

## **Book Review on Eldridge/Kerry: A Practical Guide to Cluster Randomised Trials in Health Services Research**

Do we need another book on cluster randomised trials (CRTs) after the excellent and accessible textbooks of Murray (1998), Donner/Klar (2000), and Hayes/Moulton (2009) on the topic? After having read the book of Eldridge/Kerry the answer to this question is easy: Yes, this book is needed, because it differs from the mentioned books by being explicitly devoted to practical researchers from health services that are involved in design, execution, analysis, and reporting of cluster randomized trials. Following this motivation of offering a practical guide, the book is organised in the order in which practical researchers might think when they are designing a trial. Moreover, there are some aspects that have not been exhaustively addressed in former textbooks and which are raised again and updated by Eldridge/Kerry. This includes problems such as recruitment of clusters and individuals, obtaining participants' consent in an ethically correct way, or designing and (pre-)testing the frequently complex interventions in CRTs.

Although the textbook is mainly addressing practical researchers, also biostatisticians will benefit from it, mainly in areas where their contribution to CRTs is presumably the largest, that is, in sample size calculation and statistical analysis. With respect to the first issue, the book gives an excellent and up-to-date methodical account that even includes sample sizes formulas for variable cluster sizes, for methods that do not use the intra-class correlation coefficient (ICC) to describe between-cluster variation, or for methods that adjust sample size calculation for prior stratification or matching of clusters. As sensible prior values of the ICC are also part of every sample size calculation in a CRT, the responsible biostatistician will also profit a lot from the given papers that list typical ICC values, and also from the information on factors that modify ICC values in specific areas of research.

An essential part of every research project is its proper reporting, and a number of reporting guidelines has been released in the last years. Corresponding to the relevance of this topic, the authors have not only devoted a single chapter to the respective CONSORT statement on CRTs, but have furthermore extended this chapter by adding important aspects from other guidelines for pragmatic trials and trials on non-pharmacologic interventions.

An outstanding feature of the book is the wealth of practical examples that is given. The authors, reporting to have worked in the field of CRTs for 15 to 20 years, give no less than 29 examples or real CRTs, all of which are accessibly displayed in standardised tables giving the aim, the number of clusters, the intervention, the primary outcome etc. of the respective trial. Tables of specific trials can appear repeatedly in the book (adding or leaving out specific features of the trials) which on first sight might seem annoying, but on second sight saves from paging back.

Every textbook on a specific topic should be judged on its usefulness for teaching. In the reviewer's opinion, the book is a perfect companion for teaching a semester course on CRTs in a public health programme. The parts of the book with a more statistical focus can be used for a 4-8 hour course on statistical aspects of CRTs.

Are there any drawbacks to this book? One would probably wish to have an accompanying website where software codes for at least some of the analyses or sample size calculations are given within one or two of the major statistical software packages like SAS, R, or STATA. Someone who would like to use the book for teaching would probably be grateful for some exercises at the end of each chapter. Finally, the reviewer would do well without the thorough description of statistical tests in CRTs in chapter 6.3.1. Mere p-values are not useful to communicate results from CRTs, as they confound effect size and precision, and they can be omitted in favor of effect estimates with their corresponding confidence intervals.

However, these drawbacks are only minor ones and the book of Eldridge/Kerry can be recommended to all practical researchers that are involved in the design, execution, analysis, and reporting of cluster randomised trials, but also to statisticians which seek for a complete, but not too technical overview on statistical methods in this area.

#### **References:**

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Hayes, R.J. and Moulton, L.H. (2009). Cluster Randomised Trials. Chapman and Hall/CRC, Boca Raton, USA.

Donner, A. and Klar, N. (2010). Design and Analysis of Cluster Randomization Trials in Health Research. Wiley, New York.

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