Aggregation Bias in Meta-Analysis

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Abstract

Meta-analysis is a powerful statistical tool for combining the results from multiple studies to derive an overall result that provides a comprehensive overview of a particular research question. One of the most well-known challenges in meta-analysis is aggregation bias.

Aggregation bias is a common problem in meta-analysis and it happens when individual studies' results are aggregated to derive a common effect in such a way that leads to misleading results. We aim to examine aggregation bias within meta-analysis with the help of functions in the {meta} package in the R programming language. The function `metamean` was used for conducting a meta-analysis of means to produce a pooled overall effect from multiple studies. Then, with `metareg` function, we perform a meta-regression for sourcing the presence of aggregation bias in the study data.

This thesis underlines the efforts to address aggregation bias need to be exerted in meta-analysis, resorting to the use of meta-regression techniques. This may help to improve the validity and reliability of meta-analytic findings across scientific fields by clarifying what constitutes aggregation bias.