Please join the Biometric Colloquium

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RANDOMISATION VERSUS RANDOM SAMPLING. CLINICAL TRIALS AND THE REPRESENTATION FALLACY

Date: October 20th, 2023 at 8:30 am

8:30am Joint breakfast with coffee and cakes
9:00am Talk
10:00am Reception

Location: Jugendstilhörsaal der Medizinischen Universität Wien
Spitalgasse 23, 1090 Vienna, https://cemsiis.meduniwien.ac.at/ms/contact/anschrift/

Hosts: Martin Posch and Franz König

ABSTRACT

"The practical and theoretical study of Experimental Design, with which should be included that of sampling…as developed by Mahalanobis, and by Yates, may be regarded as the second great movement in the development of statistics." RA Fisher, p6

Despite Fisher including sampling as an example of experimental design, the logic is rather different and one could hardly claim that expertise in one guaranteed expertise in the other. In fact. Frank Yates was a rare example of a statistician who did fundamental work on both experimental design and sampling theory. Randomised clinical trials are experiments. Despite experiments being usually highly artificial devices designed to elucidate causes, there are regular calls that clinical trials should be representative. I shall argue that this is misguided, giving several examples of experimental reasoning, including pre-clinical in vivo studies, bioequivalence studies and also a famous trial in nutrition, The Lanarkshire Milk Experiment.

Some of the debates that have occurred regarding randomisation have their parallels in those about random sampling. I shall look briefly at theses but nevertheless argue that clinical trials are and should be seen as being experiments and not surveys.

References

FISHER, R. A. 1990. Statistical methods and scientific inference. *In:* BENNET, J. H. (ed.) *Statistical Methods, Experimental Design and Scientific Inference.* Oxford: Oxford University.

SENN, S. 2022. Student and the Lanarkshire milk experiment. *Eur J Epidemiol*.

STUDENT 1931. The Lanarkshire milk experiment. *Biometrika*, 398-406.