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GLP-1 RA vs SGLT2i adherence in commercially insured patients with Type 2 Diabetes Mellitus

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Background

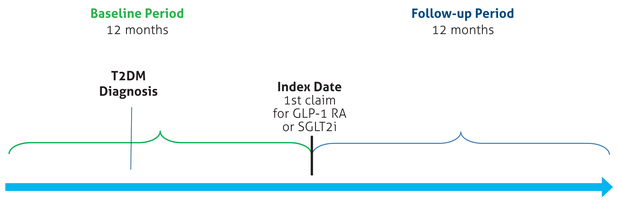
In Type 2 Diabetes Mellitus (T2DM) for patients who have not achieved adequate glycemic control with metformin and lifestyle alone, the ADA (The American Diabetes Association) recommends a second line agent. In a recent review article, GLP-1 RA and SGLT2i studies have shown these agents improve cardiovascular and renal function while controlling A1C% and hyperglycemia. GLP-1 RA and SGLT2i have set themselves in this second line agent category for T2DM which opens the door for further research. In 2006, a retrospective cohort study found that non-adherent T2DM patients had higher risk for all-cause hospitalization and mortality. In a study of veterans found that poor adherence(MPR <80%) to T2DM treatments was associated with poor glycemic control. This same study projected substantial cost savings associated with improved adherence. These studies suggest that improved adherent to T2DM treatments may lead to improved glycemic control, reduced health resource utilization and lower mortality.

There are no clear recommendations from ADA guidelines in choosing a GLP-1 RA over an SGLT2i with patients who do not have contraindications to using either one. There have been small international studies measuring adherence in T2DM patients using a GLP-1 RA vs SGLT2i. However, there are no studies conducted in the United States comparing the adherence of these medications using real world commercial claims data.

Objective

This study compared the adherence in adult patients with T2DM who started a GLP-1 RA vs. a SGLT2i

Study Outline



Methods

This was a retrospective study utilizing real world medical and pharmacy administrative claims from the Magellan Health commercial health plan database between 1/1/2018 and 12/31/2020 (study period). The baseline time-period began 365 days prior to the index date and the follow-up time-period began on the index date and continue for 365 days.

The primary end-point of the study was the index drug adherence at the end of the 12 month follow up period. The index date was defined as the first fill of an index medication (GLP-1 RA or SGLT2i see table 1). Patients were included in the study if the index date was between 1/1/2019 and 12/31/2019.

Patients must also meet the following criteria for inclusion:

1. Diagnosis of T2DM during the baseline time-period
2. Continuous enrollment in pharmacy benefit during the baseline period
3. Continuous enrollment in pharmacy benefit during the follow up period

Patient were excluded if they met any of the following criteria:

1. Patients under the age of 18 on the index date
2. Patients diagnosed with pregnancy during the study period
3. Patients diagnosed with type 1 diabetes mellitus during the study period
4. Patients diagnosed with secondary diabetes during the study period

Commercially insured adult patients who initiated a GLP-1 RA or SGLT2i for T2DM had **no significant difference** in adherence.

Methods *cont.*

Patient were assigned to either the GLP-1RA or SGLT2i cohort based on the index drug according to Table 1.
Adherence was assessed using medication possession ratio (MPR). Patients with a MPR >= 80% were considered adherent. Patients with a MPR below 80% were considered non-adherent. MPR was calculated as the sum of the day supply during the follow up period divided by days during the follow up period. Study group comparisons were conducted using methods appropriate to the data type, such as t-test for continuous variables and chi-square tests for categorical variables.

Table 1. Included Index Medications

Generic Name	Drug Class
CANAGLIFLOZIN	SGT2i
DAPAGLIFLOZIN PROPANEDIOL	SGT2i
EMPAGLIFLOZIN	SGT2i
ERTUGLIFLOZIN PIDOLATE	SGT2i
DULAGLUTIDE	GLP-1RA
EXENATIDE MICROSPHERES	GLP-1RA
EXENATIDE	GLP-1RA
LIRAGLUTIDE	GLP-1RA
LIXISENATIDE	GLP-1RA
SEMAGLUTIDE	GLP-1RA

Table 2. Included / Excluded Diagnoses

	Diagnosis	ICD-10
Include	Type 2 Diabetes Mellitus	E11.x
Exclude	Type 1 Diabetes Mellitus	E10.x
	Secondary Diabetes	E08.x, E09.x
	Pregnancy	Z34.x

Results

A total of 1,063 patients met the inclusion criteria for the study. In the GLP-1RA cohort, n=705 and in the SGLT2i cohort, n=358. Overall, 66% of included members were female with an overall mean age of 53.08 years with statistically non-significant differences between the groups (p=0.366 and p=0.124, respectively).

There was a non-significant difference in the mean MPR for the GLP-1RA group and the SGLT1i group (0.645 and 0.668, respectively p=0.366).

Rates of adherence (MPR ≥80%) for the GLP-1RA and SGLT2i groups were not found to be significantly different (46% and 41%, respectively p=0.124).

Results *cont.*

Table 3. Baseline Demographics

		Overall (n=1063)	GLP-1 RA (n=705)	SGLT2i (n=358)	
		n(%)	n(%)	n(%)	P
Gender	Female	697(66%)	476(68%)	221(62%)	0.061
	Male	366(34%)	229(32%)	137(38%)	
Age At Index Date	Continuous, Mean(Median)[SD]	53.08(54.88)[9.37]	53.27(54.89)[9.12]	52.72(54.83)[9.83]	0.367
	18-29	12(1%)	6(1%)	6(2%)	
	30-39	102(10%)	62(9%)	40(11%)	
	40-49	238(22%)	161(23%)	77(21%)	0.429
	50-59	433(41%)	295(42%)	138(38%)	
	60 and older	278(26%)	181(25%)	97(28%)	

Table 4. Adherence

		Overall (n=1063)	GLP-1 RA (n=705)	SGLT2i (n=358)	
		n(%)	n(%)	n(%)	P
Adherence	MPR, Mean(Median)[SD]	0.652(0.721)[0.34]	0.645(0.690)[0.34]	0.668(0.740)[0.35]	0.366
	Adherent (MPR >=0.8)	458(43%)	292(41%)	166(46%)	0.124
	Non-Adherent (MPR <0.8)	605(57%)	413(59%)	192(54%)	

Conclusion

This real-world study shows that adherence through the 12-month post-index period was not significantly different between the GLP-1RA and SGLT2i cohort groups. These results suggest patients started on either a GLP-1RA or SGLT2i may have similar adherence. The lack of a significant difference in adherence may inform formulary decisions, demonstrating that real world data supports the ADA recommendation that neither GLP-1RAs or SGLT2is have demonstrated superior adherence.

This study did not evaluate persistence to therapy or the use of add-on therapy. Future research should consider how these two utilization measures may further inform decisions when deciding between GLP-1RA and SGLT2i agents. Although there were more patients assigned to the GLP-1RA group (705 vs. 358), this difference suggests that there no universal step requirement for either drug class. This study evaluated treatment patterns in US commercially insured patients with T2DM and may not be generalizable to the entire T2DM population in the US or abroad. Office samples for the index medications (GLP-1RA / SGLT2i) cannot be account for using paid administrative claims. Therefore, the index date may not have been the patient's true first fill of the index medication. This study did not evaluate the presence or absence of chronic kidney disease, which may be relevant given that the CDC states 15% of US adults are estimated to have chronic kidney disease and diabetes is one of the leading causes of kidney failure.

This real-world retrospective analysis of commercially insured patients with T2DM demonstrated that there were no statistically significant differences between adherence rates for patients initiating GLP-1RAs and SGLT2is, providing further data supporting the ADAs recommendation that these agents should not be preferred one over the other.

Sponsorship

Magellan Rx Management

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