HLTH306

Research Methods for Health Sciences

S1 Day 2018

Dept of Chiropractic

Contents

General Information	2
Learning Outcomes	2
General Assessment Information	3
Assessment Tasks	4
Delivery and Resources	7
Unit Schedule	8
Policies and Procedures	9
Graduate Capabilities	10
Changes from Previous Offering	16
Changes since First Published	16

Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff
Unit Convenor
Subramanyam Vemulpad
subramanyam.vemulpad@mq.edu.au
Contact via subramanyam.vemulpad@mq.edu.au
17, Wally's Walk (C5C West), Room 351
Tuesday 10 am -12 noon

Lecturer
Anne Karpin
anne.karpin@mq.edu.au
12, Wally's Walk (E7A), 630
Mon 5-6 pm; Wed 12-1 pm

Credit points
3

Prerequisites
39cp at 100 level or above

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

General Assessment Information

1. **Assignment**

Specific details of the Assignments will be provided in your first practical class. The assignments must be submitted by the due date.

Extension to due date may be granted under extenuating circumstances**.** Application for extensions must be made under the disruption to studies policy

(http://students.mq.edu.au/student_admin/exams/disruption_to_studies/), applied for through www.ask.mq.edu.au within 5 days of the disruption and prior to the submission date of the assignment. Resubmission of assignments will not be considered under usual circumstances. Late submissions without this approval will incur a penalty of 10% of the score for each day of delay. Submissions later than a week after the deadline will not be marked.

2. Practicals

The practical exercises will be marked each week, and the overall mark will be calculated using marks from all practicals.

3. Examination

The University Examination period for First Half Year 2018 is from 12 June.

You are advised that it is Macquarie University policy not to set early examinations for individuals or groups of students. You are expected to ensure that you are available until the end of the teaching semester that is the final day of the official examination period.

The raw marks resulting from assessment of your work will be used as an initial indicator of the quality of your learning and understanding. Note that the mark ranges mentioned for different grades in the Macquarie University Undergraduate Handbook are not the raw marks. To obtain a grade you must satisfy the qualitative definition of that grade. Once your grade has been determined, you are allocated a mark in the appropriate range indicating your approximate position amongst students assigned that grade.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable will be available in draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations. http://www.timetables.mq.edu.au/exam

The only exception to not sitting an examination at the designated time is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. Information about Special Consideration process is available at

https://students.mq.edu.au/study/my-study-program/special-consideration

Students with a pre-existing disability/health condition or prolonged adverse circumstances may be eligible for ongoing assistance and support. Such support is governed by other policies and may be sought and coordinated through Campus Wellbeing and Support Services.

Supplementary examination: If you receive special consideration for the final exam, a supplementary exam will be scheduled in the interval between the regular exam period and the start of the next session. By making a special consideration application for the final exam you are declaring yourself available for a resit during the supplementary examination period and will not be eligible for a second special consideration approval based on pre-existing commitments. Please ensure you are familiar with the policy prior to submitting an application. You can check the supplementary exam information page on FSE101 in iLearn (bit.ly/FSESupp) for dates, and approved applicants will receive an individual notification one week prior to the exam with the exact date and time of their supplementary examination.

The supplementary exam may be in a different format (e.g. oral examination) ***to the original exam. Check about this with the unit convenor when you are notified of being granted a supplementary exam. Only your supplementary exam mark will be counted towards your final exam mark.***

Assessment Tasks

Name	Weighting	Hurdle	Due
Practical work	20%	No	Weekly
Assignment 1	15%	No	11 Apr 2018 (9 am)
Assignment 2	15%	No	30 May 2018 (9 am)
Final Examination	50%	No	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: **11 Apr 2018 (9 am)**
Weighting: **15%**

Assignment would include data analysis and interpretaion 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: **30 May 2018 (9 am)**
Weighting: **15%**

Assignment would include data analysis and interpretaion 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%**

This will be a 2 hour written examination with questions (MCQ, true/false, filling in the blank and short answers) related to all lecture and practical material.

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 1-13. iLectures are available for this unit.

2. Ten or 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 28 Feb.

Wednesday 2-4 pm;

Practicals : 2 hrs each week, starting week 2 of the semester (5 March).

Monday 11 – 1 PM; Prac Class 1

Monday 9 – 11 AM; Prac Class 2

Monday 3 – 5 PM; Prac Class 3

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.

Participation in practicals is compulsory. Attendance at lectures is strongly recommended.

Required and recommended resources

Recommended texts

An introduction to medical statistics by Martin Bland (4th edition, 2015; earlier editions should be fine)

Statistics at square one / T.D.V. Swinscow and M.J. Campbell. 10th ed., London : BMJ Books, 2002 (In addition to library copy, this book is available on line *via* http://www.bmj.com/thebmj)

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/

Unit Schedule

HLTH 306 List of topics by week

The topic titles are given as a guide only.

Week	Lecture Topic	Prac Class
1	Unit overview, Introduction to Evidence Based Practice, Study Design	**No**
2	Data, Summarising and Graphing Categorical Data	Yes
3	Graphing Continuous Data; populations and samples	Yes
4	Confidence Intervals	Yes
5	Hypothesis Testing for population means	Yes
6	What is evidence; where and how to find evidence (Hierarchy of evidence; Health/Chiro databases)	**No**
7	Research Planning and Research Designs - I	Yes
Break	**14 Apr to 29 Apr**	
8	Research Designs - II	Yes

9	Hypothesis Testing for regression	Yes
10	Hypothesis Testing for proportions	Yes
11	Research in Clinical Practice (outcome measures)	Yes
12	Ethics, Conflict of Interest and Confidentiality in Health Research	Yes
13	**TBA**	**TBA**

Dr Anne Karpin: Weeks 1, 2, 3, 4, 5, 9, 10 and 13

Dr Subra Vemulpad: Weeks 1, 6, 7, 8, 11, 12 and 13

Participation in practicals is compulsory. Attendance at lectures is strongly recommended.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Undergraduate students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/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/study/getting-started/student-conduct

Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au.

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) 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

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Graduate Capabilities

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

- Practical work
- 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:

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
- 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

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
- 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

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

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

- Practical work
- 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

Changes from Previous Offering

1) Exam was a hurdle until 2016. Now it is not a hurdle. 2) For final examination, students were allowed to take 1 A4 written notes. This has been discontinued. 3) Co-teaching lecturer from the Department of Statistics has changed for the offering from 2018.

Changes since First Published

Date	Description
21/02/2018	Added consultation hours for Dr Anne Karpin; rearranged the lecture topic sequence for Weeks 5 - 8;