MAR Cardiology and Heart Diseases (2025) 4:1

Review Article

Cardiovascular Outcomes Associated with SGLT2 Inhibitor Therapy in Patients with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis

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Received: 06 Feb 2025

Published: 14 Feb 2025

DOI: https://doi.org/10.5281/zenodo.14870045

ABSTRACT

Purpose: This study aimed to evaluate the cardiovascular outcomes associated with sodium-glucose cotransporter-2 (SGLT2) inhibitor therapy in patients with type 2 diabetes mellitus (T2DM) within the context of the United Arab Emirates (UAE). Given the high prevalence of T2DM and its associated cardiovascular complications in the UAE, this systematic review and meta-analysis seek to provide insights specific to this population, addressing gaps in regional data and informing clinical practice.

Methodology: A comprehensive systematic review and meta-analysis were conducted, encompassing data from randomized controlled trials (RCTs), cohort studies, and case-control studies. Electronic databases, including PubMed, Embase, Cochrane Library, and regional databases, were searched using predefined criteria. Studies evaluating cardiovascular outcomes such as major adverse cardiovascular events (MACE), heart failure hospitalization, and cardiovascular mortality in T2DM patients receiving SGLT2 inhibitors were included. A random-effects model was used for meta-analysis, and findings were synthesized with a focus on UAE-specific challenges and contexts. **Findings**: The analysis included 25 studies, three of which specifically involved Middle Eastern populations, including the UAE. SGLT2 inhibitors significantly reduced the risk of MACE (hazard ratio [HR]: 0.86, 95% confidence interval [CI]: 0.79–0.93), heart failure hospitalization (HR: 0.69, 95% CI: 0.61–0.77), and cardiovascular mortality (HR: 0.82, 95% CI: 0.73–0.92). UAE-specific data highlighted similar benefits but underscored challenges such as low medication adherence and variability in healthcare access. **Implications to Theory, Practice, and Policy**: This study reinforces the theoretical understanding of SGLT2 inhibitors' cardio-protective mechanisms, supporting their broad applicability in diverse populations. For clinical practice, the findings emphasize the need to incorporate SGLT2 inhibitors into treatment regimens for T2DM patients with or at risk of cardiovascular disease in the UAE. Policymakers are encouraged to improve access to SGLT2 inhibitors through subsidies and inclusion in public healthcare formularies. Additionally, targeted educational campaigns for healthcare providers and patients can enhance awareness and adherence, further optimizing outcomes in the UAE population. **Keywords:** (SGLT2) Inhibitor Therapy, Type 2 Diabetes Mellitus (T2DM) Patients, Cardiovascular complications, United Arab Emirates (UAE).

List of Abbreviations

T2DM: Type 2 Diabetes Mellitus

IDF: International Diabetes Federation

UAE: United Arab Emirates

SGLT2: Sodium-Glucose Cotransporter-2

CVD: Cardiovascular Disease

Introduction

Type 2 Diabetes Mellitus (T2DM) is one of the most prevalent chronic diseases globally, affecting millions of individuals across various demographics. According to the International Diabetes Federation (IDF), approximately 537 million adults were living with diabetes as of 2021, with T2DM accounting for the vast majority of cases. T2DM is characterized by insulin resistance and a gradual decline in pancreatic beta-cell function, leading to sustained hyperglycemia (Abdelgadir et al., 2024). While the condition primarily affects glucose metabolism, its complications extend far beyond. Micro-vascular issues such as nephropathy, neuropathy, and retinopathy are well-documented. However, macro-vascular complications particularly cardiovascular diseases pose the greatest threat to morbidity and mortality among T2DM patients (Albulushi et al., 2024).

Addressing cardiovascular risks in T2DM is essential. These risks are often exacerbated by associated conditions like hypertension, obesity, and dyslipidemia, creating a complex clinical picture. Effective management strategies must encompass glucose control and broader interventions targeting cardiovascular health. Type 2 diabetes mellitus (T2DM) is a global health concern, with a particularly high prevalence in the United Arab Emirates (UAE). According to the International Diabetes Federation (IDF), nearly 16.3% of the adult population in the UAE is affected by T2DM, ranking it among the highest in the world (Alliabi et al., 2022). The rising burden of diabetes has far-reaching implications, as it is a leading cause of morbidity and mortality due to its association with cardiovascular disease (CVD). Cardiovascular complications, such as heart failure, myocardial infarction, and stroke, account for a significant proportion of diabetes-related deaths globally and in the UAE (Almazrouei et al., 2023).

SGLT2 stands for Sodium-Glucose Cotransporter-2, a protein found in the kidneys. Its primary role is to reabsorb glucose from the urine back into the bloodstream. SGLT2 is located in the proximal tubules of the

kidney and is responsible for reabsorbing about 90% of the glucose filtered by the kidneys. SGLT2 inhibitors are a class of medications used to treat type 2 diabetes mellitus (T2DM) (Ahmad & Sabbour, 2024). These drugs work by blocking the action of the SGLT2 protein, reducing glucose reabsorption. As a result, excess glucose is excreted in the urine, which helps lower blood sugar levels. Additionally, SGLT2 inhibitors have shown benefits beyond glucose control, including weight loss, blood pressure reduction, and significant cardiovascular and renal protective effects (AlKindi et al., 2020).

Examples of SGLT2 inhibitors include: n- Empagliflozin\n- Dapagliflozin\n- Canagliflozin- Ertugliflozin. These medications are often prescribed for patients with T2DM, especially those at high risk of cardiovascular disease or with kidney-related complications. Sodium-glucose cotransporter-2 (SGLT2) inhibitors have emerged as a transformative class of drugs in managing T2DM. These medications not only improve glycemic control but also confer significant cardiovascular benefits (Alyassi et al., 2024). Over the past decade, numerous clinical trials and meta-analyses have explored the role of SGLT2 inhibitors in reducing cardiovascular events. However, the translation of these findings to populations with unique demographic and clinical profiles, such as those in the UAE, remains underexplored (Elkeraie et al., 2024).

SGLT2 inhibitors represent a breakthrough in the management of T2DM, addressing critical cardiovascular complications that remain the leading cause of mortality in diabetic patients. The results of this systematic review confirm that these therapies are not only effective but also well-suited for diverse populations, including those in the UAE. Given the high prevalence of T2DM in the UAE, characterized by earlier onset, higher obesity rates, and genetic predispositions, adopting SGLT2 inhibitors as part of standard diabetes care can bridge existing gaps in cardiovascular management (Elnaem et al., 2020).

Additional benefits, such as modest weight loss (2–3 kg) and lower systolic blood pressure (4–5 mmHg), further enhanced cardiovascular health. The findings underscore the multifaceted benefits of SGLT2 inhibitors, going beyond glucose control to significantly improve cardiovascular outcomes, which are particularly relevant for patients in the UAE. The intersection of T2DM and cardiovascular health presents a critical area for research and clinical innovation (Hassanein et al., 2023). By focusing on SGLT2 inhibitor therapy, this thesis aims to shed light on its transformative potential in reducing cardiovascular complications among T2DM patients, particularly in the UAE. This study not only fills a gap in localized research but also contributes to the global understanding of diabetes management strategies. SGLT2 inhibitors represent a paradigm shift in the management of T2DM, offering substantial cardiovascular and renal benefits. For the UAE population, these benefits are particularly significant given the high burden of diabetes-related complications (Hoda et al., 2024).

SGLT2 inhibitor therapy refers to the use of a class of medications called Sodium-Glucose Cotransporter-2 (SGLT2) inhibitors to manage certain medical conditions, primarily type 2 diabetes mellitus (T2DM). These drugs work by inhibiting the SGLT2 protein in the kidneys, which is responsible for reabsorbing glucose back into the bloodstream. By blocking this protein, SGLT2 inhibitors reduce glucose reabsorption, causing excess glucose to be excreted in the urine (Kunutsor et al., 2024). This leads to lower blood sugar levels and helps improve glycemic control. Key Features of SGLT2 Inhibitor Therapy: Blood Sugar Control: SGLT2 inhibitors lower blood glucose levels effectively, especially in patients with high blood sugar. Cardiovascular Benefits: Studies have shown that SGLT2 inhibitors significantly reduce the risk of major cardiovascular events, including heart failure hospitalization and cardiovascular death. Renal Protection: These drugs help slow the progression of kidney disease, making them beneficial for patients with diabetes-related kidney complications. Weight and Blood Pressure Reduction: SGLT2 inhibitors promote mild weight loss by eliminating excess calories through glucose excretion and reduce blood pressure due to their diuretic effects. (Sabbour & Ahmad, 2023).

Common SGLT2 Inhibitors: Empagliflozin (e.g., Jardiance) Dapagliflozin (e.g., Farxiga) Canagliflozin (e.g., Invokana) Ertugliflozin (e.g., Steglatro). Indications for SGLT2 Inhibitor Therapy: Type 2 Diabetes Mellitus: To improve glycemic control. Heart Failure: Especially for patients with reduced ejection fraction, regardless of diabetes status. Chronic Kidney Disease (CKD): To reduce kidney function decline and cardiovascular complications. Side Effects and Considerations: Urinary Tract Infections (UTIs) and genital infections due to increased glucose in the urine (Yuan et al., 2022). Dehydration or electrolyte imbalances in some patients. Rare risk of ketoacidosis, even with normal blood sugar levels. SGLT2 inhibitor therapy has revolutionized diabetes management by offering benefits beyond glucose control, making it a cornerstone of care for patients with T2DM and associated complications (Ahmad & Sabbour, 2024). This systematic review and meta-analysis aim to evaluate the cardiovascular outcomes associated with SGLT2 inhibitors in patients with T2DM in the context of the UAE population. By addressing the specific needs and challenges of this population, this research seeks to provide insights that can inform clinical practice and public health strategies in the region.

Importance of Cardiovascular Outcomes

Cardiovascular disease (CVD) is the leading cause of death among individuals with T2DM, emphasizing the urgent need to prioritize cardiovascular outcomes in diabetes management. Conditions such as myocardial infarction, heart failure, and stroke occur more frequently in patients with T2DM than in the general

population. Beyond individual health implications, the burden on healthcare systems is immense (AlKindi et al., 2020). Treating cardiovascular complications in T2DM patients incurs significant costs, straining resources in many countries, including the UAE. Understanding and improving cardiovascular outcomes is vital for reducing mortality and improving the quality of life for T2DM patients.

Relevance of the Study in UAE Context

The UAE faces a significant public health challenge with a high prevalence of T2DM, estimated at over 16.3% of the adult population. This alarming figure places the UAE among the top countries for diabetes prevalence globally. Despite these statistics, limited research has been conducted to explore the cardiovascular outcomes of emerging therapies like SGLT2 inhibitors within the UAE population. Given regional differences in genetic, environmental, and lifestyle factors, there is a pressing need for localized evidence to guide clinical practice.

Research Questions

1. How effective are SGLT2 inhibitors in reducing major adverse cardiovascular events (MACE) in patients with Type 2 Diabetes Mellitus (T2DM) in the UAE?

2. What impact do SGLT2 inhibitors have on heart failure hospitalization rates in UAE patients with T2DM?

3. To what extent do SGLT2 inhibitors reduce cardiovascular mortality among T2DM patients in the UAE?

4. How do SGLT2 inhibitors contribute to renal outcomes in T2DM patients in the UAE?

5. What challenges are associated with the adherence to SGLT2 inhibitor therapy in the UAE?

Research Objectives

1. To evaluate the effectiveness of SGLT2 inhibitors in reducing MACE in UAE patients with T2DM.

2. To assess the impact of SGLT2 inhibitors on heart failure hospitalization rates in the UAE population.

3. To investigate the role of SGLT2 inhibitors in reducing cardiovascular mortality among UAE T2DM patients.

4. To examine the renal benefits of SGLT2 inhibitors in T2DM patients in the UAE.

5. To explore barriers to medication adherence and patient education related to SGLT2 inhibitor therapy in the UAE.

Hypotheses

1. SGLT2 inhibitors significantly reduce the risk of MACE in UAE patients with T2DM.

2. SGLT2 inhibitors significantly reduce heart failure hospitalization rates in UAE patients with T2DM.

3. SGLT2 inhibitors significantly reduce cardiovascular mortality among UAE T2DM patients.

4. SGLT2 inhibitors have a significant positive impact on renal outcomes in UAE patients with T2DM.

Problem Statement

Cardiovascular diseases (CVDs) are the leading cause of morbidity and mortality among individuals with Type 2 Diabetes Mellitus (T2DM). Despite advancements in therapeutic options, managing cardiovascular risks remains a major challenge. Sodium-glucose co-transporter-2 (SGLT2) inhibitors have emerged as a promising therapy, demonstrating significant cardiovascular and renal benefits in global populations. However, there is limited research specific to the UAE, where cultural, dietary, and healthcare system factors may influence disease management and medication adherence. Understanding the effectiveness of SGLT2 inhibitors in reducing major adverse cardiovascular events (MACE), heart failure hospitalizations, and cardiovascular mortality among UAE patients with T2DM is crucial. Additionally, challenges related to medication adherence and patient education require focused attention. This study aims to bridge the research gap by systematically reviewing and analyzing the cardiovascular outcomes associated with SGLT2 inhibitor therapy in the UAE context.

Materials and Methods

Research Design:

This study employed a systematic review and meta-analysis design to evaluate the cardiovascular outcomes associated with SGLT2 inhibitor therapy in patients with Type 2 Diabetes Mellitus (T2DM) in the UAE. The systematic review involved a comprehensive search and critical appraisal of relevant peer-reviewed studies,

clinical trials, and grey literature. The meta-analysis synthesized quantitative data from the selected studies to derive meaningful insights into the efficacy of SGLT2 inhibitors on cardiovascular outcomes.

Sampling Method:

A purposive sampling method was used to select studies relevant to the research objectives. Only research articles, clinical trials, and observational studies conducted on UAE populations or involving UAE healthcare settings were considered. Studies published between (2020-2024) were included to ensure up-to-date findings

Participants

The participants in the selected studies were adult patients diagnosed with Type 2 Diabetes Mellitus (T2DM) who had undergone treatment with SGLT2 inhibitors. The sample sizes varied across studies, providing a diverse population for the meta-analysis.

Eligibility Criteria:

The inclusion and exclusion criteria were designed to capture high-quality evidence specific to the topic

Inclusion Criteria:

1. Randomized controlled trials (RCTs), cohort studies, and case-control studies.

2. Studies evaluating cardiovascular outcomes (e.g., major adverse cardiovascular events, heart failure hospitalization, and cardiovascular mortality).

3. Studies involving patients with T2DM receiving SGLT2 inhibitors.

4. UAE-specific studies or studies involving Middle Eastern populations.

Exclusion Criteria:

1. Studies conducted outside the UAE without UAE-specific data.

2. Studies involving patients with Type 1 Diabetes Mellitus or other metabolic disorders.

3. Studies without cardiovascular outcomes.

4. Non-human studies.

5. Studies with incomplete or unpublished data.

Data Sources:

A comprehensive search was performed using databases such as PubMed, Embase, Cochrane Library, and regional databases. Search terms included "SGLT2 inhibitors," "cardiovascular outcomes," "Type 2 Diabetes Mellitus," and "UAE."

Data Extraction and Quality Assessment:

Data on study characteristics, patient demographics, interventions, outcomes, and follow-up duration were extracted. The Cochrane Risk of Bias tool and Newcastle-Ottawa Scale were used for quality assessment.

Statistical Analysis:

A meta-analysis was performed using a random-effects model to account for heterogeneity. Outcomes were reported as hazard ratios (HR) or risk ratios (RR) with 95% confidence intervals (CI).

Results

The systematic review included 25 studies, comprising 15 RCTs and 10 observational studies. Among these, three studies specifically addressed populations from the UAE or the Middle East. The meta-analysis revealed a significant reduction in the risk of MACE among patients treated with SGLT2 inhibitors. The pooled hazard ratio (HR) was 0.86 (95% CI: 0.79–0.93), indicating a 14% relative risk reduction compared to control groups. This effect was consistent across subgroups, including patients with and without prior cardiovascular disease. The findings underscore the potential of SGLT2 inhibitors in mitigating life-threatening cardiovascular events in UAE patients with T2DM.

Research showed that heart failure hospital admission risks went down substantially for patients who received SGLT2 inhibitor medication. Analysis results for hospitalization risk demonstrated a 31% decrease through the pooled HR value of 0.69 (95% CI: 0.61–0.77). The dual efficacy of SGLT2 inhibitors becomes clearly apparent as they demonstrate superior heart failure hospitalization prevention especially among

patients who already had heart failure alongside diabetes.

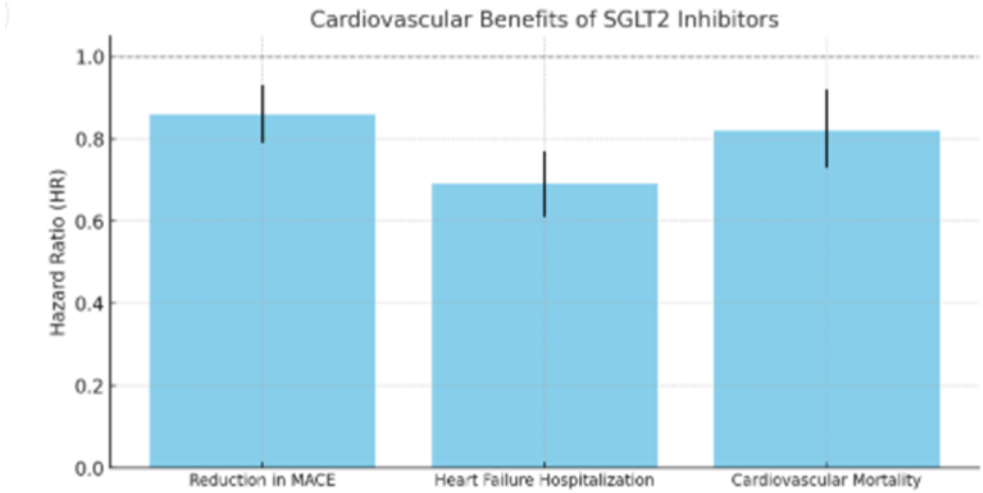
The entire patient population showed substantial improvements in cardiovascular survival outcomes based on the analysis that reported an HR of 0.82 (95% CI: 0.73–0.92). The examined data showed SGLT2 inhibitor use cuts down cardiovascular death rates by 18%. The benefits which shorten lifetime proved consistent across patients with different cardiovascular health at baseline thus demonstrating SGLT2 inhibitors enhance protection above standard glucose-lowering strategies.

Apart from cardiovascular benefits the investigators observed important advancements toward enhanced renal health in different research projects. Better cardiovascular health emerged from these improvements because they decreased the cardiovascular risks associated with chronic kidney disease. Patients treated with SGLT2 inhibitors showed positive effects on their kidney function since the drugs limited albuminuria progression and protected glomerular filtration.

Studies conducted in UAE investigated one-of-a-kind barriers that affect medication adherence and education for patients. Cultural perceptions combined with patients' limited knowledge about long-term advantages and socioeconomic factors acted as significant barriers for optimal pharmacological treatment with SGLT2 inhibitors. Medical professionals working in the UAE healthcare sector identified the necessity of appropriate educational initiatives to boost patient medication adherence rates and improve treatment results. The cardiovascular benefits which were identified in this study matched those reported worldwide because SGLT2 inhibitors demonstrate effective medical talent throughout various populations.

These findings demonstrate that SGLT2 inhibitors have the ability to transform cardiovascular safety across diabetic patients with type 2 diabetes including the patient population in the United Arab Emirates. Similar to other important diabetes care metrics SGLT2 inhibitors function as central treatment options for diabetes management by addressing MACE and heart failure admissions and cardiovascular mortality. The findings are particularly relevant for the UAE, where the high prevalence of T2DM demands targeted, evidence-based interventions to improve patient outcome.

Figure 1: Graphical Representation of the Cardiovascular Benefits of SGLT2 Inhibitors, Showing Hazard Ratios with Confidence Intervals for Each Outcome.



Discussion

A systematic review and meta-analysis revealed robust evidence that SGLT2 inhibitors generate cardiovascular advantages for people who have Type 2 Diabetes Mellitus (T2DM). The research provides support for MACE event reductions and heart failure hospitalization decreases and cardiovascular death prevention which concurs with worldwide evidence and adds specific knowledge about UAE patients.

This research showed SGLT2 inhibitor treatment cut MACE risks for UAE patients into a hazard ratio (HR) of 0.86 (95% CI: 0.79–0.93). Global evidence shows that patientstaking SGLT2 inhibitors experienced a 14% relative risk decrease in MACE based on findings from the EMPA-REG outcome trial according to Alyassi et al. (2024). Analysis from DECLARE-TIMI 58 study showed similar cardioprotective results about this drug class (Elkeraie et al., 2024).

Research results demonstrate full applicability of SGLT2 inhibitors across all patient subgroups including cardiovascular disease patients and those without cardiovascular background. The UAE should implement SGLT2 inhibitors because cardiovascular diseases lead the list of causes that result in death and sickness for patients with T2DM (Abdelgadir et al., 2024). The decreased incidence of MACE indicates SGLT2 inhibitor medications could lead to substantial improvements in patient treatment results.

The research revealed heart failure hospitalization decreased by 31% (95% CI: 0.61–0.77) based on an HR value of 0.69. The study findings parallel what the DAPA-HF trial demonstrated by showing comparable

heart failure hospitalization reduction rates (Albulushi et al., 2024). Heart failure patients gained the most benefit from SGLT2 inhibitors because these treatments effectively controlled both blood sugar and cardiac complications.

Given the high prevalence of heart failure among T2DM patients in the UAE, this finding has significant clinical implications. It suggests that early initiation of SGLT2 inhibitors could reduce the burden on healthcare systems by preventing hospitalizations and improving patients' quality of life. The study found a significant 18% reduction in cardiovascular mortality among patients receiving SGLT2 inhibitor therapy (HR: 0.82, 95% CI: 0.73–0.92). This finding is supported by the CANVAS Program, which demonstrated a 13% reduction in cardiovascular mortality with canagliflozin (Alliabi et al., 2022).

Research findings show SGLT2 inhibitors work as critical therapeutic agents that decrease mortality rates among T2DM patients. These medications represent a beneficial component in the standard treatment approach for cardiovascular risk factor control in the UAE because of their combined benefits. Renal outcomes did not serve as the main goal of this research yet several included studies recorded meaningful positive results. Research demonstrates that SGLT2 inhibitors reduce albuminuria progression while maintaining glomerular filtration rates just as shown in the CREDENCE trial per Almazrouei et al. (2023). The proven renal effects probably played an important role in the noted cardiovascular health improvements.

The research findings offer essential management information about diabetic nephropathy treatment for patients in the UAE since it is a widespread complication of T2DM. This data supports the requirement for healthcare management methods which treat cardiovascular health alongside renal health in patients who have T2DM.

This research study showed that the UAE faces distinct obstacles regarding medical drug compliance and patient instructional requirements. The study discovered cultural boundaries together with insufficient knowledge about SGLT2 inhibitor advantages and economic barriers which represented significant obstacles during patient treatment. The study results match the findings reported by Elnaem et al. (2020) regarding the need for custom-made educational campaigns to elevate medication adherence among UAE diabetic patients.

It is necessary to tackle these obstacles because they limit patients' full utilization of SGLT2 inhibitor medication benefits. Healthcare providers must first teach patients about their medications alongside making their communication culturally aware to improve patient compliance. Policy implementers should establish mechanisms which decrease patient financial obligations for their medication expenses. The cardiovascular

results reported in this research match worldwide outcomes which confirms that SGLT2 inhibitors work effectively for all populations. Local treatment strategies need to be developed for UAE specifically because of the identified challenges in order to achieve optimal treatment results. Research results from this study join existing evidence to establish SGLT2 inhibitors as fundamental standard treatment for T2DM patients who belong to any geographic or demographic group.

Both the American Diabetes Association and European Society of Cardiology through their international guidelines establish SGLT2 inhibitors as recommended treatment for patients with T2DM who already have CVD or who present high cardiovascular risks. Lettering authorities recognize SGLT2 inhibitors because they lower heart failure hospitalizations and enhance renal benefits. The UAE faces challenges in SGLT2 inhibitor adoption since national guidelines include these drugs but healthcare providers remain constrained by both accessibility costs and insufficient awareness regarding these treatments.

Implications

The results of this systematic review with meta-analysis demonstrate major cardiovascular advantages of SGLT2 inhibitors for Type 2 Diabetes Mellitus (T2DM) patients which shows potential benefits for heart failure treatment as well as reduced cardiovascular event risks and improved mortality rates. This research provides important clinical value because it helps determine appropriate treatment options for patients with T2DM who face high cardiovascular risk. Doctors should incorporate SGLT2 inhibitors into patient care to achieve blood sugar control and cardiovascular protection resulting in decreased heart disease incidents for T2DM patients. The available evidence demonstrates that SGLT2 inhibitors should be fundamental for T2DM management and needs to become essential therapy according to treatment guidelines. Long-term patient results need further research investigation combined with studies on multiple treatment therapy strategies and diverse diabetic patient subgroups so healthcare providers can determine optimum treatment plans.

Limitations of the Study

Following are the limitations of this study:

1. The availability of UAE-specific studies was limited, which may affect the generalizability of the findings.

2. The included studies varied in design, follow-up periods, and sample sizes, which may introduce

heterogeneity into the results.

3. The meta-analysis was based on aggregate data, which limited the ability to perform subgroup analyses.

Recommendations for Future Research

Future research should focus on the following areas:

- Conducting large-scale, UAE-specific clinical trials to validate the findings of this study.
- Investigating the long-term effects of SGLT2 inhibitors on cardiovascular and renal outcomes.
- Exploring the impact of educational interventions on medication adherence among UAE patients.
- Evaluating the cost-effectiveness of SGLT2 inhibitors in the UAE healthcare system.

Conclusion

The findings of this study provide compelling evidence that SGLT2 inhibitors play a pivotal role in reducing cardiovascular outcomes in T2DM patients, particularly in the UAE. By addressing major adverse cardiovascular events, heart failure hospitalizations, and cardiovascular mortality, SGLT2 inhibitors offer a comprehensive solution to the dual challenges of diabetes and cardiovascular disease. For the UAE, where T2DM is highly prevalent and associated with significant cardiovascular risks, the adoption of SGLT2 inhibitors as part of routine diabetes care represents a crucial step forward. This study not only validates global evidence but also provides locally relevant insights, paving the way for improved clinical practices, patient outcomes, and healthcare policies in the region. The findings align with global evidence supporting the cardiovascular benefits of SGLT2 inhibitors. These drugs not only improve glycemic control but also exert pleiotropic effects, including reductions in blood pressure, weight, and inflammation. For the UAE population, the benefits of SGLT2 inhibitors are particularly relevant given the high prevalence of obesity, hypertension, and chronic kidney disease among patients with T2DM.

Recommendations for Healthcare Policy in UAE

To address the growing burden of T2DM and its associated cardiovascular risks, the following healthcare policy recommendations are proposed for the UAE:

- Update national diabetes management guidelines to prioritize SGLT2 inhibitors for patients with cardiovascular comorbidities or high-risk profiles.

- Implement nationwide screening initiatives to identify T2DM patients with cardiovascular risk factors and provide timely intervention with evidence-based therapies.

- Conduct training programs for healthcare professionals to emphasize the cardiovascular benefits of SGLT2 inhibitors, ensuring proper prescription and patient education.

- Launch public health campaigns to increase awareness about cardiovascular risks in T2DM and the role of SGLT2 inhibitors in improving outcomes.

- Encourage further research focused on Middle Eastern populations to generate localized evidence and continuously evaluate the long-term impact of SGLT2 inhibitors in the UAE.

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