INPLASY

Hepatic and Renal Outcomes of SGLT2 Inhibitor Therapy in Patients With Cirrhosis and Chronic Kidney Disease: A Systematic Review and Meta-analysis

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ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - The review has not yet started.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202650068

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 11 May 2026 and was last updated on 11 May 2026.

INTRODUCTION

Review question / Objective Primary Aim: To evaluate the effect of SGLT2 inhibitor therapy on hepatic and renal outcomes in patients with cirrhosis and chronic kidney disease.

Rationale Management of hepatorenal dysfunction in cirrhosis remains challenging. Conventional diuretic therapy is frequently limited by electrolyte abnormalities, hypotension, worsening renal function, and recurrent ascites requiring repeated paracentesis. SGLT2 inhibitors may provide an additional therapeutic mechanism through natriuresis and renal protection while improving metabolic dysfunction Emerging evidence has demonstrated encouraging findings regarding the use of dapagliflozin and empagliflozin in refractory ascites and cirrhosis-associated renal dysfunction .Furthermore, large real-world cohort studies have reported associations between SGLT2 inhibitor use and reduced risks of hepatic decompensation, serious liver events, kidney-related outcomes, and mortality.

Condition being studied CKD, CIRRHOSIS, END STAGE LIVER DISEASE.

METHODS

Search strategy Search terms will include combinations of the following keywords and MeSH terms: “SGLT2 inhibitor”, “sodium-glucose cotransporter-2 inhibitor”, “empagliflozin”, “dapagliflozin”, “cirrhosis”, “decompensated cirrhosis”, “ascites”, “hepatic decompensation”, “acute kidney injury”, “chronic kidney disease”, and “hepatorenal syndrome”. Reference lists of included studies and relevant reviews will also be screened.

Participant or population Inclusion Criteria:
- Adults aged ≥18 years.
- Patients with confirmed liver cirrhosis.
- Studies evaluating SGLT2 inhibitor therapy.
- Randomized controlled trials, cohort studies, pilot studies, feasibility studies, and case-control studies.
- Studies reporting hepatic or renal outcomes.

Intervention SGLT 2 INHIBITOR.

Comparator None.

Study designs to be included RCI , NON RANDOMIZED CONTROL TRIALS.

Eligibility criteria Inclusion Criteria:
• Adults aged ≥18 years.
• Patients with confirmed liver cirrhosis.
• Studies evaluating SGLT2 inhibitor therapy.
• Randomized controlled trials, cohort studies, pilot studies, feasibility studies, and case-control studies.
• Studies reporting hepatic or renal outcomes.

Information sources Database Search: A comprehensive search will be performed in PubMed/MEDLINE, Embase, Scopus, Web of Science, Cochrane Library, and Google Scholar from inception until the final search date.

Main outcome(s) • Hepatic decompensation
• Ascites-related outcomes
• Acute kidney injury
• CKD progression
• All-cause mortality
Secondary Outcomes
• Hospitalization
• MELD score and Child-Pugh score
• Liver enzyme changes
• HbA1c changes
• Adverse events
Expected Significance
This systematic review and meta-analysis will provide comprehensive evidence regarding the hepatic and renal effects of SGLT2 inhibitors in patients with cirrhosis and CKD. The findings may clarify the role of SGLT2 inhibitors as a potential adjunctive therapy in hepatorenal dysfunction and identify important evidence gaps for future prospective trials.

Quality assessment / Risk of bias analysis Risk of bias will be assessed using the Cochrane RoB 2 tool for randomized controlled trials and Newcastle-Ottawa Scale for observational studies.

Strategy of data synthesis Extracted variables will include author, publication year, country, study design, sample size, cirrhosis etiology, compensated/decompensated status, CKD status, diabetes status, SGLT2 inhibitor type, comparator therapy, duration of follow-up, hepatic outcomes, renal outcomes, mortality, hospitalization, and adverse events.
Subgroup analysis Extracted variables will include author, publication year, country, study design, sample size, cirrhosis etiology, compensated/decompensated status, CKD status, diabetes status, SGLT2 inhibitor type, comparator therapy, duration of follow-up, hepatic outcomes, renal outcomes, mortality, hospitalization, and adverse events.

Sensitivity analysis Extracted variables will include author, publication year, country, study design, sample size, cirrhosis etiology, compensated/decompensated status, CKD status, diabetes status, SGLT2 inhibitor type, comparator therapy, duration of follow-up, hepatic outcomes, renal outcomes, mortality, hospitalization, and adverse events.

Language restriction No.

Country(ies) involved UNITED STATES OF AMERICA.

Keywords SGLT2 , PORTAL HYPERTENSION, CKD, CIRRHOSIS.

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