In a real-world population, SGLT2 inhibitors resulted in a significant but less than expected reduction in HbA1c, weight and systolic blood pressure at 12 months.

Impact of SGLT2 Inhibitors on Metabolic Parameters and Healthcare Utilization in Patients with Type 2 Diabetes Mellitus

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BACKGROUND

- Patients with type 2 diabetes mellitus (T2DM) are at higher cardiovascular (CV) risk, which can be decreased with medications and lifestyle changes.[1]
- Evidence shows that sodium-glucose cotransporter-2 inhibitors (SGLT2i) lower systolic blood pressure after 1 month and diastolic blood pressure after 6 months by approximately 5 mmHg, lower hemoglobin A1c (HbA1c) by 0.8-1%, and increased LDL. [2, 3, 4] These drugs have been associated with adverse events such as diabetic ketoacidosis and amputations. [2]
- The impact of SGLT2 inhibitors on metabolic parameters may differ in a real-world patient population as compared to patients in clinical trials. The goal of this study is to determine the impact of SGLT2 inhibitors on metabolic parameters in a real-world patient population.

METHODS

- A retrospective, single-center chart review for patients diagnosed with T2DM and prescribed as SGLT2i for the first time between July 1, 2016 to December 31, 2017 at The Emory Clinic.
- Patient demographics, past medical history, medications, HbA1c, weight, blood pressure (BP) and lipids were collected at baseline, 6 months, and 12 months following the medication initiation. Healthcare utilization was also assessed.
- Results were analyzed using descriptive statistics.

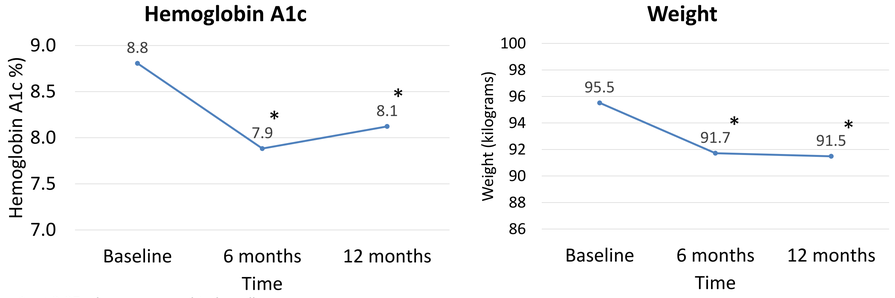
RESULTS

- A total of 473 patients were reviewed. Most common reasons for exclusion were: receiving an SGLT2i prior to study start date (162 patients, 44.6%), discontinuing the SGLT2i during the study period (85 patients, 23.4%), insufficient data (61 patients,16.8%). Patients were also excluded if they received two SGLT2i concomitantly, received glucagon-like peptide-1 receptor agonist with SLGT2i therapy, or if an SGLT2i was never prescribed. A total of 363 patients were excluded.

Table 1: Baseline Demographics (n = 108)

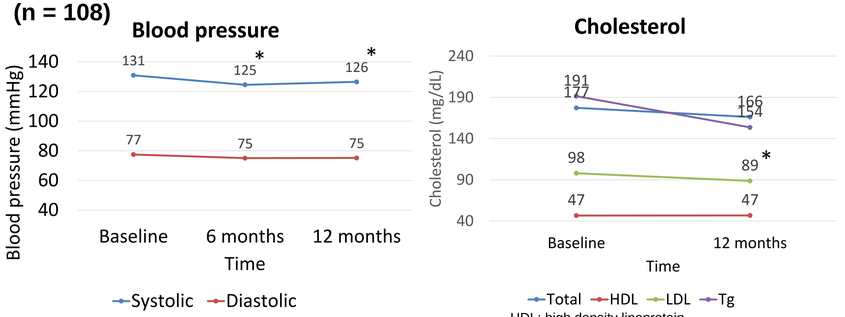
Characteristic	n (%)	Characteristic	n (%)
Gender		**Insurance Status**	
Female	60 (55.6)	Private insurance	80 (74.1)
Race		Medicare	18 (16.7)
Caucasian	47 (43.5)	Medicaid	5 (4.6)
African American	46 (42.6)	Uninsured	3 (2.8)
Hispanic	1 (0.9)	Other, unable to obtain	2 (1.8)
Asian	9 (8.3)	**Education**	
Other	5 (4.6)	High school or less	11 (10.2)
Hypertension history	76 (70.4)	College	36 (33.3)
Heart failure history	6 (5.6)	Professional degree	12 (11.1)
Statin at baseline	76 (70.4)	Unable to obtain	49 (45.4)

Figure 1: Impact of SGLT2 Inhibitors on Hemoglobin A1c and Weight (n = 108)



*p < 0.05 when compared to baseline

Figure 2: Impact of SGLT2 Inhibitors on Blood pressure and Cholesterol (n = 108)



*p < 0.05 when compared to baseline

HDL: high density lipoprotein
LDL: low density lipoprotein
Tg: triglycerides

Table 2: Healthcare Utilization (n = 108)

	n (%)
Emergency department (ED) visit	4 (3.7)
Hospital admission	9 (8.3)
Diabetes-related hospital admission	4 (3.7)

- There were no instances of amputations, diabetic ketoacidosis, or genital or urinary infections requiring hospitalization identified during the study period.
- No hospital admissions or ED visits were attributed to SGLT2i therapy

CONCLUSION

The use of SGLT2 inhibitors resulted in significant but less reduction in HbA1c, weight, and systolic blood pressure compared to previous studies. In contrast to previous studies, LDL was decreased at 12 months. Limitations of this study include its retrospective nature, limited time frame, and single-center focus. Factors such as medical compliance, medication cost, and patient lifestyle may impact metabolic parameters in a real-word patient population.

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