

Hendrik Schmidt

Selected Topics in Meta-Analysis

Abstract:

An integrated summary of data arising from different studies has been done for a long time but it was not until the 1970s when GV Glass ([1]) coined the term "meta-analysis" along with its definition as "statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings".

Nowadays, summarizing results of clinical trials is quite common but still methodological research is going on and no standard approach exists in the first place. In particular a large variety of literature (cf. e.g. [2], [3] and [4]) deals with the "fixed effects approach" and the "random effects approach" and advantages as well as disadvantages of either method and its applicability in practical situations are discussed back and forth. Furthermore, special issues that arise in connection with meta analyses are heterogeneity of studies combined (cf. e.g. [5]) and the continuity correction in case of binary data with zero events (cf. e.g. [6]).

This presentation intends to provide an overview of meta-analytic methods and models. In particular different methods for the detection and quantification of heterogeneity as well as for the continuity correction of sparse binary data will be discussed.

[1] Glass GV. Primary, secondary and meta-analysis of research. Educational Research 1976; 5:3-8

[2] Senn S. The many modes of meta. Drug Information Journal 2000; 34:535-549

[3] DerSimonian R, Laird N. Meta-analysis in clinical trials. Controlled Clinical Trials 1986; 7:177-188

[4] Whitehead A, Whitehead J. A general parametric approach to the meta-analysis of randomized clinical trials. Statistics in Medicine 1991; 10:1665-1677

[5] Higgins J, Thompson SG. Quantifying heterogeneity in a meta-analysis. Statistics in Medicine 2002; 21:1539-1558

[6] Sweeting J, Sutton AJ, Lambert PC. What to add to nothing? Use and avoidance of continuity corrections in meta-analysis of sparse data. Statistics in Medicine 2004; 23: 1351-1375