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Introduction and Aims

In 2022, 25.5 million Americans were diagnosed with diabetes and 107,000 died due to diabetes. The direct medical cost in 2022 were \$307 billion in the United States and excess medical cost per person in 2022 was \$12,022.¹

Our aims were to **evaluate out-of-pocket costs, total health expenditures and health-related quality of life (HRQoL)** between **SGLT2i vs. GLP-1 RA**, either alone or with metformin for patients with Type 2 diabetes mellitus (T2DM).²

Methods

Data source: 2017-2021 Medical Expenditure Panel Survey

Study population: Patients with T2DM , ≥ 18 years, on SGLT2i, GLP-1 RA, or in combination with metformin (Figure 1) (N=8,222)

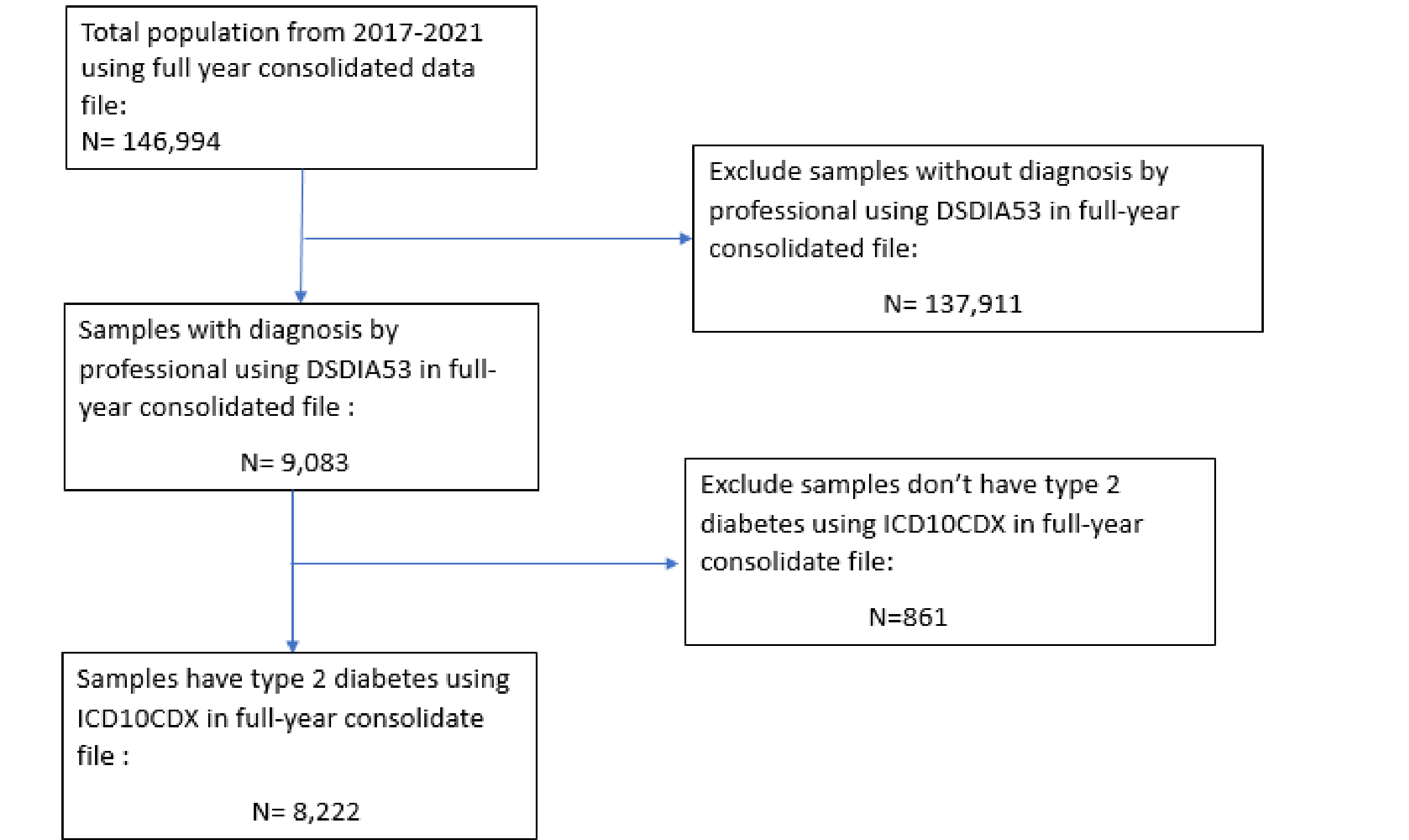
Outcomes:

- HRQoL:** physical component summary (PCS) and mental component summary (MCS) of Veterans Rand 12 (Table 2 and 3)
- Expenditure:** out-of-pocket payment (OOP), total health care expenditure (Table 2 and 3)

Statistics Analysis:

- Propensity score matching was performed to control selection bias (Table 1).
- Mann-Whitney U test was used to compare health expenditures and HRQoL between treatments.
- Bonferroni adjustment was used to recalculate the P-value (Baseline characteristics: **P = 0.0031**. Total health expenditure or OOP, PCS, and MCS: **P = 0.017**).

Figure 1: Flow Diagram of Adults with T2DM: Medical Expenditure Panel Survey 2017-2021



Results

Table 1: Baseline characteristics of adults with T2DM on SGLT2i and GLP-1 RA for OOP, PCS, and MCS before and after matching using MEPS data 2017-2021.

		Before Matching			After Matching		
Baseline characteristics (%)		SGLT2i (N=117)	GLP-1 RA (N = 224)	P value	SGLT2i (N = 117)	GLP-1 RA (N = 117)	P value
Age	18-44	12.0	7.6	0.57	12.0	9.4	0.88
	45-64	44.4	46.4		44.4	43.6	
	>=65	43.6	46.0		43.6	47.0	
Sex	Male	46.15	38.8	0.38	46.15	47.9	0.86
	Female	53.85	61.2		53.85	52.1	
Race	White	70.9	76.8	0.031	70.9	75.2	0.36
	Black	19.6	18.3		19.6	21.4	
	Multiple	0.9	3.1		0.9	0%	
	other	8.6	1.8		8.6	3.4	
Region	Northeast	11.1	13.0	0.81	11.1	7.7	0.88
	Midwest	17.1	17.9		17.1	20.5	
	South	59.8	54.9		59.8	59.8	
	West	12.0	14.3		12.0	12.0	
Education	No school	0%	0%	0.67	0%	0%	0.93
	Grade 1-8	2.6	1.3		2.56	2.6	
	Grade 9-12	53.0	45.1		53.0	50.4	
	Grade >12	44.4	53.6		44.4	47.0	
Marriage	Never married	12.0	10.2	0.62	12.0	9.4	0.86
	Widowed	33.3	34.4		33.3	32.5	
	married	54.7	55.4		54.7	58.1	
Income	Negative/poor /near poor	21.4	25.0	0.93	21.4	22.2	0.91
	low	13.7	11.6		13.7	10.3	
	Middle	28.2	29.0		28.2	31.6	
	high	36.7	34.4		36.7	35.9	
Employment	Not employed	53.85	62.95	0.14	53.85	57.3	0.85
	employed	46.15	37.05		46.15	42.7	

	SGLT2i (N = 117)	GLP-1 RA (N= 117)	P value	SGLT2i + metformin (N = 271)	GLP-1 RA + metformin (N= 271)	P value
	Median (range)	Median (range)		Median (range)	Median (range)	
OOP (\$)	81.0 (1.1-7218.8)	166.5 (4.2-10119.6)	<0.001	107.3 (3.9-4643.2)	140.40	<0.001
MCS	53.5 (22.7-65.4)	52.3 (28.1-69.3)	0.15	54.37 (20.5-66.0)	54.24	0.59
PCS	47.8 (16.6-58.1)	45.9 (17.3-65.8)	0.10	46.53 (17.2-60.9)	44.12	0.088

Table 3: Total health expenditure, PCS, MCS of SGLT2i either alone or with metformin and GLP-1 RA with metformin: Medical Expenditure Panel Survey 2017-2021

	SGLT2i (N = 160)	GLP1 RA (N= 160)	P value	SGLT2i + metformin (N = 160)	GLP1 RA + metformin (N= 160)	P value
	Median (range)	Median (range)		Median (range)	Median (range)	
Total health expenditure (\$)	14623.1 (2025.5-173051.6)	16350.7 (1630.6-184253.3)	0.14	13844.7 (1086.0-140094.0)	15628.0 (1901.8-114100.0)	0.028
MCS	53.5 (22.7-65.4)	52.4 (27.2-69.3)	0.40	54.30 (20.5-66.0)	54.2 (21.4-66.8)	0.69
PCS	44.5 (16.6-58.1)	45.22 (16.2-65.8)	0.19	46.1 (17.2-60.9)	45.7 (15.1-66.5)	0.55

Discussion & Limitations

There is significant difference for OOP between SGLT2i and GLP-1 RA either alone or in combination with metformin, but no difference between total health expenditure, PCS, and MCS.

Strengths:

- real-world national representative data
- used propensity score matching to avoid bias.

Limitations:

- Timeline (2017-2021) included the COVID pandemic period, during which there was reduced health utilization.
- Self-reported survey data, recall bias may occur
- MEPS doesn’t have clinical outcomes (A1C, BG, and side effect).

Conclusions & Implications

This study findings will help provide health care providers guidance when they prescribe SGLT2i or GLP1 RA for patients with T2DM.

Lack of significant difference in PCS or MCS between GLP-1 agonists and SGLT2i raises concerns, since GLP-1 agonists have higher OOP payments. Further investigation is recommended to study the long-term impact on HRQoL and clinical outcomes.

Reference

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