7.67 (6.86 to 8.47)	8.13 (6.10 to 10.17)	8.88 (6.82 to 10.95)	10.07 (7.91 to 12.22)	9.65 (7.77 to 11.54)	8.10 (6.41 to 9.79)
3	8.31 (7.03 to 9.59)	8.66 (7.42 to 9.91)	9.56 (8.37 to 10.76)	9.47 (8.40 to 10.53)	12.34 (9.44 to 15.25)	13.05 (10.27 to 15.84)	11.69 (9.21 to 14.17)	9.64 (7.73 to 11.55)	11.69 (9.00 to 14.37)
4	10.64 (9.00 to 12.27)	12.92 (11.26 to 14.58)	14.43 (12.52 to 16.35)	14.72 (13.13 to 16.31)	16.27 (12.49 to 20.06)	16.46 (12.95 to 19.96)	12.06 (8.55 to 15.58)	13.27 (10.48 to 16.07)	17.22 (12.69 to 21.75)

5	15.09 (12.66 to 17.51)	15.49 (13.11 to 17.86)	20.31 (17.51 to 23.11)	19.15 (17.02 to 21.28)	19.42 (14.18 to 24.66)	25.09 (19.01 to 31.17)	20.15 (14.87 to 25.44)	21.24 (15.73 to 26.75)	21.07 (13.94 to 28.19)
≥ 6	21.33 (18.03 to 24.63)	23.98 (20.34 to 27.62)	25.57 (22.06 to 29.09)	29.64 (26.45 to 32.84)	32.68 (24.54 to 40.82)	28.54 (21.53 to 35.55)	37.43 (29.68 to 45.18)	24.14 (17.34 to 30.94)	24.01 (16.01 to 32.01)
Cumulative unfavorable SDOH									
Low-burden (≤ 2)	6.41 (5.72 to 7.10)	6.81 (6.08 to 7.53)	7.52 (6.86 to 8.18)	7.99 (7.44 to 8.54)	9.66 (8.35 to 10.97)	8.48 (7.14 to 9.83)	8.60 (7.48 to 9.71)	8.99 (7.85 to 10.14)	9.79 (8.75 to 10.84)
High-burden (> 2)	11.59 (10.60 to 12.57)	12.67 (11.76 to 13.57)	14.30 (13.26 to 15.34)	14.17 (13.28 to 15.06)	16.01 (13.96 to 18.06)	17.16 (15.10 to 19.23)	14.41 (12.56 to 16.26)	12.94 (11.23 to 14.65)	15.17 (12.63 to 17.70)

Note. Abbreviations: *CI*, confidence interval; KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus.

Supplementary Table S6. Age-standardized adjusted odds ratios for vulnerable groups with T2DM by SDOH (*aOR* [95% *CI*]) based on data obtained from the KNHANES

Variables	Overall (2007–2024)		Pre-pandemic (2007–2019)		Intra-pandemic (2020–2022)		Preliminary post-pandemic (2023–2024)	
	aOR (95% *CI*)[a]	*P*-value	*aOR* (95% *CI*)	*P*-value	*aOR* (95% *CI*)	*P*-value	*aOR* (95% *CI*)	*P*-value
Education level								
High	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Low	**1.23 (1.14 to 1.32)**	**< 0.001**	**1.34 (1.23 to 1.45)**	**< 0.001**	**1.27 (1.13 to 1.44)**	**< 0.001**	**1.16 (1.00 to 1.34)**	**0.048**
Marital status								
Married	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Single, separated, widowed, or divorced	**1.10 (1.02 to 1.19)**	**0.016**	1.02 (0.94 to 1.10)	0.697	**1.19 (1.05 to 1.34)**	**0.006**	1.11 (0.97 to 1.28)	0.135
Household income								
High	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Low	**1.25 (1.17 to 1.35)**	**< 0.001**	**1.30 (1.21 to 1.39)**	**< 0.001**	**1.38 (1.24 to 1.55)**	**< 0.001**	**1.17 (1.02 to 1.34)**	**0.030**
Food security								
Full security	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Marginal, low, or very low security	1.06 (0.99 to 1.12)	0.078	1.07 (1.00 to 1.14)	0.055	1.09 (0.98 to 1.20)	0.109	**1.18 (1.02 to 1.35)**	**0.022**
Type of health insurance								
Private	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Government or none	**1.26 (1.18 to 1.35)**	**< 0.001**	**1.43 (1.31 to 1.55)**	**< 0.001**	**1.31 (1.17 to 1.47)**	**< 0.001**	1.09 (0.94 to 1.26)	0.261
Employment stats								
Employed, student, or retired	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Unemployed	**1.26 (1.17 to 1.35)**	**< 0.001**	**1.28 (1.19 to 1.38)**	**< 0.001**	**1.34 (1.20 to 1.50)**	**< 0.001**	**1.20 (1.04 to 1.37)**	**0.010**
Home ownership								
Own home	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	

Rent home or other arrangement	**1.16 (1.08 to 1.25)**	**< 0.001**	**1.09 (1.01 to 1.17)**	**0.019**	**1.28 (1.14 to 1.44)**	**< 0.001**	**1.15 (1.01 to 1.33)**	**0.042**
SDOH burden score								
0	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
1	1.11 (0.98 to 1.25)	0.097	1.09 (0.95 to 1.25)	0.216	1.19 (0.99 to 1.43)	0.069	1.14 (0.93 to 1.39)	0.201
2	**1.16 (1.02 to 1.32)**	**0.022**	1.12 (0.98 to 1.29)	0.108	**1.32 (1.08 to 1.61)**	**0.008**	**1.28 (1.03 to 1.60)**	**0.027**
3	**1.32 (1.17 to 1.50)**	**< 0.001**	**1.35 (1.17 to 1.56)**	**< 0.001**	**1.54 (1.25 to 1.89)**	**< 0.001**	**1.27 (1.02 to 1.59)**	**0.032**
4	**1.47 (1.29 to 1.68)**	**< 0.001**	**1.60 (1.37 to 1.86)**	**< 0.001**	**1.65 (1.33 to 2.05)**	**< 0.001**	**1.37 (1.05 to 1.77)**	**0.019**
5	**1.66 (1.44 to 1.92)**	**< 0.001**	**1.70 (1.44 to 2.00)**	**< 0.001**	**1.96 (1.55 to 2.48)**	**< 0.001**	**1.72 (1.30 to 2.28)**	**< 0.001**
≥ 6	**1.80 (1.56 to 2.09)**	**< 0.001**	**1.91 (1.61 to 2.26)**	**< 0.001**	**2.48 (1.98 to 3.12)**	**< 0.001**	**1.72 (1.27 to 2.32)**	**< 0.001**
Continuous value	**1.24 (1.21 to 1.26)**	**< 0.001**	**1.12 (1.10 to 1.15)**	**< 0.001**	**1.15 (1.11 to 1.19)**	**< 0.001**	**1.09 (1.05 to 1.14)**	**< 0.001**
Cumulative unfavorable SDOH								
Low-burden (≤ 2)	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
High-burden (> 2)	**1.11 (1.08 to 1.13)**	**< 0.001**	**1.40 (1.29 to 1.51)**	**< 0.001**	**1.43 (1.27 to 1.60)**	**< 0.001**	**1.20 (1.04 to 1.38)**	**0.011**

Note. Abbreviations: aOR, adjusted odds ratio; *CI*, confidence interval; KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus. The figures in bold indicate statistical significance (*P*-value < 0.05). [a]This model was adjusted for all sociodemographic variables.

Supplementary Table S7. Adjusted odds ratios for T2DM according to weighted SDOH burden score across pandemic periods based on data from the KNHANES.

Variables	Overall (2007–2024)		Pre-pandemic (2007–2019)		Intra-pandemic (2020–2022)		Preliminary post-pandemic (2023–2024)	
	aOR (95% *CI*)[a]	*P*-value	*aOR* (95% *CI*)	*P*-value	*aOR* (95% *CI*)	*P*-value	*aOR* (95% *CI*)	*P*-value
Weighted SDOH burden score[b]								
Low	1.00 (ref)		1.00 (ref)		1.00 (ref)		1.00 (ref)	
Middle-low	**1.19 (1.09 to 1.29)**	**< 0.001**	**1.22 (1.09 to 1.36)**	**< 0.001**	**1.30 (1.15 to 1.46)**	**< 0.001**	1.09 (0.92 to 1.29)	0.309
Middle-high	**1.34 (1.23 to 1.46)**	**< 0.001**	**1.41 (1.27 to 1.57)**	**< 0.001**	**1.45 (1.28 to 1.65)**	**< 0.001**	**1.23 (1.03 to 1.48)**	**0.023**
High	**1.71 (1.56 to 1.88)**	**< 0.001**	**1.85 (1.65 to 2.08)**	**< 0.001**	**1.89 (1.65 to 2.16)**	**< 0.001**	**1.42 (1.17 to 1.72)**	**< 0.001**
Continuous value	**1.89 (1.72 to 2.09)**	**< 0.001**	**1.95 (1.75 to 2.17)**	**< 0.001**	**1.86 (1.65 to 2.09)**	**< 0.001**	**1.87 (1.41 to 2.48)**	**< 0.001**

Note. Abbreviations: *aOR*, adjusted odds ratio; *CI*, confidence interval; KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus. The figures in bold indicate statistical significance (*P*-value < 0.05). [a]This model was adjusted for all sociodemographic variables. [b]The weighted SDOH score was categorized into quartiles using the following cutoffs: Q1 (0–0.1335), Q2 (0.1336–0.3536), Q3 (0.3537–0.6233), and Q4 (0.6234–1.1956).

Supplementary Table S8. Mediation analysis of the association between SDOH burden score and T2DM through lifestyle-related mediators based on data from the KNHANES.

Mediator	Effect	Effect size, β (95% *CI*)	*P*-value
Overweight/obesity	ACME	-0.004 (-0.007 to 0.003)	0.456
	ADE	**0.318 (0.269 to 0.373)**	**< 0.001**
	Total effect	**0.314 (0.266 to 0.371)**	**< 0.001**
	Proportion Mediated	-0.012 (-0.021 to 0.010)	0.456
Current smoking	ACME	**0.011 (0.007 to 0.016)**	**< 0.001**
	ADE	**0.293 (0.242 to 0.340)**	**< 0.001**
	Total effect	**0.304 (0.252 to 0.352)**	**< 0.001**
	Proportion Mediated	**0.036 (0.024 to 0.052)**	**< 0.001**
Current drinking	ACME	**0.020 (0.016 to 0.025)**	**< 0.001**
	ADE	**0.286 (0.238 to 0.340)**	**< 0.001**
	Total effect	**0.306 (0.257 to 0.360)**	**< 0.001**
	Proportion Mediated	**0.065 (0.050 to 0.087)**	**< 0.001**
Insufficient physical activity	ACME	0.000 (-0.003 to 0.001)	0.240
	ADE	**0.305 (0.257 to 0.355)**	**< 0.001**
	Total effect	**0.305 (0.258 to 0.355)**	**< 0.001**
	Proportion Mediated	0.000 (-0.010 to 0.002)	0.240

Note. Abbreviations: KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health; T2DM, type 2 diabetes mellitus. The figures in bold indicate statistical significance (*P*-value < 0.05).

Supplementary Table S9. Variance inflation factors for SDOH variables based on data from the KNHANES.

SDOH variables	**Variance inflation**	***P*-value**
Education level	1.21	< 0.001
Marrital status	1.06	< 0.001
Household income	1.25	< 0.001
Food security	1.06	0.001
Type of health insurance	1.19	< 0.001
Employment status	1.07	< 0.001
Home ownership	1.07	< 0.001

Note. Abbreviations: KNHANES, Korea National Health and Nutrition Examination Survey; SDOH, social determinants of health.