

Title:	Research Methods
Short Code:	CND521
Level:	5
Credit Points Equivalence:	20
Start Date:	January 2023
Subject:	Postgraduate Entry
Module Leader:	Patricia Treseder-Griffin

Aims

The aim of the module is to further develop student understanding of the scientific method and the statistical approaches that underpin nutritional and biomedical research, patho-physiological reasoning and evidence based practice. This module also introduces systematic search strategies, critical appraisal forms, and the tools that can be used for the statistical analysis of research data.

Syllabus

- Nature of research, research paradigms, modes of research.
- Epidemiological research: case control, cohort and cross-sectional studies; the evidence based medicine hierarchy.
- Experimental design, placebo effects, randomisation, double blind studies, controls, variables and sampling, crossover designs, the phases of clinical trials.
- Writing research papers and recording/presenting data.
- Quantitative research; survey mechanics and methodology. Quantitative research techniques and methodology. Structured, unstructured and semi structured qualitative research techniques and methodology (interviews, focus groups, surveys, interpretive phenomenological analysis). Use of research in healthcare.
- Ethical and resource issues in qualitative, quantitative, epidemiological and experimental research. Research Ethics Committees.
- Collecting data: hard data using reliable measures; soft data (perceptions of quality, agreement and preference, personal meaning and understanding).
- Calculating descriptive statistics: means, mode and median, standard deviation and percentiles.
- Inferential statistics: the origin of the normal distribution, the central limit theorem, standard error of the mean, hypothesis testing, correlations and effect size, statistical test selection, hypothesis construction and 'tails', paired and non-paired tests, parametric and non-parametric tests, power analysis. Using Statistical Software packages.
- Analysing survey data using factor analysis.
- Using a systematic approach to search the literature; Meta-Analysis and Systematic Reviews; Cochrane protocols for systematic reviews; Mechanism reviews.
- Tools for critical appraisal and evaluation of research papers

- Application of research methods and skills in nutritional science in a range of work based environments.
- Application of statistical analysis and meta analysis in future modules.

Learning Outcomes

On completion of the module, the successful student will be able to:

1. Utilise a systematic search methodology designed to locate salient research.
2. Interpret and respectfully critique the work of other researchers in qualitative and quantitative biomedical/clinical research.
3. Evaluate the choice of inferential statistical techniques in literature and determine if appropriate to a given research question.
4. Effectively use critical evaluation tools and questioning strategies to evaluate the quality of qualitative and quantitative biomedical/clinical research.
5. Implement statistical analysis and use a variety of tools for the summation and analysis of data.

Learning, Teaching and Assessment Strategy

Teaching/learning approaches are integrated with assessment arrangements to facilitate student achievement of the learning outcomes identified for this module. Online lectures and recommended reading demonstrate the key concepts of research, helping the student to understand the complexities of evidence for complex systems.

Each student will participate in individual and group activities online, such as multiple choice, quizzes and short answer questions, to help engage them with the lecture content. The content will be discussed by peers and tutors using a variety of: forums, online seminars and online tutorials, with group involvement and participation, to prepare for online activities, formative and summative assessment. Online group and/or personal tutorial time will also be used by tutors to assist students in their progression through the module.

Each student will be encouraged to develop their practical research skills including the use of appropriate research methodologies, analysing data and evaluating scientific literature to answer research questions. Each student will be encouraged to maintain a Professional and Skills Portfolio where they can record their reflections on concepts taught within the module.

Assessment Scheme

Summative

The summative assignment for this module consists of a Research Skills Portfolio made up of three separate parts (total combined wordcount 1,800 as indicated below):

Part (a) Critique a given human paper (CARET) incorporating the use of an appropriate critical analysis tool (SIGN 50). (1000 words) (learning outcomes 2, 3, 4)

Part (b) Use statistical software to analyse data and complete an Excel table of results (No wordcount allocated as presented as Table) (learning outcome 5)

Part (c) Using a provided topic, write a protocol for a Cochrane meta analysis (Methodology) (800 words) (learning outcomes 1, 3)

Learning materials

Essential

- Bell, J. and Waters, S., 2018. *Doing Your Research Project*. 7th ed. Amacon. (Kindle £19.99, Paperback £21.72) - Core Text
- Greenhalgh, T., 2019. *How to read a paper: The Basics of Evidence-Based Medicine*. 6th ed. Wiley-Blackwell. (paperback £26.76, Kindle £27.42) - Core Text for BSc
- Ben-Shlomo, Y., 2013. *Epidemiology, Evidence-based Medicine and Public Health*. 6th ed. Wiley-Blackwell. (RSM ebook)
- Rowntree, D., 2018. *Statistics without Tears: An Introduction for Non-Mathematicians*. Penguin. (Paperback £7.99)

Recommended

- Clark, T. et al., 2021. *Bryman's Social Research Methods*. OUP Oxford. (paperback £42.63)

Assessment Weighting

Seen examination	None
Unseen examination	None
Coursework (no examination)	100%
Timetabled examination required	No
Total Hours	200 hours with assessment

Review of content and resources is approximately 50 hours.