

Supplementary Table 2. GLMs (gamma family with log link) for the association between HbA1c and healthcare costs

Cost category	Variable	B	Standard error	t	p value
Total cost	HbA1c	0.0053	0.0041	1.299	0.197
Inpatient cost	HbA1c	-0.0055	0.0047	-1.179	0.239
Outpatient cost	HbA1c	0.0580	0.0062	9.824	< 0.001
Out-of-pocket cost	HbA1c	0.0170	0.0044	3.862	0.000
Insurance expenditure	HbA1c	0.0011	0.0046	0.241	0.810

GLM, generalized linear models; HbA1c, hemoglobin A1c; BMI, body mass index; CKD, chronic kidney disease; SDE, serious disease exemption.

Coefficients (B) and standard errors were obtained from GLMs with gamma distribution and log link.

B estimates are on the log-cost scale; the percent change in cost per 1-percentage-point increase in HbA1c is calculated as $(e^B - 1) \times 100\%$. For example, for outpatient cost, $B \approx 0.058$ implies $\approx 6.0\%$ higher cost per +1% HbA1c; for out-of-pocket cost, $B \approx 0.017$ implies $\approx 1.7\%$ higher cost. Two-tailed tests were performed.

Models adjusted for age, sex, BMI, CKD, cancer, SDE status, and insurance class (reference: National Health Insurance; class 1 = medical aid; class 2 = without insurance coverage).

Supplementary Table 3. Healthcare costs by HbA1c category in key clinical subgroups

	Non-DM				DM			
	NG (n = 50,913)	MG (n = 3,735)	HG (n = 889)	p value	NG (n = 11,048)	MG (n = 11,330)	HG (n = 8,502)	p value
Total cost	6,549.0	4,467.0	3,430.0	< 0.001	14,204.0	10,272.0	10,126.0	< 0.001
OOP cost	1,928.0	1,443.0	1,134.0	< 0.001	3,209.0	2,708.0	2,749.0	< 0.001
IE cost	4,322.0	2,934.0	2,217.0	< 0.001	10,508.0	7,215.0	7,112.0	< 0.001
	Without CKD				With CKD			
	NG (n = 46,261)	MG (n = 10,496)	HG (n = 6,436)	p value	NG (n = 15,700)	MG (n = 4,569)	HG (n = 2,955)	p value
Total cost	6,389.0	6,769.0	6,764.0	< 0.001	11,620.0	13,408.0	15,204.0	< 0.001
OOP cost	1,785.0	1,940.0	2,031.0	< 0.001	3,185.0	3,484.0	3,945.0	< 0.001
IE cost	4,296.0	4,556.0	4,523.0	< 0.001	7,945.0	9,442.0	11,039.0	< 0.001
	With SDE status				Without SDE status			
	NG (n = 12,242)	MG (n = 3,787)	HG (n = 2,211)	p value	NG (n = 49,719)	MG (n = 11,278)	HG (n = 7,180)	p value
Total cost	16,871.0	19,154.0	21,213.0	< 0.001	5,958.0	6,233.0	6,680.0	< 0.001
OOP cost	3,308.0	3,618.0	4,111.0	< 0.001	1,872.0	2,025.0	2,173.0	< 0.001
IE cost	13,000.0	15,189.0	17,180.0	< 0.001	3,782.0	3,918.0	4,238.0	< 0.001

HbA1c, hemoglobin A1c; DM, diabetes mellitus; CKD, chronic kidney disease; SDE, serious disease exemption; NG, normal glycemic group; MG, moderately hyperglycemic group; HG, highly hyperglycemic group; OOP, out-of-pocket cost; IE, insurance expenditure. The values represent the 75th percentile of healthcare costs (USD) within each subgroup.

HbA1c categories were defined as follows: NG, HbA1c < 6.5%; MG, 6.5% ≤ HbA1c < 8.0%; HG, HbA1c ≥ 8.0%.

Healthcare costs include total OOP and IE components.

All cost values were converted to USD and adjusted to 2023 values using annual Consumer Price Index data from Statistics Korea. p values were derived from comparisons across HbA1c groups within each subgroup.