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Evaluation of study quality, heterogeneity, and publication bias: A survey of systematic reviews on HIV/AIDS

Madhukar Pai

(Scheduled Workshop Talk)

Saturday, May 11
9:30 am to 10:00 am

LOCATION: Lawrence Hall of Science, Room 150

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Background: Quality assessment of primary studies and evaluation of heterogeneity and publication bias are important components of systematic reviews (SRs). However, empiric research has shown that not all SRs address these methodological issues. We surveyed SRs on HIV/AIDS, published during 2001, to determine how study quality, heterogeneity, and publication bias were evaluated.

Methods: We identified all SRs on HIV/AIDS published during 2001, and indexed in MEDLINE, using a validated search strategy. Among the 25 systematic reviews identified, 8 (32%) involved only observational studies, 5 (20%) involved only RCTs, 7 (28%) were cross-design syntheses, 2 (8%) involved diagnostic tests, and 3 (12%) used individual patient data. One reviewer read these articles and abstracted data. The publications covered a range of subspecialties and journals.

Results: Quality assessment was reported in 14 of 25 SRs (56%). Quality assessment was reported more often in SRs of RCTs, as compared to reviews of other designs (80% versus 50%). Quality was assessed in all Cochrane reviews, as compared to 48% in journal reviews. Among those SRs that performed quality assessment, not all evaluated the impact of study quality on the results. Testing for heterogeneity was not universal, and there was no consistency in the reporting of heterogeneity. Not all SRs with significant heterogeneity explored reasons for it or refrained from meta-analysis. Few reviews stated the rationale for using random effects or fixed effects models based on consideration of the question addressed. Only 3 of 25 reviews (12%) evaluated publication bias. **Conclusions:** Data from this small survey revealed major deficiencies in the way SRs handle methodological issues. Our results suggest that systematic reviews are of variable quality and many systematic reviews are neither systematic nor unbiased. These findings suggest that readers of systematic reviews must critically appraise the quality of the reviews before using them for clinical or policy decision-making.

Parent Workshop: [Statistical Challenges for Meta-Analysis of Medical and Health-Policy Data](#)

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