Type 2 diabetes mellitus (T2DM) is a chronic and progressive disease that is characterised by ß-cell dysfunction, insulin resistance, and compromised insulin secretion. It is the third leading cause of death worldwide, and its prevalence is increasing worldwide—primarily in low- and middle-income countries—resulting in more than 500 million people living with diabetes in 2017, with the figure expected to rise to 700 million by 2045. The economic and health consequences of T2DM are significant, with costs associated with diabetes and its complications estimated at around €400 billion per year globally and growing annually in most regions of the world. The current treatment options include dietary changes, exercise, weight loss, metformin, and a number of other oral hypoglycaemic drugs, with insulin being used in patients who fail to achieve glycaemic control with these agents. The introduction of new treatments, such as sodium-glucose cotransporter 2 (SGLT2) inhibitors, has represented an important step toward improving the management of T2DM. Despite an increased number of SGLT2 inhibitors, such as dapagliflozin, empagliflozin, liraglutide, and canagliflozin, the optimal comparator for achieving clinical benefit has not been determined. This study aimed to evaluate the cost-effectiveness of canagliflozin (CANA) versus liraglutide (LIRA) on the basis of a network meta-analysis of the literature and subsequent model simulations.

The Economic and Health Outcomes Model of T2DM (ECHO-T2DM; MediCrea; Paris) was developed to model T2DM and its complications, including micro- and macrovascular complications, and to project the costs and survival of individuals with T2DM. The model compared different drug therapies, such as metformin and basal insulin, and newly developed agents, such as SGLT2 inhibitors and GLP-1 receptor agonists.

The base case simulation was performed by generating and simulating the lives of 1,000 cohorts of 2,000 hypothetical T2DM patients. Sensitivity analyses were conducted using the same prediction model in which the following assumptions were varied: the duration of the drug after the last dose, the proportion of patients being treated with and without comorbidities, and the proportion of patients who had diabetes. The model also allows for the inclusion of patient-level costs, such as those associated with AEs, from a societal perspective.

In the base case, CANA was associated with incremental cost savings of €3,382 compared to LIRA 1.2 mg. It was also associated with smaller increases in the prevalence of complications, such as peripheral vascular disease, lower limb amputation, and retinopathy. The model also predicted that CANA resulted in a 2.5% decrease in the risk of all-cause mortality and a 3.4% decrease in the risk of hospitalisation compared to LIRA 1.2 mg. In addition, the model predicted that CANA was associated with a greater improvement in QALYs compared to LIRA 1.2 mg.

In conclusion, the results of this study suggest that CANA is a cost-effective therapy for the treatment of T2DM in people with comorbidities, particularly those who are insulin resistant. This study provides important information for healthcare decision-makers in Ireland and other countries, who may consider the use of CANA as part of their treatment strategy for T2DM.

Health-related Quality of Life

Quality-of-life data were acquired from 801 patients (51.6% female) across 8 countries across 8 countries. Five-point and four-point Likert scales were used to assess the impact of diabetes and diabetes-related AEs on the patients' quality of life. After 28 weeks of treatment, the patients' quality of life was assessed using a visual analogue scale (VAS) ranging from 0 to 100 points, with a score of 0 indicating the worst quality of life and a score of 100 indicating the best quality of life. The patients were asked to score their health status and to rate their health status on a 0 to 10 scale.

Results

The results showed that the mean VAS score for quality of life was 78.5 points for the CANA group and 76.2 points for the LIRA group. The mean VAS score for health status was 7.8 points for the CANA group and 7.6 points for the LIRA group. The mean VAS score for health status was 7.8 points for the CANA group and 7.6 points for the LIRA group. The mean VAS score for the patients’ perception of their health status was 7.8 points for the CANA group and 7.6 points for the LIRA group. The mean VAS score for the patients’ perception of their health status was 7.8 points for the CANA group and 7.6 points for the LIRA group.

Discussion

The results of this study suggest that CANA is a cost-effective therapy for the treatment of T2DM in people with comorbidities, particularly those who are insulin resistant. This study provides important information for healthcare decision-makers in Ireland and other countries, who may consider the use of CANA as part of their treatment strategy for T2DM.

Summary

CANA, as an SGLT2 inhibitor, may be used for a cost-effective treatment versus LIRA for patients who are uncontrolled with metformin therapy, suggesting that CANA represents a good value for money treatment for T2DM patients in Ireland. Benefits analyses and consideration of patient uncertainty suggest that the results are robust.