Supplementary Material

Search strategy:

P: Patients with atrial fibrillation and chronic liver disease

I: Direct oral anticoagulants (DOAC)

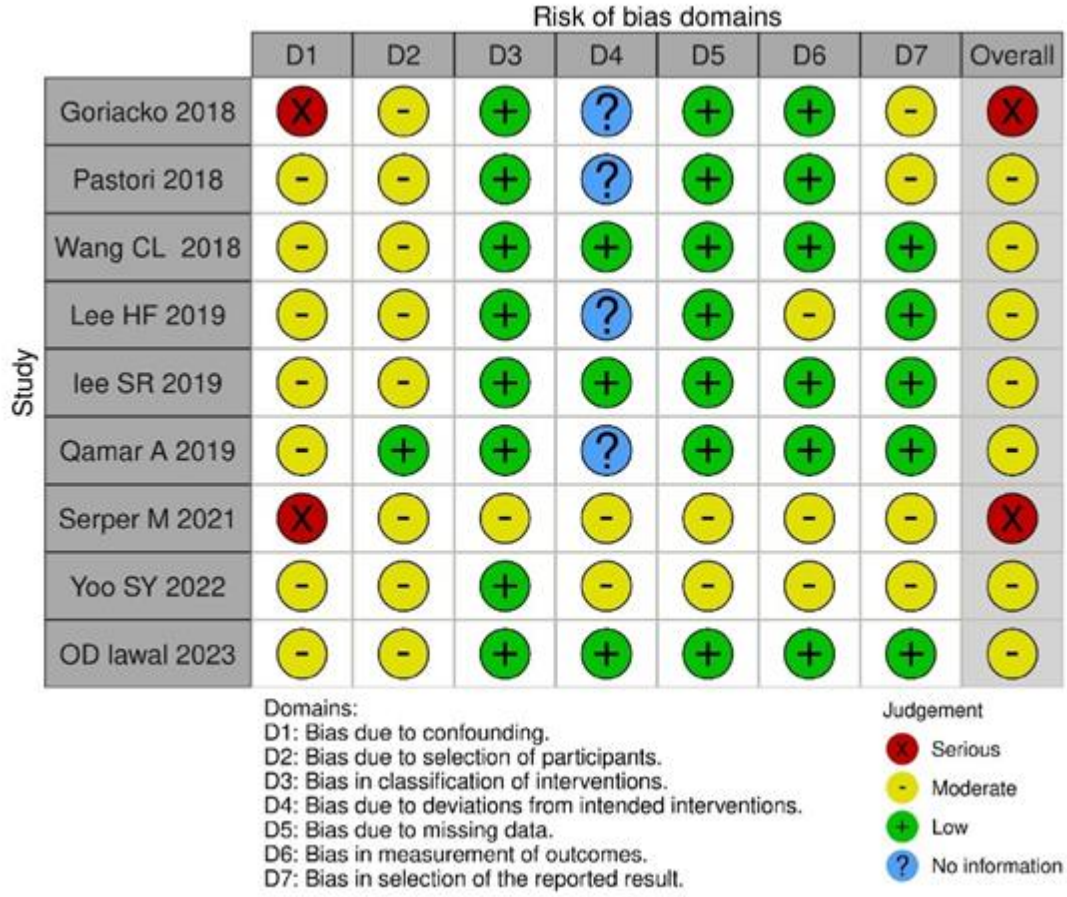
C: Warfarin

O: Efficacy and safety (e.g., the efficacy endpoints included ischemic stroke/systemic embolism (IS/SE), and all-cause death, and the safety end-points included, major bleeding, and gastrointestinal bleeding)

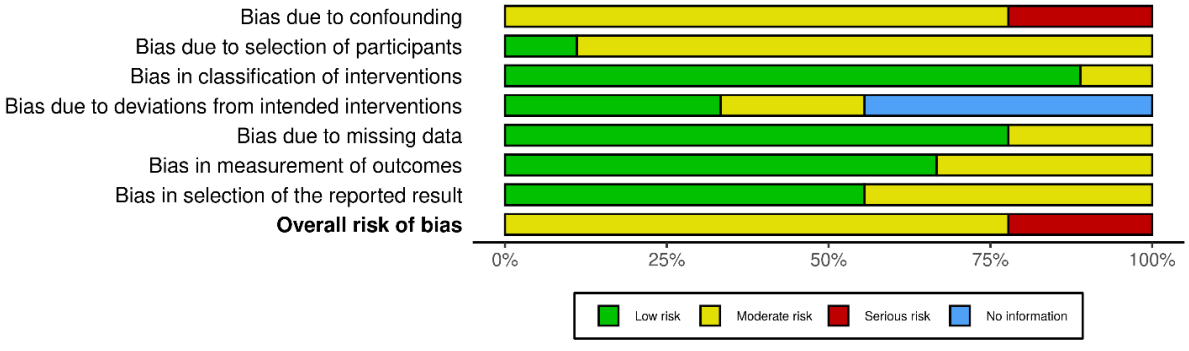
Supplementary Table SI. Search strategy

Databases	**Search strategy**	**Results**
PubMed/Medline	("direct oral anticoagulants" OR "Oral Factor Xa Inhibitors/administration and dosage" OR "non-vitamin K antagonist oral anticoagulant") AND (warfarin OR "Warfarin" OR "vitamin K antagonist oral anticoagulant") AND (atrial fibrillation OR "Atrial Fibrillation" OR "AF") AND ("liver disease" OR "chronic liver disease" OR "Liver Cirrhosis" OR "End Stage Liver Disease" OR "liver dysfunction")	62
Cochrane	("direct oral anticoagulants" OR "oral anticoagulants") AND ("warfarin" OR "vitamin K antagonist") AND ("atrial fibrillation" OR "AF") AND ("liver disease" OR "liver dysfunction")	12

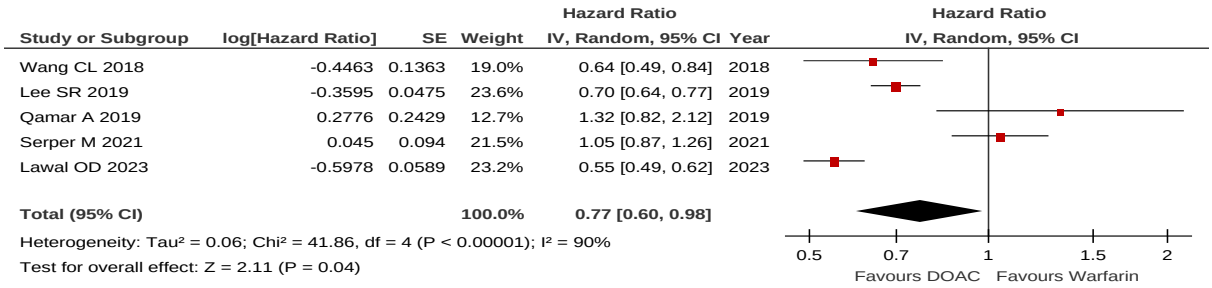
Quality assessment:



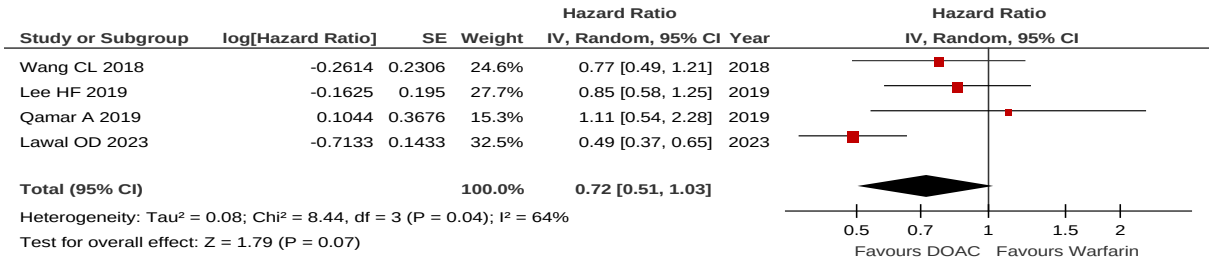
Supplementary Figure S1. Traffic light plot



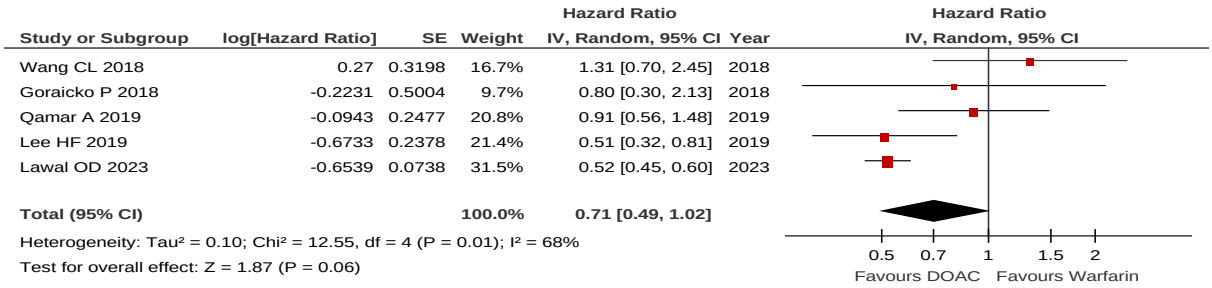
Supplementary Figure S2. Weighted bar plot



Supplementary Figure S3. Forest plot for primary outcome all-cause death



Supplementary Figure S4. Forest plot for primary outcome ischemic stroke or systemic embolism (ISSE)



Supplementary Figure S5. Forest plot for primary outcome major bleeding

Supplementary Table SII. Sensitivity analysis for primary outcome all-cause death

Study removed	**Effect size without study (HR)**	**95% confidence interval**	***P*-value**	***I*²** **(heterogeneity)**
Wang CL 2018	0.81	0.60–1.28	0.15	93%
Lee SR 2019	0.81	0.54–1.21	0.3	93%
Qamar A 2019	0.71	0.56–0.91	0.006	91%
Serper M 2021	0.69	0.56–0.86	0.0008	84%
Lawal OD 2023	0.85	0.64–1.13	0.26	86%
None (all studies)	0.77	0.60–0.98	0.04	90%

Supplementary Table SIII. Sensitivity analysis for primary outcome Ischemic Stroke or Systemic Embolism (ISSE)

Study removed	**Effect size without study (HR)**	**95% confidence interval**	***P*-value**	***I*^{2} (heterogeneity)**
Wang CL 2018	0.72	0.45–1.17	0.19	74%
Lee HF 2019	0.69	0.44–1.09	0.11	66%
Qamar A 2019	0.67	0.46–0.97	0.03	68%
Lawal OD 2023	0.85	0.65–1.12	0.25	0%
None (all studies)	0.72	0.51–1.03	0.07	64%

Supplementary Table SIV. Sensitivity analysis for primary outcome Major Bleeding

Study removed	**Effect size without study (HR)**	**95 % confidence interval**	***P*-value**	***I*^{2} (heterogeneity)**
Wang CL 2018	0.6	0.45–0.79	0.0003	44%
Goriacko P 2018	0.7	0.47–1.05	0.09	75%
Qamar A 2019	0.66	0.44–0.99	0.04	65%
Lee HF 2019	0.8	0.49–1.30	0.36	76%
Lawal OD 2023	0.81	0.53–1.25	0.35	52%
None (all studies)	0.71	0.49–1.02	0.06	68%