Analysis Report

Generated with the reporter() Function of the metafor Package

02 October, 2020

Methods

The analysis was carried out using the log risk ratio as the outcome measure. A random-effects model was fitted to the data. The amount of heterogeneity (i.e., τ^2), was estimated using the restricted maximum-likelihood estimator (Viechtbauer, 2005). In addition to the estimate of τ^2, the Q-test for heterogeneity (Cochran, 1954) and the I^2 statistic (Higgins & Thompson, 2002) are reported. In case any amount of heterogeneity is detected (i.e., $\hat{\tau}^2 > 0$, regardless of the results of the Q-test), a credibility/prediction interval for the true outcomes is also provided (Riley, Higgins, & Deeks, 2011). Studentized residuals and Cook's distances are used to examine whether studies may be outliers and/or influential in the context of the model (Viechtbauer & Cheung, 2010). Studies with a studentized residual larger than the $100 \times (1 - 0.05/(2 \times k))$th percentile of a standard normal distribution are considered potential outliers (i.e., using a Bonferroni correction with two-sided $\alpha = 0.05$ for k studies included in the meta-analysis). Studies with a Cook's distance larger than the median plus six times the interquartile range of the Cook's distances are considered to be influential. The rank correlation test (Begg & Mazumdar, 1994) and the regression test (Sterne & Egger, 2005), using the standard error of the observed outcomes as predictor, are used to check for funnel plot asymmetry. The analysis was carried out using R (version 3.6.3) (R Core Team, 2018) and the **metafor** package (version 2.4.0) (Viechtbauer, 2010).

Results

A total of $k = 4$ studies were included in the analysis. The observed log risk ratios ranged from -0.3488 to 0.1836, with the majority of estimates being negative (75%). The estimated average log risk ratio based on the random-effects model was $\hat{\mu} = -0.2493$ (95% CI: -0.5342 to 0.0355). Therefore, the average outcome did not differ significantly from zero ($z = -1.7154$, $p = 0.0863$). A forest plot showing the observed outcomes and the estimate based on the random-effects model is shown in Figure 1.

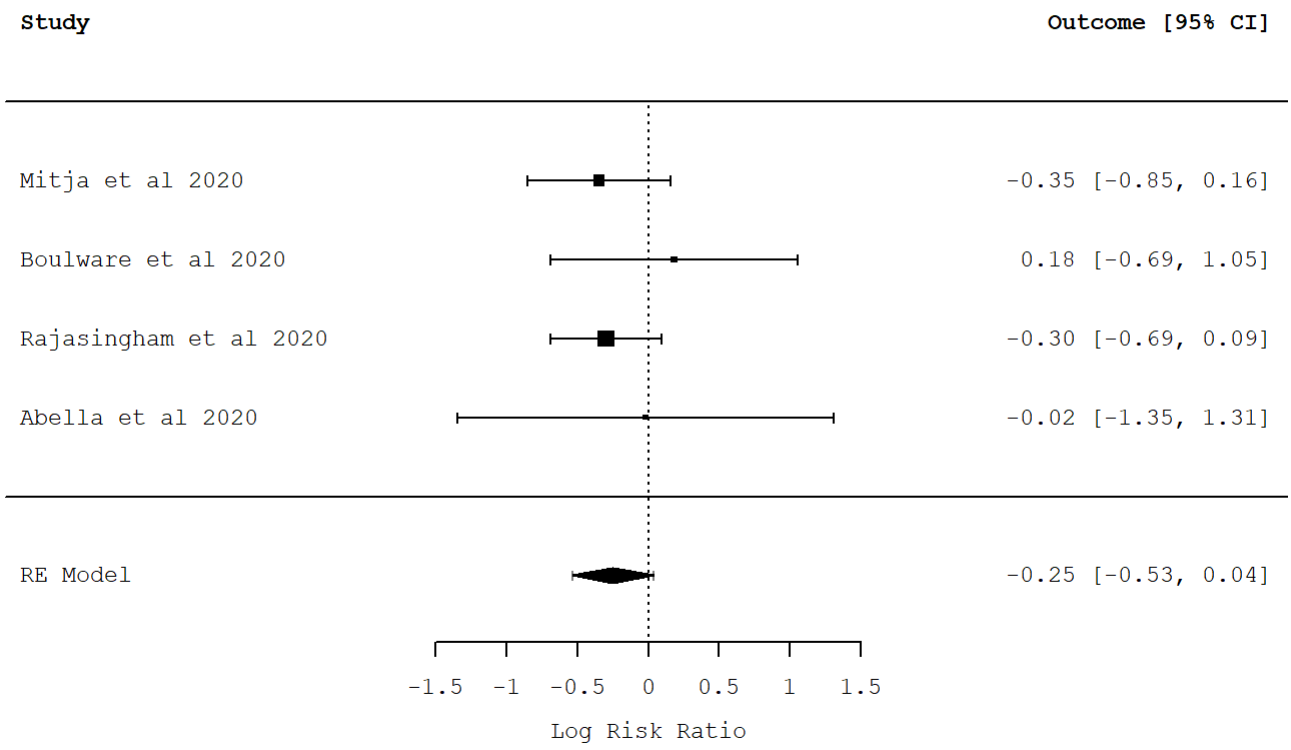

Figure 1: Forest plot showing the observed outcomes and the estimate of the random-effects model

According to the Q-test, there was no significant amount of heterogeneity in the true outcomes ($Q(3) = 1.2715$, $p = 0.7359$, $\hat{\tau}^2 = 0.0000$, $I^2 = 0.0000\%$).

An examination of the studentized residuals revealed that none of the studies had a value larger than ± 2.4977 and hence there was no indication of outliers in the context of this model. According to the Cook's distances, none of the studies could be considered to be overly influential.

A funnel plot of the estimates is shown in Figure 2. Neither the rank correlation nor the regression test indicated any funnel plot asymmetry ($p = 0.7500$ and $p = 0.3904$, respectively).

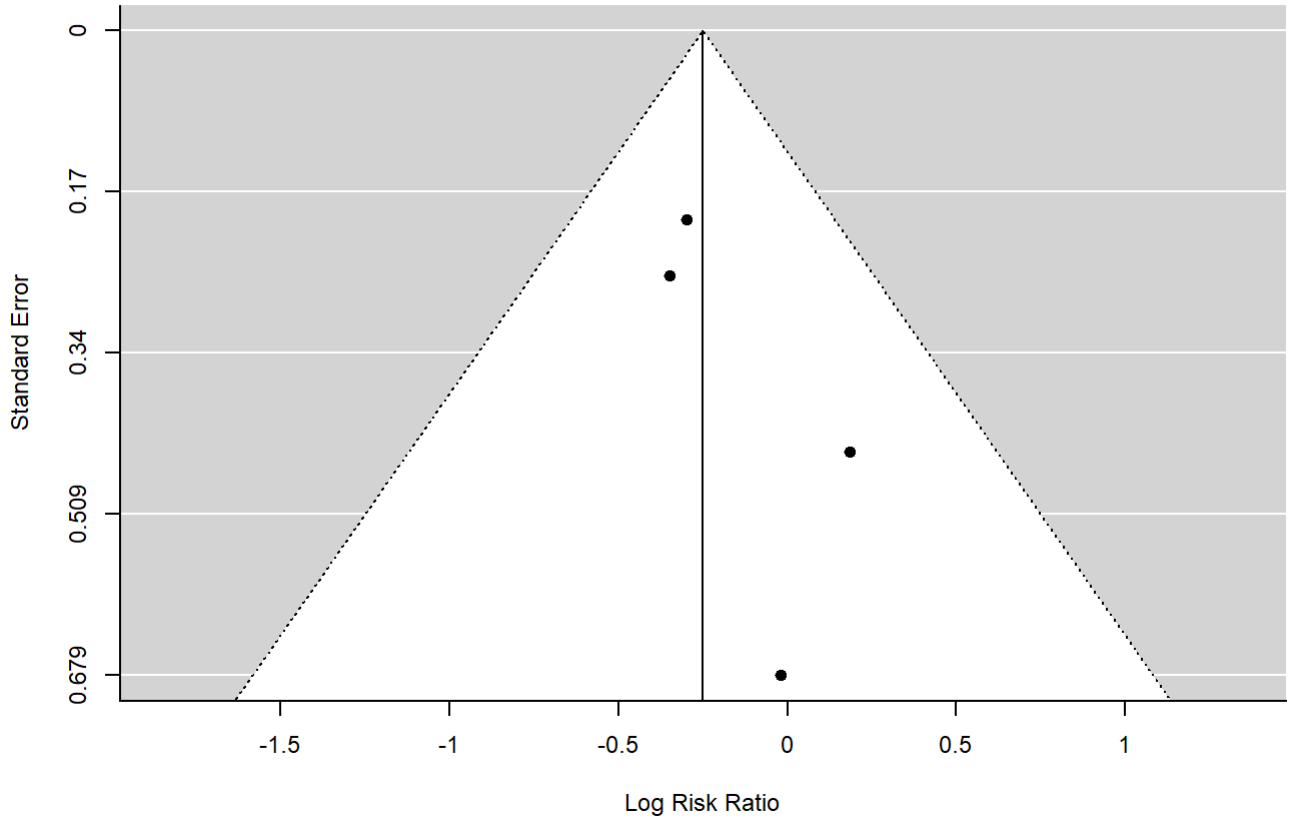

Figure 2: Funnel plot

Notes

This analysis report was dynamically generated for model object ‘ `res` ’ with the `reporter()` function of the **metafor** package. The model call that was used to fit the model was ‘ `rma(yi = yi, vi = vi, data = dat, slab = paste(author))` ’. This report provides an illustration of how the results of the model can be reported, but is not a substitute for a careful examination of the results.

References

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