Background & Objective

• Randomized controlled trials (RCTs) and real-world evidence (RWE) are often synthesized separately in health technology assessment (HTA).

• One reason is that RCTs and RWE show great heterogeneity in methodology and risk of bias which makes merging the two data sources technically difficult.

• To address this problem, Bayesian Network Meta-regression (BNMR) models have been applied for evidence synthesis in the HTA setting.

• Hence, we aimed to estimate and compare the performance of existing BNMR models in a case study of Myelodysplastic Syndromes (MDS).

Method - Meta-analysis

Case

• Data source: Song et al. (2021);

• Target population: Patients with acute myeloid leukemia and myelodysplastic syndromes;

• Intervention: Reduced intensity conditioning (RIC);

• Comparator: Myeloablative conditioning (MAC);

• Outcomes of interest: Overall survival (Binary outcome).

Identification of BNMR models using the snowballing approach, according to Wohlin (2016)

• Website that supports the snowballing approach: Connected Papers;

• Starting from two identified reviews of appraisal tools: Jenkins et al. (2021) & Zhang et al. (2019)

• Eligibility criteria: (1) Bayesian model; (2) The model supported binary outcomes; (3) Codes for running a model were available.

Data collection & preparation

• Characteristics of BNMR models;

• Codes used to run the BNMR models;

• Covariates: age, duration of follow up.

Model running

• R package: Crossnma & R2jags;

• Initial value set in the BNMR models: Null;

• Number of iterations of Bayesian meta-regression: 50000;

• Number of burn-in iterations: 20000;

• Number of Markov chains: 4

• Number of thinning of Markov chains: 1.

Model comparison

• Comparison of mean and confidence interval in a forest plot.

RESULTS

Figure 1. Flow chart of the BNMR models for comparison

Figure 2. Forest plot

CONCLUSION

• Estimates obtained from the BNMR models are sensitive to model algorithms.

• Further research is needed to confirm our findings by validating these algorithms in other case studies.

Reference


