Cost-Effectiveness of Glucagon-Like Peptide-1 (GLP-1) Receptor Agonists

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INTRODUCTION

In 2017, over 6% of the global population was affected by type 2 diabetes (T2D), a metabolic disorder characterized by the inability to properly secrete insulin and insulin resistance.[1] T2D is associated with increased risk of medical complications such as Chronic Kidney Disease and death.[2] Therefore, T2D and its associated complications impose significant disease and economic burden on both patients and society through direct and indirect costs.[3]
These costs are of great concern as the prevalence of diabetes continues to increase.[2]

People living with T2D have various treatments to control their disease. Usually, patients are prescribed a combination of antidiabetic medications and lifestyle modifications. Glucagon-like peptide 1 (GLP-1) receptor agonists are one of the most common classes of antidiabetic drugs.[4] GLP-1s manage blood sugar by lowering hepatic glucose output and are very effective at helping patients manage their T2D.[4]

In response to the increasing burden of T2D, new GLP-1s and other antidiabetic drugs are entering the market.[5] While these drugs are effective at controlling T2D, antidiabetic drugs are highly correlated with increases in medical spending and increased financial burden.[5] This and the growing burden of disease makes it pertinent that only the most cost-effective drugs are prescribed to patients. Cost-effective analysis (CEA) provides evidence into the additional value of a drug. CEA is often paired with modeling to assess the long-term cost effectiveness of drugs. These models offer useful insights into the potential long-term benefit of prescribing certain antidiabetic medications or combinations of medications over other treatments.

Objective

This study aimed to review the long-term cost-effectiveness of GLP-1 Receptor Agonists for the treatment of T2D against different classes of antidiabetic medications.

Particularly, the study aimed to assess the extrapolated results of long-term models from short-term clinical trials.

METHODS

This is a partial update of a systematic review by Hong, et al. from 2019 assessing the cost-effectiveness of T2D drugs focused on GLP-1 receptor agonists.[5]

Databases

- PubMed/EMBASE
- CINAHL Plus
- Embase

Search Strategy (MeSH Terms)

- Economics
- Cost-effectiveness
- Cost
- Value
- Cost-utility
- Names of GLP-1 receptor agonists

The search strategy was used in the PubMed/MEDLINE, EMBASE, CINAHL Plus databases (from 2 June 2018 to 7 December 2021). Studies assessing GLP-1 drugs from the initial review were also included.

Inclusion/Exclusion

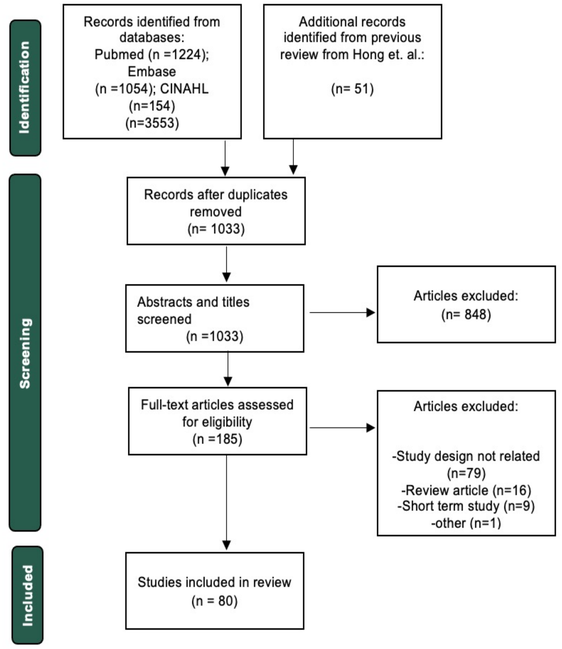
Studies were assessed for inclusion using title/abstract followed by a full-text review. Studies were excluded if they did not focus on GLP-1s, did not use a validated diabetes model, or focused on Type 1 Diabetes were excluded. Grey literature and conference papers were not included.

Data Extraction

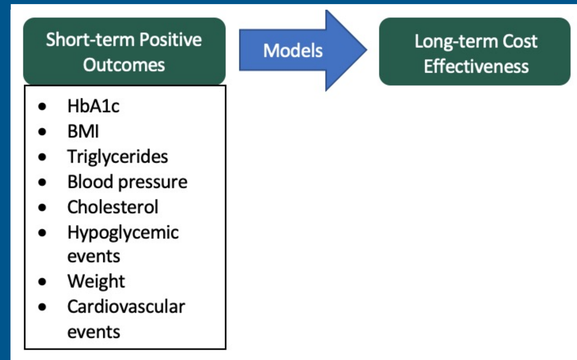
Data on type of comparison drug, short-term biologic outcomes, and long-term cost-effectiveness was extracted.

RESULTS

In total, 80 articles were found that used a validated diabetes model (e.g., CORE model and UKPDS model) to determine if short-term treatment effects from clinical trials such as HbA1c reduction led to the long-term cost-effectiveness of GLP-1s versus other T2D drugs. Of the 80 articles, 51 were from the initial review and 29 were from the updated search. Comparative drugs included other GLP-1s (n=32), insulin (n=31), sodium-glucose transport protein 2 inhibitors (SGLT2) (n=14), dipeptidyl-peptidase 4 (DPP4) (n=13), sulfonylureas (n=5), and thiazolidinediones (TZD) (n=3). GLP-1 was considered cost-effective compared to other GLP-1s and was considered cost-effective and dominant compared to TZDs and sulfonylureas. Although GLP-1s were cost-effective compared to DPP4s, 2 studies found that DPP4s were more cost-effective than GLP-1s. 30 of the 31 studies comparing GLP-1s to insulin found GLP-1s to be a cost-effective treatment and 1 article found GLP-1s not to be cost-effective.



PRISMA Flowchart



CONCLUSION

The review shows strong and consistent evidence that in the long term, GLP-1s are a cost-effective treatment for patients with uncontrolled T2D. A more complete update of the review should focus on the cost-effectiveness of other T2D drugs.

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