HLTH306
Research Methods for Health Sciences
S1 Day 2013
Chiropractic

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General Information

Unit convenor and teaching staff
Lecturer
Kenneth Beath

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Contact via ken.beath@mq.edu.au
E4A 507
Friday 2-4

Unit Convenor
Subramanyam Vemulpad

subramanyam.vemulpad@mq.edu.au
Contact via subramanyam.vemulpad@mq.edu.au
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://students.mq.edu.au/important-dates

Learning Outcomes

1. Have an understanding of the role of research and scientific enquiry in health sciences
2. Understand relative merits of different levels of ‘evidence’
3. Understand the process of scientific enquiry
4. Be able to explain the differences between various types of experimental, quasi- and non-experimental studies
5. Appreciate the importance of evidence based health care
6. Be able to critically appraise available information including published work related to health sciences
7. Appreciate the distinction between statistical and clinical significance
8. Be able to explore practical application of research data from basic and applied research fields to evaluate the efficacy of chiropractic practice
10. Appreciate the importance of keeping their knowledge base up to date
11. Appreciate ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
12. Be able to use spreadsheets for basic statistical analyses of data
13. Understand 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
14. Develop skills for self-directed learning and inquiry

Assessment Tasks

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical work</td>
<td>20%</td>
<td>Weekly</td>
</tr>
<tr>
<td>Assignment 1</td>
<td>15%</td>
<td>9 April 2013 (9 am)</td>
</tr>
<tr>
<td>Assignment 2</td>
<td>15%</td>
<td>28 May 2013 (9 am)</td>
</tr>
<tr>
<td>Final Examination</td>
<td>50%</td>
<td>University Exam period</td>
</tr>
</tbody>
</table>

Practical work

Due: **Weekly**
Weighting: **20%**

Exercises based on Practical sessions

This Assessment Task relates to the following Learning Outcomes:
• Have an understanding of the role of research and scientific enquiry in health sciences
• Understand relative merits of different levels of ‘evidence’
• Understand the process of scientific enquiry
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• Develop skills for self-directed learning and inquiry

Assignment 1

Due: 9 April 2013 (9 am)
Weighting: 15%

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

This Assessment Task relates to the following Learning Outcomes:
• Have an understanding of the role of research and scientific enquiry in health sciences
• Understand relative merits of different levels of ‘evidence’
• Understand the process of scientific enquiry
• Be able to explain the differences between various types of experimental, quasi- and non-experimental studies
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• Develop skills for self-directed learning and inquiry

Assignment 2
Due: 28 May 2013 (9 am)
Weighting: 15%

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

This Assessment Task relates to the following Learning Outcomes:
• Have an understanding of the role of research and scientific enquiry in health sciences
• Understand relative merits of different levels of ‘evidence’
• Understand the process of scientific enquiry
• Be able to explain the differences between various types of experimental, quasi- and non- experimental studies
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• Appreciate the importance of keeping their knowledge base up to date
• Appreciate ethics, confidentiality, conflict of interest and related issues in the context of research and clinical practice
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• Understand 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
• Develop skills for self-directed learning and inquiry

Final Examination

Due: University Exam period
Weighting: 50%

This Assessment Task relates to the following Learning Outcomes:

• Have an understanding of the role of research and scientific enquiry in health sciences
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• Understand the process of scientific enquiry
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Delivery and Resources

**Delivery mode**

1. 2 hour lectures per week, weeks 1-13. iLectures are available for this unit.

2. Ten 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 25 Feb.

Monday 8 – 10 am; E7BT3

**Practicals:** 2 hrs each week, as noted below, starting week 2 (4th March), excluding week 6.

- Prac Group 1: Monday 10 – 12 noon; E4B306; starting on 4th March
- Prac Group 2: Monday 12 –2 PM; E4B306; starting on 4th March
- Prac Group 3: Monday 2 – 4 PM; E4B306; starting on 4th March
- Prac Group 4: Monday 4 – 6 PM; E4B306; starting on 4th 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 text**


**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...
Unit Schedule

HLTH 306 List of topics by week

The topic titles are given as a guide only.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lecture Topic*</th>
<th>Prac Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>25/02/13</td>
<td>Scientific Method, Introduction to EBP, Clinical Epidemiology</td>
<td>No</td>
</tr>
<tr>
<td>1.</td>
<td>4/03/13</td>
<td>Study Design</td>
<td>Yes</td>
</tr>
<tr>
<td>1.</td>
<td>11/03/13</td>
<td>Data collection and organisation</td>
<td>Yes</td>
</tr>
<tr>
<td>1.</td>
<td>18/03/13</td>
<td>Location and Spread</td>
<td>Yes</td>
</tr>
<tr>
<td>1.</td>
<td>25/03/13</td>
<td>What is evidence; where and how to find evidence (Hierarchy of evidence; Health/Chiro databases)</td>
<td>Yes</td>
</tr>
<tr>
<td>1.</td>
<td>1/04/13</td>
<td>Public Holiday (no lecture)</td>
<td>No</td>
</tr>
<tr>
<td>1.</td>
<td>8/04/13</td>
<td>Research Planning and Research Designs I</td>
<td>Yes</td>
</tr>
<tr>
<td>Break</td>
<td>15-26 Apr</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. 29/04/13 Research Designs II  Yes
1. 6/05/13 Distributions and Confidence Intervals  Yes
1. 13/05/13 Hypothesis Testing  Yes
1. 20/05/13 Examining Relations  Yes
1. 27/05/13 Research in Clinical Practice (outcome measures)  Yes
1. 3/06/13 Ethics, Conflict of Interest and Confidentiality in Health Research  No

* Dr Subra Vemulpad: Weeks 1, 5, 7, 8, 12 and 13
Dr Ken Beath: Weeks 1, 2, 3, 4, 9, 10 and 11

**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:


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

**Student Support**

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at: [http://students.mq.edu.au/support/](http://students.mq.edu.au/support/)

**UniWISE provides:**

- Online learning resources and academic skills workshops [http://www.students.mq.edu.au/support/learning_skills/](http://www.students.mq.edu.au/support/learning_skills/)
Student Enquiry Service
Details of these services can be accessed at http://www.student.mq.edu.au/ses/.

Equity 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.

IT Help
If you wish to receive IT help, we would be glad to assist you at 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 and it outlines what can be done.

Graduate Capabilities
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

- Understand the process of scientific enquiry
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• Develop 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

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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
• Have an understanding of the role of research and scientific enquiry in health sciences
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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 outcomes

- Understand the process of scientific enquiry
- Appreciate the importance of evidence based health care
- Be able to explore practical application of research data from basic and applied research fields to evaluate the efficacy of chiropractic practice

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

- Understand relative merits of different levels of ‘evidence’
- Understand the process of scientific enquiry
- Appreciate the importance of evidence based health care
- Be able to critically appraise available information including published work related to health sciences
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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
• Have an understanding of the role of research and scientific enquiry in health sciences
• Appreciate the importance of evidence based health care
• Be able to critically appraise available information including published work related to health sciences
• Be able to explore practical application of research data from basic and applied research fields to evaluate the efficacy of chiropractic practice
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• Develop skills for self-directed learning and inquiry
Assessment tasks

- Assignment 1
- Assignment 2
- Final Examination

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:

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- Develop skills for self-directed learning and inquiry
**Assessment tasks**

- Practical work
- Assignment 1
- Assignment 2
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**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**

- Have an understanding of the role of research and scientific enquiry in health sciences
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- Develop skills for self-directed learning and inquiry

**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**

- Have an understanding of the role of research and scientific enquiry in health sciences
- Understand relative merits of different levels of ‘evidence’
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