

## Safety and efficacy of SGLT2 inhibitors in diabetic and non-diabetic heart failure patients, a meta-analysis of randomized controlled trials

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**Background:** Heart failure (HF) is the most common cardiovascular causes of hospitalization in people over 60 years affecting about 64.3 million people worldwide. Few studies have investigated sodium glucose like transporter-2 inhibitors (SGLT-2i) role in diabetic and non-diabetic patients with HF.

**Objective:** We conducted our meta-analysis to further investigate SGLT-2i role in diabetic and non-diabetic HF patients.

**Methods:** PubMed, Scopus, web of science, and Embase were searched. All clinical trials that compared the effect of SGLT2 inhibitors versus placebo on heart failure patients were included. Dichotomous data were extracted, pooled as risk ratio (RR) with 95% confidence interval, and analyzed via RevMan version 5.3 for windows using Mantel Haenszel (M-H) method.

**Results:** Twelve randomized clinical trials were included for analysis with

a total number of 69024 patients. SGLT2i significantly lowered the risk of hospitalization for heart failure (HHF) in diabetic (RR=0.68, 95% CI 0.63–0.74) and non-diabetic patients (RR=0.75, 95% CI 0.62–0.89). Also, it significantly lowered mortality risk in both diabetic (RR=0.87, 95% CI 0.77–0.99) and non-diabetic patients (RR=0.93, 95% CI 0.70–1.23). Further analyses for serious adverse events were conducted, and SGLT-2i showed a significant lower risk in diabetic (RR=0.94, 95% CI 0.90–0.98) and non-diabetic patients (RR=0.72, 95% CI 0.38–1.39), yet with no observed difference over placebo in the risk of stroke.

**Conclusion:** SGLT2 inhibitors showed a favorable effect in lowering cardiovascular mortality, HHF, and stroke in diabetic patients with heart failure. In non-diabetic patients, they significantly reduce HHF, yet with no difference on cardiovascular mortality and stroke. Therefore, more trials are needed to establish their effect in non-diabetic patients.

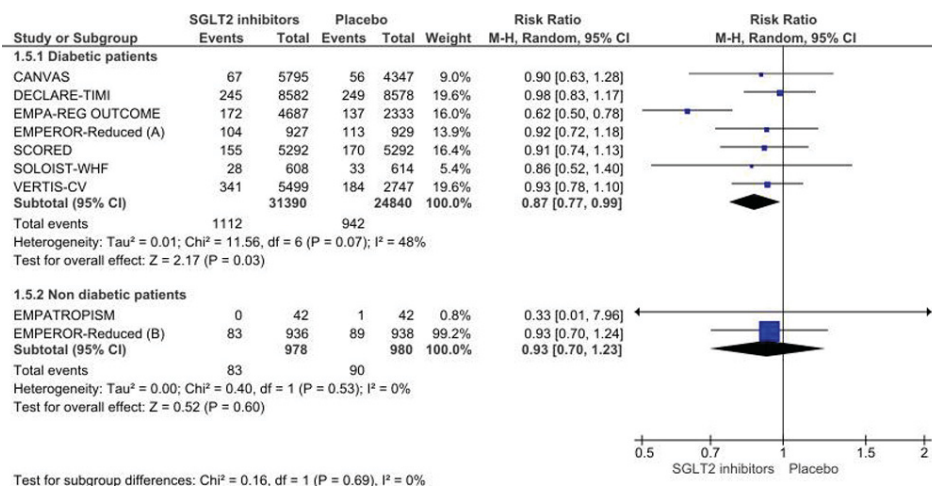


Figure 1. Analysis of cardiovascular mortality

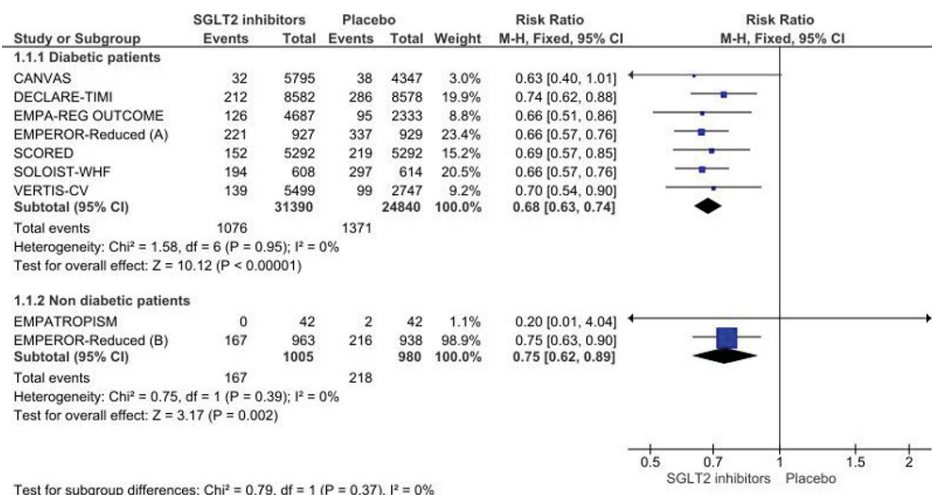


Figure 2. Analysis of hospitalization for HF