



# HLTH306

## Research Methods for Health Sciences

S1 Day 2014

*Chiropractic*

### Contents

<u>General Information</u>	2
<u>Learning Outcomes</u>	2
<u>Assessment Tasks</u>	3
<u>Delivery and Resources</u>	5
<u>Unit Schedule</u>	6
<u>Policies and Procedures</u>	9
<u>Graduate Capabilities</u>	10
<u>Grading criteria for HLTH306</u>	16
<u>Changes since First Published</u>	16

#### Disclaimer

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## General Information

Unit convenor and teaching staff

Unit Convenor

Subramanyam Vemulpad

[subramanyam.vemulpad@mq.edu.au](mailto:subramanyam.vemulpad@mq.edu.au)

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C5C West 351

Tuesday 10 am -12 noon

Credit points

3

Prerequisites

39cp

Corequisites

Co-badged status

Unit description

This unit provides an introduction to the principles of evidence-based health practice. The unit covers a range of issues in research including: subjectivity and objectivity; different research strategies; evaluation and interpretation of data; and ethical issues. Concepts of efficacy, effectiveness, clinical and statistical significance, and critical appraisal of published work are introduced.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

Explain the role of research and scientific enquiry in health sciences

Compare relative merits of different levels of 'evidence'

Explain the importance of evidence based health care

Critically appraise available information including published work related to health sciences

Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice

Use spread sheets and Minitab for basic statistical analyses of data

Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and validity

Demonstrate skills for self-directed learning and inquiry

## Assessment Tasks

Name	Weighting	Due
<u>Practical work</u>	20%	Weekly
<u>Assignment 1</u>	15%	9 April 2014 (2 pm)
<u>Assignment 2</u>	15%	28 May 2014 (2 pm)
<u>Final Examination</u>	50%	June (University Exam period)

### Practical work

Due: **Weekly**

Weighting: **20%**

Exercises based on Practical sessions

On successful completion you will be able to:

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Use spread sheets and Minitab for basic statistical analyses of data
- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and validity
- Demonstrate skills for self-directed learning and inquiry

## Assignment 1

Due: **9 April 2014 (2 pm)**

Weighting: **15%**

Assignment would include data analysis and interpretation as well as critical appraisal of published articles.

On successful completion you will be able to:

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Use spread sheets and Minitab for basic statistical analyses of data
- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and validity
- Demonstrate skills for self-directed learning and inquiry

## Assignment 2

Due: **28 May 2014 (2 pm)**

Weighting: **15%**

Assignment would include data analysis and interpretation as well as critical appraisal of published articles.

On successful completion you will be able to:

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Use spread sheets and Minitab for basic statistical analyses of data

- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and validity
- Demonstrate skills for self-directed learning and inquiry

## Final Examination

Due: **June (University Exam period)**

Weighting: **50%**

On successful completion you will be able to:

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and validity
- Demonstrate skills for self-directed learning and inquiry

## Delivery and Resources

### Delivery mode

1. 2 hour lectures per week, weeks 1-12. iLectures are available for this unit.
2. Eleven x2 hour practicals per student, starting from week 2.
3. Four to five hours per week self-instructional learning, readings from the text and exercises on lecture topics

### Class times and locations

**Lecture times:** 2 hrs each week starting from 3 March 2014.

Monday 8 – 10 am; E7BT3

**Practicals** : 2 hrs each week, as noted below, starting week 2 (10<sup>th</sup> March).

Prac Group 1: Monday 10 – 12 noon; E4B306; starting on 10th March

Prac Group 2: Monday 12 – 2 PM; E4B306; starting on 10<sup>th</sup> March

Prac Group 3: Monday 2 – 4 PM; E4B306; starting on 10<sup>th</sup> March

Prac Group 4: Monday 4 – 6 PM; E4B306; starting on 10<sup>th</sup> March

You are advised to bring a USB memory stick for practical classes. Practical group allocations will be finalized in Week 1. Students allocated to one group cannot turn up for practicals meant for another group without prior approval from the Unit convenor.

· Attendance: Attendance for practicals is compulsory. Attendance at lectures is strongly recommended.

## **Required and recommended resources**

### *Recommended texts*

Hoffmann et al. Evidence-Based Practice Across the Health Professions. 2 Edn. ISBN: 9780729541350, Elsevier Australia.

Minichiello et al. Research Methods for nursing and health science. 2 Edn; ISBN: 9781740095969; Pearson Education Australia.

### *Further reading*

Straus, S.E et al. 2005. Evidence Based Medicine; 4 Edn; Churchill Livingstone

### **Useful web-resources:**

<http://www.mq.edu.au/library> (Macquarie University library site; list and links to many databases and Journals)

<http://www.cochrane.org> (Cochrane Collaboration, the most reliable source of evidence in health care)

<http://www.pedro.org.au/> (Physiotherapy Evidence Database)

Unit web page

The URL of the HLTH306 iLearn site is: <https://ilearn.mq.edu.au/>

You will be asked for a username and password. Your username is your student MQID. Your MQID and password have been mailed to you by the University. If you have lost them go to the student portal: <http://students.mq.edu.au/home/>

Any changes made since last offering: 1) Two tutors per prac class instead of the earlier single tutor per class. 2) Hoffmann et al has been added as a recommended text. 3) Minichello text book has been changed from 'required' to 'recommended'.

## **Unit Schedule**

HLTH 306 List of topics by week

**The topic titles are given as a guide only.**

Week	Date	Lecture Topic*	Prac Class
1.	3/03/14	Scientific Method, Introduction to EBP, Clinical Epidemiology	No
1.	10/03/14	Study Design, Measurement and Summarising and Graphing Categorical Data	Yes
1.	17/03/14	Summarising and Graphing Continuous Data	Yes
1.	24/03/14	Graphing Continuous Data (continued), Populations and Samples	Yes
1.	31/03/14	What is evidence; where and how to find evidence (Hierarchy of evidence; Health/Chiro databases)	Yes
1.	7/04/14	Research Planning and Research Designs I	Yes
Break	14-21 Apr		
1.	28/04/14	Research Designs II	Yes
1.	5/05/14	Confidence Intervals and One-sample Hypothesis Tests	Yes
1.	12/05/14	Paired data, 2 sample hypothesis tests, tests of proportions	Yes
1.	19/05/14	Regression, Contingency Tables and Odds Ratios	Yes
1.	26/05/14	Research in Clinical Practice (outcome measures)	Yes
1.	2/06/14	Ethics, Conflict of Interest and Confidentiality in Health Research	Yes



1.	9/06/ 14	Public Holiday	No			
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\* Dr Subra Vemulpad: Weeks 1, 5, 6, 7, 11 and 12

Dr Ken Beath: Weeks 1, 2, 3, 4, 8, 9 and 10

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Disruption to Studies Policy [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html) *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

## Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)

- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

When using the University's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

### Learning outcomes

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Use spread sheets and Minitab for basic statistical analyses of data
- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and

validity

- Demonstrate skills for self-directed learning and inquiry

## **Assessment tasks**

- Practical work
- Assignment 1
- Assignment 2
- Final Examination

## **Commitment to Continuous Learning**

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

## **Learning outcomes**

- Explain the role of research and scientific enquiry in health sciences
- Explain the importance of evidence based health care
- Use spread sheets and Minitab for basic statistical analyses of data
- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and validity
- Demonstrate skills for self-directed learning and inquiry

## **Assessment tasks**

- Practical work
- Assignment 1
- Assignment 2
- Final Examination

## **Discipline Specific Knowledge and Skills**

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary

solutions to problems.

This graduate capability is supported by:

## **Learning outcomes**

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
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## **Assessment tasks**

- Practical work
- Assignment 1
- Assignment 2
- Final Examination

## **Critical, Analytical and Integrative Thinking**

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

## **Learning outcomes**

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of

research and clinical practice

- Use spread sheets and Minitab for basic statistical analyses of data
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- Demonstrate skills for self-directed learning and inquiry

## **Assessment tasks**

- Practical work
- Assignment 1
- Assignment 2
- Final Examination

## **Problem Solving and Research Capability**

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

## **Learning outcomes**

- Explain the role of research and scientific enquiry in health sciences
- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Use spread sheets and Minitab for basic statistical analyses of data
- Interpret basic epidemiological and statistical terms such as confidence intervals, effectiveness, efficacy, error, incidence, mean, median, mode, prevalence, probability, reproducibility, risk, sample size, sampling, SD, sensitivity, significance, specificity and validity

## **Assessment tasks**

- Practical work
- Assignment 1
- Assignment 2

- Final Examination

## Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

### Learning outcome

- Explain the importance of evidence based health care

### Assessment tasks

- Assignment 1
- Assignment 2
- Final Examination

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

### Learning outcomes

- Compare relative merits of different levels of 'evidence'
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Use spread sheets and Minitab for basic statistical analyses of data
- Demonstrate skills for self-directed learning and inquiry

### Assessment tasks

- Practical work
- Assignment 1
- Assignment 2
- Final Examination

## Engaged and Ethical Local and Global citizens

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

### Learning outcomes

- Explain the role of research and scientific enquiry in health sciences
- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Demonstrate skills for self-directed learning and inquiry

### Assessment tasks

- Assignment 1
- Assignment 2
- Final Examination

## Socially and Environmentally Active and Responsible

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

### Learning outcomes

- Explain the importance of evidence based health care
- Critically appraise available information including published work related to health sciences
- Explain ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
- Demonstrate skills for self-directed learning and inquiry

## Assessment tasks

- Practical work
- Assignment 1
- Assignment 2
- Final Examination

## Grading criteria for HLTH306

Achievement of grades will be based on the following criteria:

Grade	
Fail	Failure to complete all assessment tasks or unsatisfactory performance (<50% mark)
Pass	A minimum of 50% <b>in each assessment task</b>
Credit	A minimum of 50% in each assessment task, PLUS a minimum 65% total mark
Distinction	A minimum of 50% in each assessment task, PLUS a minimum 75% total mark
High Distinction	A minimum of 50% in each assessment task, PLUS a minimum 85% total mark

## Changes since First Published

Date	Description
04/03/2014	Lecture topics now include more descriptive titles.