A tribute to Doug Altman

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COMET VII Meeting, Amsterdam, The Netherlands
November 2018

“To maximise the benefit to society, you need to not just do research but do it well.”

- Professor Doug Altman
Medical research hero and statistics game-changer

1948 - 2018
Acknowledgments

• COMET management group for inviting me
• Jon Deeks / Steven Evans for providing some of the slides, photos and comments
• Lots of other people for (mainly unpublished) comments

> 1600 co-authors
Meeting Doug for the first time...
Empirical Evidence for Selective Reporting of Outcomes in Randomized Trials
Comparison of Protocols to Published Articles

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Selective Publication of Studies with statistically significant results has received widespread recognition. In contrast, selective reporting of favorable outcomes within published studies has not undergone comparable empirical investigation. The existence of outcome reporting bias has been widely suspected for years, but direct evidence is limited because once a study has been approved by the Scientific-Ethical Committees for Copenhagen and Frederiksberg Denmark, in 1994-1995. The number and characteristics of reported and unreported trial outcomes were recorded from protocols, journal articles, and a sample of trialists. An outcome was considered incompletely reported if insufficient data were presented in the published articles for meta-analysis. Odds ratios relate the completeness of reporting to outcome statistical significance were calculated for each trial and then pooled to provide an overall estimate of bias. Protocol and published articles were also compared to identify discrepancies in primary outcomes.

Main Outcome Measures Completeness of reporting of efficacy and harms and of statistically significant vs nonsignificant outcomes; consistency between primary outcomes defined in the most recent protocols and those defined in published articles.

Context Selective reporting of outcomes within published studies based on the nature or direction of their results has been widely suspected, but direct evidence of bias is currently limited to case reports.

Objective To study empirically the extent and nature of outcome reporting bias in a cohort of randomized trials.

Design Cohort study using protocols and published reports of randomized trials approved by the Scientific-Ethical Committees for Copenhagen and Frederiksberg Denmark, in 1994-1995. The number and characteristics of reported and unreported trial outcomes were recorded from protocols, journal articles, and a sample of trialists. An outcome was considered incompletely reported if insufficient data were presented in the published articles for meta-analysis. Odds ratios relate the completeness of reporting to outcome statistical significance were calculated for each trial and then pooled to provide an overall estimate of bias. Protocol and published articles were also compared to identify discrepancies in primary outcomes.

Main Outcome Measures Completeness of reporting of efficacy and harms and of statistically significant vs nonsignificant outcomes; consistency between primary outcomes defined in the most recent protocols and those defined in published articles.

Results We received 41 (73%) replies from lead researchers of 56 projects, which were a complete cohort of clinical research applications approved in a particular time period by the LREC. Fifteen of these projects, which were completed and published at the time of our study were further investigated. Only six (40%) stated which outcome variables were of primary interest and four (67%) of these showed consistency in the reports. Eight (53%) of the 15 studies mentioned an analysis plan. However, seven (88%) of these eight studies did not follow their prescribed analysis plan: the analysis of outcome variables or associations between certain fitted were found to be missing from the report. Conclusions Our pilot study has shown that...
“As a mentee, I always appreciated Doug’s commitment to promoting the success of his students. I valued how he opened doors for me while also giving me the room to learn through the process of working independently.

I will always remember his wisdom, kindness, and clarity of thought, as well as his office full of papers stacked high (and his incredible ability to find a specific older paper buried within one of many piles)!”

- An-Wen Chan
Doug’s mission to improve medical research

- Statistics in medical journals
- Educational writing
- Interpretation of findings
- Reporting guidelines
- Meta-analysis and Cochrane
- Meta-epidemiology and Risk of bias

Outcome reporting bias in trials: a methodological approach for assessment and adjustment in systematic reviews

Jamie J Kirkham,1 Douglas G Altman,2 An-Wen Chan,3 Carrol Gamble,4 Kerry M Dwan,4 Paula R Williamson4

Systematic reviews of clinical trials aim to include all relevant studies conducted on a particular topic and to provide an unbiased summary of their results, producing the best evidence about the benefits and harms of medical treatments. Relevant studies, however, may not provide the results for all measured outcomes or may selectively report only some of the analyses undertaken, leading to unnecessary waste in the production and reporting of research, and potentially biasing the conclusions to systematic reviews. In this article, Kirkham and colleagues provide a methodological approach, with an example of how to identify missing outcome data and how to assess and adjust for outcome reporting bias in systematic reviews.

The aim of this article is to show, with an example, how systematic reviewers can minimise the amount of missing data in reviews of healthcare interventions, and use ORBIT methods to detect and classify the suspicion of outcome reporting bias in benefits and harms reported in included studies. The paper also provides details of a statistical approach to assess the robustness of meta-analysis conclusions on this potential source of bias that non-methodologists can implement on a web-based platform.

Selecting the most appropriate review outcomes

One way to streamline the process of systematic reviews and to help reduce outcome reporting bias is...
Welcome to the ORBIT website

http://www.outcome-reporting-bias.org/
Doug Altman’s legacy to Cochrane and evidence synthesis

Cochrane Database of Systematic Reviews

It is hard to find an area of medicine or health research where the initiatives Doug Altman instigated and championed have not had an influence. Doug was a man on several missions: advocating statistical peer review to reduce statistical errors in medical journals; improving doctors’ and health researchers’ understanding of statistics and research design through thoughtful teaching; writing accessible and well-used statistical notes; producing a major medical statistics textbook; advocating a focus on estimating effects and confidence intervals rather than hypothesis testing; and providing numerous templates and guidelines to educate journals and researchers as to how they should report their studies.\[1, 2, 3, 4, 5, 6\] Doug was one of the leaders of the COMET Initiative, promoting the development of core outcome sets to be measured and reported in all randomized trials of a specific condition, making it easier for the results of trials to be compared, contrasted, and combined as appropriate.\[7\] He also pushed for the development of reviews for prognostic research. His dedication to his work continued until a few days before he died.
Doug with long-time collaborators, David Moher and Ken Schulz

“Doug was always fun to be with and he did have an infectious laugh.”
“He possessed qualities that brought people together”

Ken Schulz
(Some of) Doug’s Awards…

... if anybody in the audience never heard of Doug, they were likely aliens from another planet! That is how influential he was (and still is). Doug was modest about his out of the world achievements

- David Moher
“The thing I’m most proud of achieving is writing a textbook. It is extremely easy to start one, but extremely difficult to finish.

I read a lot and I learned a lot during the process. That was twenty-five years ago, but people are still buying it, which is really remarkable.

...you want people to find it helpful and the positive feedback I have received about it has been very gratifying.”

*Interview with Methods in Research on Research (MiRoR) Fellows (2018)*
“An editor's life is all about decisions. So many of the difficult decisions I have had to make over the years have been made easier - even turned from stressful to delightful - by knowing we had Doug to guide us.”

- Fiona Godlee (BMJ EiC)

“One behavior not too many people knew – he was a huge list fanatic e.g. he had a list of every peer review he’s ever done – thousands!”

- David Moher
“Bad research is not good for patients”

Doug’s research mattered to him because improving the quality of medical research better informed the care of patients.

We have no doubt that Doug’s many outstanding contributions have left the world a better place for patients.
... But the best description of all, in my view, was the suggestion that he had “geniousness”. Now this word is not to be found in any dictionary that I know of, although it deserves to be in them all. So what does it mean? Well it’s clearly a portmanteau word.”

Genius + generousness

Twitter: A “funomenon” - “fun” + “phenomenon”
Doug we salute you!