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Clinical Outcomes for Newly Diagnosed Diabetes Patients in Korea: A National Health Insurance Data

Samel Park¹, Hyung Woo Kim⁵, Sun-Hee Park², Hyun Jung Kim³, Sang Youb Han⁴

¹Department of Internal Medicine-Nephrology, Soon Chun Hyang University Cheonan Hospital, Korea, Republic of

²Department of Internal Medicine-Nephrology, Kyungpook National University Hospital, Korea, Republic of

³Department of Preventive Medicine, Korea University College of Medicine, Korea, Republic of

⁴Department of Internal Medicine-Nephrology, Inje University Ilsan Paik Hospital, Korea, Republic of

⁵Department of Internal Medicine-Nephrology, Severance Hospital, Korea, Republic of

Objectives : Diabetes mellitus (DM) is associated with multiple severe complications, such as chronic kidney diseases (CKD). However, previous research has faced challenges due to the absence of accurate information regarding the initial diagnosis of type 2 DM. This study explores clinical outcomes in newly diagnosed type 2 DM patients, utilizing the extensive scope of the National Health Insurance Service (NHIS) data in Korea.

Methods : This study identified patients with newly diagnosed DM, excluding those under 20 or over 80 years of age, with a history of atherosclerotic cardiovascular disease or kidney disease (eGFR < 60, albuminuria, or relevant ICD codes). Control individuals were age and sex-matched at a 1:4 ratio. The main outcomes measured were the incidence of ischemic stroke, myocardial infarction, heart failure, all-cause mortality, and end-stage kidney disease (ESKD) that initiated renal replacement therapy.

Results : Out of 2,199,685 individuals, 439,937 were newly diagnosed with DM. Initial findings revealed significant increases in the risk (hazard ratio, 95% confidence interval) of ischemic stroke (1.93, 1.87 – 1.99), myocardial infarction (2.08, 1.99 – 2.18), heart failure (2.1, 2.07 – 2.22), all-mortality (1.28, 1.24 – 1.32), and ESKD (4.72, 4.11 – 5.43) respectively. Following adjustment for covariates, the adjusted hazard ratios for ischemic stroke, myocardial infarction, heart failure, all-cause mortality, and ESKD were 1.70 (95% CI: 1.63 – 1.77), 1.78 (95% CI: 1.68 – 1.89), 2.13 (95% CI: 2.04 – 2.22), 1.10 (95% CI: 1.06 – 1.14), and (3.89, 3.28 – 4.62), respectively.

Conclusions : Our research demonstrated that individuals newly diagnosed with type 2 DM showed an increased risk of ischemic stroke, myocardial infarction, heart failure, all-cause mortality, and ESKD, reflecting findings across the entire Korean population.

Table1.png

Table 1. Baseline characteristics in patients with incident diabetes mellitus and age and sex-matched control group.

	Incident DM (N = 439,937)	Control (N = 1,759,748)	Std. Diff
Age, years (SD)	54.4 (10.6)	54.3 (10.7)	0.014
Male, n (%)	259,879 (59.1)	1,039,516 (59.1)	0.000
Blood pressure, n (%)			0.323
SBP <120, DBP <80	104,734 (23.8)	630,124 (35.8)	
SBP <130, DBP <80	52,158 (11.9)	225,718 (12.8)	
SBP <140, DBP <90	178,761 (40.6)	656,275 (37.3)	
SBP <180, DBP <120	101,210 (23.0)	242,870 (13.8)	
SBP ≥180, DBP ≥120	3,043 (0.7)	4,609 (0.3)	
Missing	31 (0.0)	152 (0.0)	
Pulse pressure, n (%)			0.174
<40 mmHg	56,331 (12.8)	295,305 (16.8)	
40-59 mmHg	318,185 (72.3)	1,288,813 (73.2)	
≥60 mmHg	65,390 (14.9)	175,478 (10.0)	
Missing	31 (0.0)	152 (0.0)	
BMI, n (%)			0.493
<18.5	4,625 (1.1)	45,255 (2.6)	
18.5 – 24.9	196,820 (44.7)	1,142,047 (64.9)	
25.0 – 29.9	191,694 (43.6)	521,664 (29.6)	
≥30	46,718 (10.6)	50,445 (2.9)	
Missing	80 (0.0)	337 (0.0)	
Smoking history, n (%)			0.070
None	235,130 (53.5)	1,001,381 (56.9)	
Ex-smoker	91,736 (20.9)	335,869 (19.1)	
Current smoker	112,884 (25.7)	421,700 (24.0)	
Missing	187 (0.0)	798 (0.0)	
Alcohol history, n (%)			0.091
None	22,7340 (51.7)	903,529 (51.3)	
Male, <5drinks; female, 4<drinks	110,713 (25.2)	501,338 (28.5)	
Male, ≥5drinks; female, 4≥drinks	101,395 (23.0)	352,827 (20.0)	
Missing	489 (0.1)	2,054 (0.1)	