



MEDICINE AND SURGERY

Course: Biostatistics

Year: 3rd

Period: 2nd semester

Credits: 4

Objectives

On completion of this course, the student should be able to describe the basic epidemiological concepts, interpret and critically evaluate literature relevant to public health professionals, select and apply appropriate statistical methods for managing common types of health data, interpret and communicate the results to public health professionals and to the general public.

Contents

1. Introduction to epidemiology: historical evolution
2. Introduction to biostatistics: summarizing data
3. Measures of disease occurrence + Workshop 1
4. Measures of association + Workshop 2
5. Experimental study designs: clinical trials
6. Observational study designs: cohort studies
7. Observational study designs: case-control studies
8. Workshop 3
9. Basics of statistical analysis
10. Bias and confounding, causal inference
11. Screening
12. Evidence synthesis: systematic reviews and meta-analysis
13. Clinical practice guidelines: GRADE & Oxford systems



14. Research methodology: development of a study protocol
15. How to write, submit and publish a scientific article
16. Research ethics, research misconduct
17. Open discussion on the central concepts of the course: Q/A
18. Simulation of the final examination

Stata Lab sessions (duration: 12 hours)

To work with Stata software, explore the data, and deepen our understanding of biostatistics. This lab module will include: Introduction to Stata software, presentation of data using graphical methods, statistical analysis using real datasets, hypothesis testing, comparison of means and proportions, chi squared test, correlation and linear regression analysis, non-parametric tests, sample size and power calculations. Emphasis will be given in concepts and interpretation.

Teaching Methods

Lessons

Stata Lab sessions (duration: 12 hours)

Verification of learning

The final examination will include 30 multiple choice questions (plus 1 bonus question) worth one point each, and will focus on the topics discussed during the course; thus, understanding deeply the material covered in the lectures and workshops is the key to success. A mark of at least 18/30 is needed to pass the exam.

* Depending upon the state of the pandemic, the written examination may be turned into oral examination (remote, via video conference).

Texts

Biostatistics:

- Altman DG. Practical Statistics for Medical Research. Chapman and Hall/CRC.
- Bland M. An Introduction to Medical Statistics. Oxford University Press.

Epidemiology:

- Rothman KJ, Greenland S, Lash TL. Modern Epidemiology. Lippincott Williams & Wilkins.
- Bonita R, Beaglehole R, Kjellström T. Basic Epidemiology. World Health Organization. (available free at: http://apps.who.int/iris/bitstream/10665/43541/1/9241547073_eng.pdf)