Socioeconomic Factors Play a More Important Role than Clinical Needs in the Use of SGLT2 Inhibitors and GLP-1 Receptor Agonists in People With Type 2 Diabetes

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Growing evidence from clinical trials and observational studies has demonstrated cardiac and renal benefits of two newer glucose-lowering drug classes, sodium–glucose cotransporter 2 inhibitors (SGLT2i) (including exenatide, liraglutide, dulaglutide, albiglutide, lixisenatide, and semaglutide) and glucagon-like peptide 1 receptor agonists (GLP-1RAs) (including canagliflozin, empagliflozin, dapagliflozin, and ertugliflozin) (1). The American Diabetes Association recommends these two drug classes for people with type 2 diabetes (T2D) who are at increased risk for or who have established atherosclerotic cardiovascular disease (ASCVD), heart failure (HF), and chronic kidney disease (CKD) (2). Our previous study documented a rapid increase in the use of the two classes in commercially insured populations between 2010 and 2018 (3). In contrast, a recent study suggested that use of the new drug classes remained low in other populations, such as Medicare beneficiaries (4). Medicare beneficiaries have higher risks of ASCVD, HF, and CKD than the commercially insured population due to their older age and longer diabetes duration and, thus, could benefit more from the new drug classes. However, the low utilization rate in the Medicare population suggests other factors play a more prominent role than clinical need. The objectives of this study were to examine factors associated with the use of the two new drug classes and estimate the contributions of these factors to use of the drugs.

Our study data came from the Medical Expenditure Panel Survey (MEPS) (2017–2018), a nationally representative sample of individuals with T2D. Our study sample was 3,347 adults (aged >18 years) with self-reported T2D treated with noninsulin second-line glucose-lowering drugs. We applied multivariable logistic regression to examine factors associated with the use of the two newer drug classes, including demographics (age, sex, and race/ethnicity), clinical risk factors (hypertension, hyperlipidemia, obesity, and history of ASCVD, CKD, or HF), and socioeconomic status (SES) (including health insurance type, income, and education). We used a regression-based decomposition analysis to estimate the contributions of the factors to the variations in use (5). The same analysis was replicated in two subgroups: individuals aged <65 years and those aged ≥65 years. We have examined the potential multicollinearity issue by estimating the correlation coefficients and variance inflation factors for the variables included in the model.

Descriptive statistics for the included variables are provided in Table 1. Age, CKD, and hyperlipidemia status, race/ethnicity, health insurance type, income, and education were significantly associated with the use of the newer drugs. Compared with their counterparts, individuals having Medicare insurance (vs. private insurance) (odds ratio [OR] 0.6, 95% CI 0.36–0.99) and middle (OR 0.7, 95% CI 0.52–0.95) or low (OR 0.41, 95% CI 0.26–0.64) income (vs. high income) had a lower utilization rate. SES and clinical risk factors contributed 49.4% and 15.9% of the variation, respectively. Race/ethnicity alone contributed 25.8% of the variation after adjusting for other factors. Results from the subgroup analysis were similar to the main analysis and, thus, are not provided in detail. No multicollinearity issue was detected.

Our results suggest that the use of the two newer drug classes was influenced more by nonclinical factors such as affordability (e.g., income) and out-of-pocket cost (i.e., health plan coverage)

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Table 1—Associations between newer drug use and potential demographic, health, and economic factors

				95% CI			
	Mean	SD	OR	Lower bound	Upper bound	*P* value	Decomposition analysis† (%)
Demographics							
Age	63.00	13.20	0.98	0.96	0.99	<0.01	7.5
Female	51.40	49.98	1.08	0.84	1.38	0.57	1.5
Race							25.8
Non-Hispanic White (reference)	48.60	49.98					
Non-Hispanic Black	19.70	39.77	0.39	0.26	0.58	<0.01	
Hispanic	21.50	41.08	0.66	0.46	0.95	<0.05	
Others	10.10	30.13	0.49	0.31	0.77	<0.01	
Health							
Hypertension	66.20	47.30	1.14	0.87	1.49	0.35	15.9
Hyperlipidemia	53.50	49.88	1.41	1.09	1.84	<0.05	
CKD	3.20	17.60	1.61	0.18	14.14	0.67	
ASCVD	7.60	26.50	1.78	1.00	3.20	0.05	
HF	1.30	11.33	1.11	0.68	1.79	0.67	
Social economics							
Health insurance							49.4
Private (reference)	29.60	45.65					
Medicaid	17.40	37.91	0.77	0.50	1.16	0.21	
Medicare	15.60	36.29	0.60	0.36	0.99	<0.05	
Other*	33.00	47.02	0.71	0.47	1.08	0.11	
None	4.40	20.51	0.63	0.29	1.36	0.24	
Income level							
>400% poverty line (reference)	29.90	45.78					
Middle income (200–400% poverty line)	27.50	44.65	0.70	0.52	0.95	<0.05	
Low income (125–200% poverty line)	16.60	37.21	0.41	0.26	0.64	<0.01	
Near poor (100–125% poverty line)	6.50	24.65	0.55	0.30	1.04	0.06	
Poor (<100% poverty line)	19.50	39.62	0.67	0.44	1.04	0.07	
Education lower than high school	76.20	42.59	0.51	0.34	0.76	<0.01	

Data for mean and SD columns are years (for age) or %. *Other types of insurance include Veterans Affairs health care, TRICARE, dual-plan eligibility, etc. †Decomposition is the proportion of variation explained by each group of factors.

than clinical need. The price difference between the older drugs and the two newer drugs is as much as $8,000 per year (3). High cost-sharing could be a barrier to taking the newer drugs for individuals with lower SES, which could lead to increased health disparities. Lower utilization rates in those who would have a larger gain in health benefits, such as Medicare beneficiaries, because of their higher ASCVD, HF, and CKD risks may not be an efficient use of health care resources. The higher out-of-pocket payment for newer drugs under Medicare Part D may contribute to the lower utilization rate in this population.

Our study included the following limitations. *1*) Our decomposition analysis only includes information collected in MEPS, and other factors, such as patient blood glucose level and provider preference, might also influence the use. Future research is warranted to understand the role of "provider inertia" in prescribing newer drugs to the patients. *2*) The cross-sectional study design implies the identified relationships are not necessarily causal.

Our study findings suggest policy actions to reduce out-of-pocket payment are needed to increase the use of the new drug classes in those who can benefit the most. A risk-based hierarchical model for reimbursement could be more cost-effective than the current universal payment models.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.
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