MH900-20 Epidemiology and Statistics

26/27

Department
Warwick Medical School
Level
Taught Postgraduate Level
Module leader
Saran Shantikumar
Credit value
20
Module duration
1 week
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

This six day module will help you become familiar with various epidemiological study designs that are used in epidemiology, the rationale for using each study design, the types of results produced, and their interpretation.
You will explore key statistical principles and techniques such as hypothesis testing and estimation including how to use these techniques to analyse and interpret epidemiological studies.

Module web page

Module aims

The module aims to give students a systematic understanding of epidemiological methods, their applications, strengths and weaknesses and current methodological issues; and comprehensive knowledge of the application of medical statistics to the assessment of risk and disease impact.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Epidemiology

1. Measures of disease
2. Use of routine statistics
3. Direct and indirect standardisation, years of life lost, life expectancy and DALYS
4. Absolute and relative measures of risk
5. Causality, bias and confounding
6. Methodologies: analytic and observational, cross-sectional, case control, cohort, clinical trials, ecological studies
7. Numbers needed to treat (NNT)
8. Epidemiological Paradigms
   Statistics
9. Probability theory
10. Statistical distributions
11. Principles of inference from a sample
12. Measures of location and dispersion of data
13. Hypothesis testing, type I and II errors, calculating power
14. Parametric and non-parametric tests for comparisons
15. Estimation and confidence intervals
16. ANOVAS; Multiple regression; Logistic Regression,

Learning outcomes

By the end of the module, students should be able to:

- By the end of the module you should understand the following concepts and features that are encountered in epidemiological studies.n Measures of diseasen Use of routine statisticsn Direct and indirect standardisation, years of life lost, life expectancy and Disability Adjusted Life Yearsn Absolute and relative measures of riskn Causality, bias and confoundingn Methodologies: analytic and observational, cross-sectional, case control, cohort, clinical trials, ecological studiesn Numbers needed to treat (NNT)
- You should also be able to understand the following statistical principles and be able to use them to analyse epidemiology studiesn Probability theoryn Statistical distributionsn Principle of inference from a samplen Measures of location and dispersion of datan Hypothesis testing, type I and II errors, calculating powern Parametric and non-parametric tests for comparisonsn Estimation and confidence intervals
- Key Skillsn Communication (written, verbal, and graphical)n Numeracy and analysisn Use of information technology (statistical analysis software)n Ability to learn with and from others (teamwork)n You will learn to apply your knowledge in the design of a studyn Using routine statisticsn Direct and indirect standardisation, estimation of years of life lost, life expectancy and Disability Adjusted Life Years.n Calculation of statistical power in a study

Indicative reading list

Reading lists can be found in Talis

Subject specific skills

Skills in study design, statistical analysis, and protocol writing.
Sound understanding of subject
Critically evaluate
Reflection

Transferable skills

Numeracy
Thinking and problem solving
written communiction
oral communication
Teamwork
Organisation & time management
Use of tools and technology
Commercial awareness
Independence and initiative
Adaptability/Flexibility

Study

Study time

Type	Required
Lectures	20 sessions of 1 hour (10%)
Seminars	15 sessions of 1 hour (8%)
Private study	145 hours (72%)
Assessment	20 hours (10%)
Total	200 hours

Private study description

Self-directed learning

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group A5

	Weighting	Study time	Eligible for self-certification
Assessment component			
Written Assignment	100%	20 hours	Yes (extension)

Written assignment comprising of 2 parts.

Part 1: A 2000 word write up of an epidemiological study design (50% of module mark)

Part 2: Written short responses to set statistical questions (50% of module mark).

Reassessment component is the same

Feedback on assessment

Written feedback with the availability of face-to face personalised feedback.

Availability

Courses

This module is Core for:

- TMDS-B9C2 Postgraduate Taught Health Research
  - Year 1 of B9C2 Health Research
  - Year 1 of B902 Public Health
  - Year 1 of B902 Public Health
- TMHS-B902 Public Health
  - Year 1 of B902 Public Health
  - Year 1 of B902 Public Health

This module is Core optional for:

- TMHS-B930 MSc in Health Sciences
  - Year 1 of B930 Health Sciences
  - Year 1 of B930 Health Sciences
  - Year 7 of B930 Health Sciences
  - Year 8 of B930 Health Sciences
- Year 1 of TMDA-B91Z Postgraduate Taught Interdisciplinary Biomedical Research

This module is Optional for:

- Year 1 of TIMA-L981 Postgraduate Social Science Research

This module is Core option list A for:

- Year 1 of TMHS-B906 MSc in Diabetes