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NITheP Colloquium

Monday, 27July 2020, 16h00

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University of Cape Town

Network meta-analysis with random inconsistency effects and outliers

Abstract: Network meta-analysis (NMA) expands the scope of a standard meta-analysis to simultaneously handle multiple treatment comparisons. The studies in a network meta-analysis may be heterogeneous and the network may be inconsistent. Random effects may be used to describe any inconsistency in the network. In addition some trials may appear to deviate markedly from the others and thus be inappropriate to be synthesized in the NMA. In addition, the inclusion of these trials in evidence synthesis may lead to bias in estimation. Therefore the presence of such outliers could substantially alter the conclusions in a network meta-analysis.This paper proposes a methodology for identifying and, if desired, downweighting studies that do not appear representative of the population they are thought to represent. An outlier is taken as a study result with an inflated random effect variance. We used the likelihood ratio test statistic as an objective measure for determining whether observations have inflated variance and are therefore considered outliers. The NMA model is formulated using a constrast-based approach. The proposed methodology is then applied to a network meta-analytic dataset from the literature.

Bio: Associate Professor Freedom Gumedze is employed in the Department of Statistical Sciences at the University of Cape Town. He holds a C1 rating from the NRF. He has been a visiting scientist at Rothamsted Research, UK, University of Warwick UK and Population Health Research Institute, Canada. His research interest lies in the development and application of statistical methods in health sciences research, especially but not exclusively in the areas of dermatology and cardiology. The theoretical aspects of his research work has involved development of methods for the analysis of multivariate longitudinal or repeated measures data including methods for the detection of outliers/robust estimation, survival analysis, joint analysis of longitudinal data and survival data, competing or semi-competing risks, models for recurrent events, design and analysis of clinical trials, meta-analysis and statistical methods for medical diagnosis data.

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Date: Monday, 27th July 2020

Time: 16h00