

INTRODUCTION

Approximately one in five individuals with diabetes mellitus in the United States remains undiagnosed, with the condition often going unnoticed for 4 to 7 years before clinical diagnosis.<sup>1-2</sup> During this undiagnosed period, patients are at increased risk of developing microvascular and cardiovascular complications, which may occur prior to formal diagnosis. These complications contribute significantly to the overall burden of disease and complicate the effectiveness of subsequent treatment.<sup>3-5</sup> However, when stratified by race, racial minorities receive diabetes prevention services (such as HbA1c tests, cholesterol screenings, foot exams, and eye exams) at disproportionately lower rates.<sup>6-7</sup> At the same time, certain racial groups face higher rates of diabetes-related complications.<sup>8</sup> Due to these disparities in preventive care and diabetes management, minority populations are at greater risk of experiencing advanced-stage complications.<sup>9-11</sup> Additionally, inadequate control of these complications contributes to higher mortality rates among racial minorities compared to White populations.<sup>12-13</sup>

OBJECTIVE

To investigate racial disparities in health status, management, and outcome among U.S. adults diagnosed with diabetes within the past two years.

METHOD

Data from the National Health and Nutrition Examination Survey spanning 1999–2020 were analyzed, including 1,522 non-pregnant adults older than 19 years recently diagnosed with diabetes. Age- and sex-standardized rates were estimated by race/ethnicity, and regression models adjusted for demographic (Age, gender, education, BMI), socio-economic (Family income), health behavior (Smoking status) , and access to care factors (Usual source of care and health insurance). Outcome variables included hypertension (>140/90 mmHg or medication use), hyperlipidemia (total cholesterol ≥240 mg/dL), chronic kidney disease (CKD; albumin-to-creatinine ratio ≥30 mg/g or eGFR <60 mL/min/1.73 m<sup>2</sup>), and cardiovascular events (CVD). Disease management was defined as achieving HbA1c <7.0%, blood pressure <140/90 mmHg, or cholesterol <240 mg/dL.

DISCUSSION

Racial disparities in disease management and outcomes persist among individuals with newly diagnosed diabetes. Black individuals face challenges in hypertension and HbA1c control despite higher treatment rates, while Mexican Americans demonstrate the lowest cardiovascular event rates. Addressing these disparities requires targeted, population-specific strategies to promote equity and improve health outcomes across racial groups.

RESULTS

TABLE 1: Characteristics of Early Diagnosed Diabetes Patients by Racial Group

Characteristic	Non-Hispanic White N = 581	Non-Hispanic Black N = 369	Mexican American N = 284	Other N = 288	p-value
<b>AgeGroup</b>					
20-44	13.43% (10.88% - 16.45%)	16.80% (13.32% - 20.97%)	15.49% (11.73% - 20.18%)	17.36% (13.41% - 22.18%)	<0.001
45-64	36.32% (32.50% - 40.31%)	53.12% (48.01% - 58.16%)	51.76% (45.95% - 57.53%)	46.18% (40.49% - 51.97%)	
>=65	50.26% (46.20% - 54.32%)	30.08% (25.61% - 34.96%)	32.75% (27.53% - 38.42%)	36.46% (31.10% - 42.18%)	
<b>Gender</b>					
Female	46.13% (42.11% - 50.20%)	52.85% (47.74% - 57.90%)	52.82% (46.99% - 58.56%)	51.04% (45.28% - 56.78%)	0.127
Male	53.87% (49.80% - 57.89%)	47.15% (42.10% - 52.26%)	47.18% (41.44% - 53.01%)	48.96% (43.22% - 54.72%)	
<b>Education</b>					
High school or less	54.48% (50.41% - 58.50%)	52.75% (47.60% - 57.83%)	83.75% (78.97% - 87.60%)	53.15% (47.34% - 58.87%)	<0.001
Some college	28.97% (25.41% - 32.79%)	34.07% (29.37% - 39.09%)	12.72% (9.31% - 17.14%)	27.62% (22.75% - 33.10%)	
College graduate	16.55% (13.74% - 19.80%)	13.19% (10.08% - 17.07%)	3.53% (1.91% - 6.44%)	19.23% (15.07% - 24.22%)	
<b>Poverty to income ratio</b>					
<1.3	29.85% (26.09% - 33.90%)	32.82% (27.91% - 38.13%)	48.16% (41.96% - 54.42%)	40.42% (34.39% - 46.75%)	<0.001
1.3-3.5	41.63% (37.49% - 45.90%)	42.11% (36.83% - 47.57%)	35.92% (30.15% - 42.12%)	35.83% (30.01% - 42.10%)	
≥3.5	28.52% (24.82% - 32.53%)	25.08% (20.65% - 30.10%)	15.92% (11.85% - 21.05%)	23.75% (18.79% - 29.55%)	
<b>Usual source of care</b>					
Any usual care	96.56% (94.72% - 97.77%)	95.66% (93.04% - 97.33%)	91.20% (87.29% - 93.98%)	92.01% (88.27% - 94.64%)	0.002
No usual care	3.44% (2.23% - 5.28%)	4.34% (2.67% - 6.96%)	8.80% (6.02% - 12.71%)	7.99% (5.36% - 11.73%)	
<b>Health insurance status</b>					
Any insurance	91.91% (89.40% - 93.87%)	89.16% (85.55% - 91.95%)	65.96% (60.23% - 71.26%)	85.02% (80.40% - 88.70%)	<0.001
Uninsured	8.09% (6.13% - 10.60%)	10.84% (8.05% - 14.45%)	34.04% (28.74% - 39.77%)	14.98% (11.30% - 19.60%)	
<b>BMI categories</b>					
Normal weight	9.92% (7.64% - 12.80%)	12.03% (9.01% - 15.89%)	8.46% (5.63% - 12.52%)	19.25% (14.93% - 24.44%)	<0.001
Overweight	25.19% (21.66% - 29.09%)	23.50% (19.34% - 28.23%)	35.38% (29.80% - 41.39%)	35.85% (30.30% - 41.81%)	
Obese	64.89% (60.69% - 68.86%)	64.47% (59.30% - 69.32%)	56.15% (50.06% - 62.07%)	44.91% (39.01% - 50.94%)	
<b>Smoke</b>					
Current smoker	15.40% (12.65% - 18.62%)	23.40% (19.30% - 28.06%)	13.83% (10.27% - 18.38%)	13.94% (10.39% - 18.45%)	<0.001
Former smoker	31.15% (27.46% - 35.09%)	22.56% (18.53% - 27.18%)	25.53% (20.78% - 30.95%)	21.25% (16.90% - 26.37%)	
Never smoker	53.45% (49.32% - 57.54%)	54.04% (48.85% - 59.14%)	60.64% (54.81% - 66.18%)	64.81% (59.10% - 70.12%)	

TABLE 2: Age- and Gender-Standardized Prevalence, Treatment, and Control Rates of Hyperglycemia, Hypertension, and Hyperlipidemia Across Racial Groups

Characteristic	Non-Hispanic White	Non-Hispanic Black	Mexican American	Other Race	p-value
<b>Glucose control</b>					
HbA1c, % points, mean	6.94 (6.76 - 7.12)	7.33 (7.09 - 7.58)	7.22 (6.98 - 7.46)	7.15 (6.91 - 7.4)	0.069
Insulin or oral medication use	70.13% (65.56% - 74.71%)	75.67% (70.62% - 80.71%)	67.63% (61.69% - 73.59%)	70.55% (64.65% - 76.44%)	0.704
Oral medication use only	66.87% (62.11% - 71.64%)	71.26% (65.49% - 77.03%)	65.18% (58.93% - 71.43%)	68.08% (61.92% - 74.25%)	0.968
Any insulin use	12.59% (9.1% - 16.08%)	20.38% (15.46% - 25.3%)	10.58% (6.2% - 14.94%)	10.96% (6.76% - 15.16%)	0.238
HbA1c <7.0%-points (<53 mmol/mol), %	84.67% (80.74% - 88.59%)	76.96% (70.49% - 83.43%)	81.95% (75.47% - 88.44%)	78.06% (71.81% - 84.32%)	0.089
<b>Blood pressure</b>					
Diastolic, mmHg, mean	61.51(59.14 - 63.89)	63.99 (61.15 - 66.84)	57.84 (54.77 - 60.9)	62.02 (58.87 - 65.17)	0.495
Systolic, mmHg, mean	105.67 (101.57 - 109.77)	112.3 (107.74 - 116.86)	105.7 (100.37 - 111.04)	105.24 (99.9 - 110.57)	0.698
Hypertension >140/90 mmHg or med use), %	46.75% (42.48% - 51.01%)	60.80% (55.67% - 65.93%)	46.71% (41.16% - 52.27%)	46.99% (41.36% - 52.62%)	0.619
Treated*	61.85% (60.48% - 63.22%)	67.13% (65.63% - 68.63%)	58.03% (56.05% - 60.01%)	59.30% (57.47% - 61.14%)	0.000
Treated and controlled (blood pressure ,140/90 mmHg)*	48.41% (47.03% - 49.79%)	46.65% (45.15% - 48.15%)	42.78% (40.81% - 44.76%)	43.40% (41.58% - 45.23%)	0.000
Hypertension >130/80 mmHg or med use), %	59.78% (55.31% - 64.26%)	67.74% (62.68% - 72.80%)	55.10% (49.31% - 60.89%)	57.63% (51.83% - 63.43%)	0.181
Treated*	40.13% (39.35% - 40.92%)	50.98% (49.96% - 52.00%)	39.42% (38.12% - 40.73%)	39.82% (38.63% - 41.01%)	0.216
Treated and controlled (blood pressure ,130/80 mmHg)*	22.79% (22.11% - 23.48%)	25.53% (24.60% - 26.46%)	21.56% (20.37% - 22.74%)	20.34% (19.30% - 21.38%)	0.000
<b>Lipids</b>					
Total cholesterol, mg/dL, mean	193.54 (188.92 - 198.16)	186.59 (181.24 - 191.94)	197.66 (192.13 - 203.2)	191.2 (184.75 - 197.64)	0.9
Hyperlipidemia (total cholesterol >240 mg/dL or med use), %	38.95% (34.56% - 43.33%)	41.02% (35.73% - 46.31%)	34.16% (28.63% - 39.70%)	41.85% (36.02% - 47.69%)	0.901
Treated†	43.09% (42.17% - 44.00%)	50.66% (49.19% - 52.14%)	41.45% (39.92% - 42.98%)	45.77% (44.35% - 47.19%)	0.066
Treated and controlled (total cholesterol,240 mg/dL)†	35.39% (34.51% - 36.27%)	37.64% (36.22% - 39.05%)	33.13% (31.59% - 34.67%)	35.84% (34.43% - 37.24%)	0.629
Hyperlipidemia (total cholesterol >200 mg/dL or med use), %	54.90% (50.22% - 59.58%)	49.65% (44.07% - 55.22%)	54.01% (47.96% - 60.06%)	53.58% (47.31% - 59.84%)	0.837
Treated†	25.64% (25.06% - 26.21%)	31.18% (30.22% - 32.15%)	24.09% (23.07% - 25.12%)	28.13% (27.17% - 29.08%)	0.009
Treated and controlled (total cholesterol,200 mg/dL)†	16.22% (15.73% - 16.71%)	17.98% (17.13% - 18.82%)	13.80% (12.91% - 14.68%)	17.20% (16.35% - 18.06%)	0.977
<b>All three risk factors controlled</b>					
HbA1c < 7.0%, Blood pressure <130/80 mmHg, total cholesterol <200 mg/dL, %	49.39% (41.53% - 57.26%)	49.1% (39.97% - 58.24%)	50.85% (39.09% - 62.61%)	39.69% (28.81% - 50.57%)	0.269
HbA1c < 7.0%, Blood pressure <140/90 mmHg, total cholesterol <240 mg/dL, %	30.83% (24.65% - 37.00%)	29.47% (21.43% - 37.51%)	25.85% (17.3% - 34.39%)	25.53% (17.08% - 33.99%)	0.259

TABLE 3: Age- and Gender-Standardized Prevalence of Chronic Kidney Disease and Cardiovascular Events Across Racial Groups

Characteristic	Non-Hispanic White	Non-Hispanic Black	Mexican American	Other Race	p-value
Any chronic kidney disease	19.83% (16.12% - 23.54%)	23.63% (18.87% - 28.39%)	24.19% (18.97% - 29.41%)	19.81% (14.96% - 24.66%)	0.701
Albuminuria (albumin-to-creatinine ratio ≥30 mg/g)	24.29% (20.1% - 28.48%)	27.41% (22.25% - 32.58%)	26.0% (20.47% - 31.53%)	24.12% (18.5% - 29.74%)	0.984
Reduced eGFR (<60 mL/min/1.73 m2)	15.92% (12.86% - 18.98%)	11.46% (7.61% - 15.32%)	11.44% (7.14% - 15.73%)	15.84% (10.98% - 20.7%)	0.638
Treated CKD among CKD patients	4.8% (3.97% - 5.62%)	6.32% (5.18% - 7.45%)	6.51% (5.14% - 7.89%)	6.14% (4.78% - 7.49%)	0.036
Any self-reported cardiovascular disease	21.51% (18.19% - 24.83%)	22.54% (18.22% - 26.85%)	10.7% (7.04% - 14.35%)	17.3% (12.8% - 21.9%)	0.008
History of chronic heart failure	10.8% (8.19% - 13.42%)	10.52% (7.01% - 14.04%)	5.87% (2.79% - 8.95%)	7.41% (4.0% - 10.82%)	0.701
History of stroke	11.87% (9.01% - 14.73%)	14.16% (9.75% - 18.56%)	3.8% (1.22% - 6.38%)	10.69% (6.63% - 14.75%)	0.099
History of heart attack	12.66% (9.59% - 15.72%)	11.7% (7.91% - 15.48%)	6.96% (3.48% - 10.44%)	9.77% (5.66% - 13.87%)	0.087
Any Complication (CKD, microvascular, CVD)	35.48% (31.34% - 39.61%)	37.39% (32.39% - 42.4%)	33.67% (28.24% - 39.09%)	32.37% (27.01% - 37.73%)	0.278

Disclosures:  
Acknowledgments:

FIGURE 1: Age- and Gender-Standardized Prevalence, Treatment, and Control Rates of Hyperglycemia Across Racial Groups

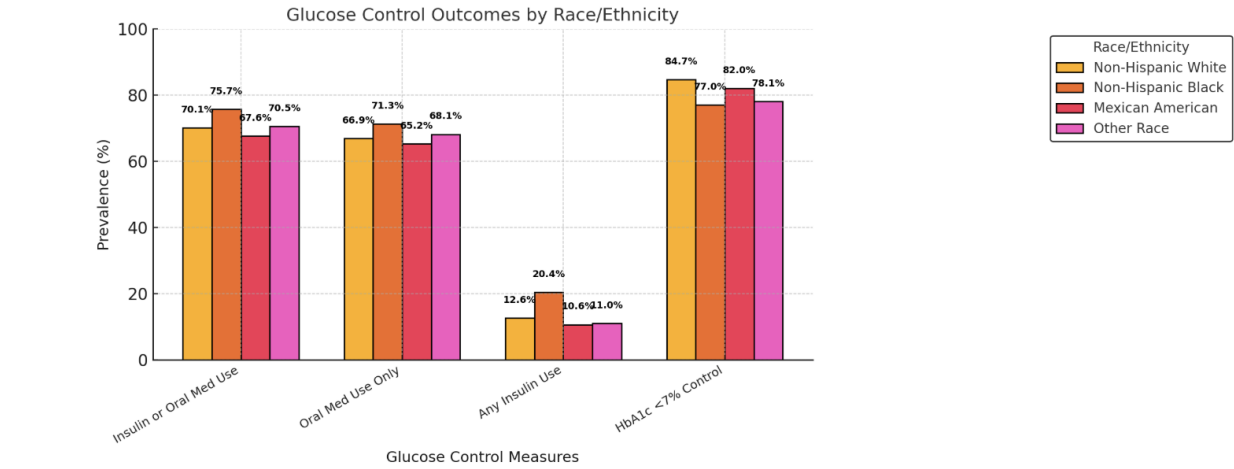


FIGURE 2: Age- and Gender-Standardized Prevalence, Treatment, and Control Rates of Hypertension and Hyperlipidemia Across Racial Groups

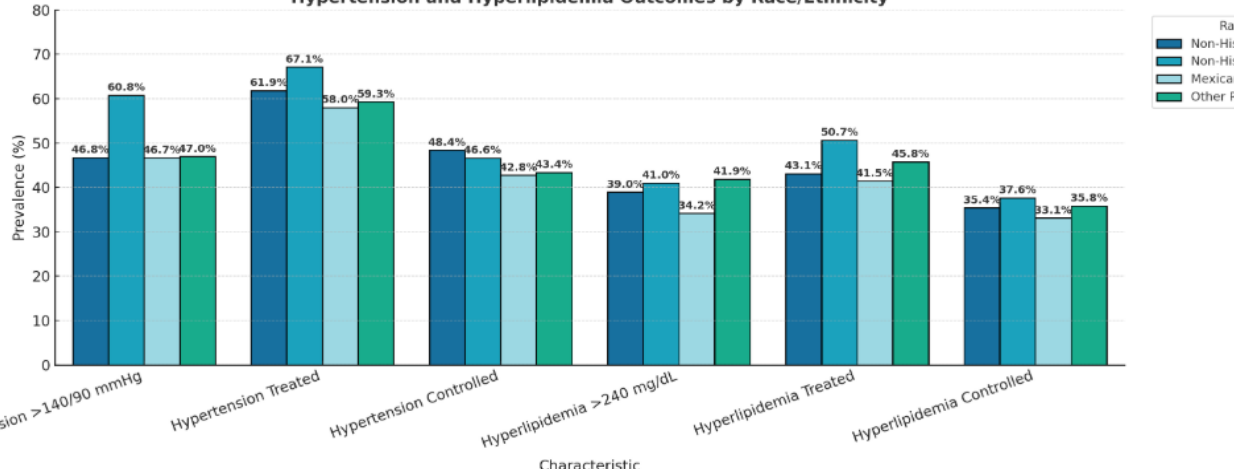
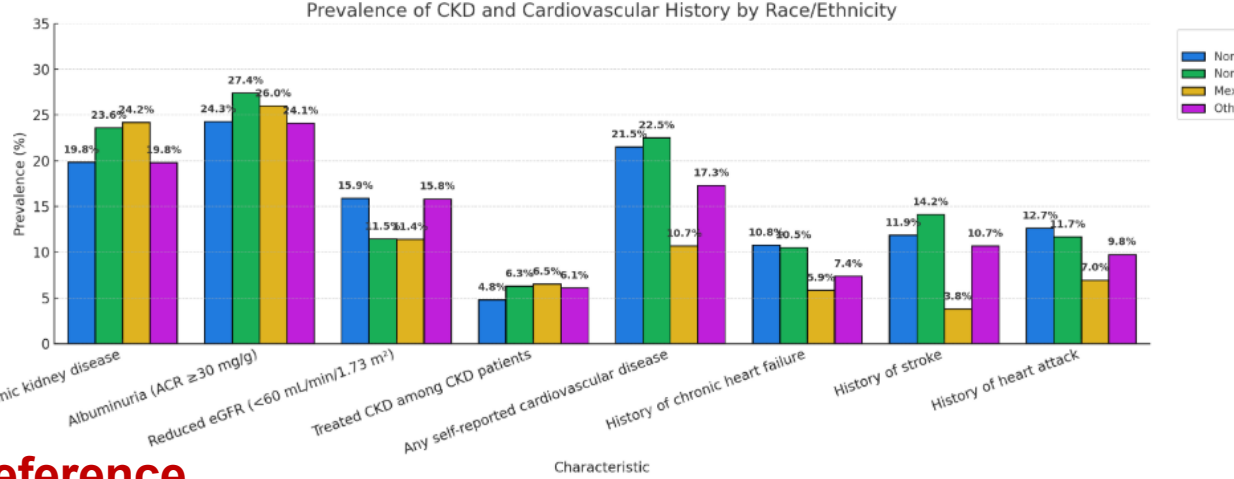


FIGURE 3: : Age- and Gender-Standardized Prevalence of Chronic Kidney Disease and Cardiovascular Events History Across Racial Groups



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