Searching and using the literature

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Roger Carter
Liaison Librarian for Science, Health and Sports Science
This will cover...

- Understanding evidence-based practice & literature
- Formulating a research question using PICO (and PICo)
- Using PICO to formulate search strategy
- Choice of databases
- Searching strategies
- Evaluating results
- Levels and types of evidence
- This presentation can be found on the Home tab of this guide

http://libguides.usc.edu.au/OT
Think of health research as a cyclical process.
Searching the literature (Access Evidence) is the first step.
Eventually the application of research (Use Evidence) leads to patient care or other outcomes that may lead to further publications (more evidence).

Source: Joanna Briggs Institute website
Try to formulate a clear research question that will lead to a clear search strategy

A poor research question: “Is gardening good therapy?”
Think about why this is not a good research question.

Better: “Does regular gardening lead to higher levels of perceived wellbeing in persons with acquired brain damage than regular aerobic exercise?”

This can be analysed with PICO:
P: Persons with ABD
I: Regular gardening
C: Regular aerobic exercise
O: Improved wellbeing
PICO is a method of forming a research question in a clear defined way that then allow the creation of logical effective search strategy for databases like CINAHL and PubMed

PICO stands for:

- Patient/Population - Who or What?
- Intervention - treatment or therapy
- Comparison - alternative intervention or placebo or none
- Outcome - What is your desired outcome?
Does regular gardening lead to higher levels of perceived wellbeing in persons with acquired brain damage than regular aerobic exercise?

A PICO analysis of this would be:

- **Patient/Population**: Persons with ABD
- **Intervention**: Regular gardening
- **Comparison**: Regular aerobic exercise
- **Outcome**: Improved wellbeing

**Note**: you may have two aspects to your patient/population concept and often there may be no stated outcome. PICO is not a set of rules, just a scheme that helps you think clearly about your topic.
Producing these search terms...

It can be useful to lay your search term out in a table using PICO as your starting point. This allows you to think logically about the process and develop synonyms (alternative terms) for the different concepts.

<table>
<thead>
<tr>
<th>P</th>
<th>I</th>
<th>C</th>
<th>O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquired brain damage</td>
<td>Gardening</td>
<td>Aerobic exercise</td>
<td>Wellbeing</td>
</tr>
<tr>
<td>Traumatic brain injury</td>
<td>Horticultural therapy</td>
<td>(more?)</td>
<td>(more?)</td>
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<tr>
<td>(more?)</td>
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</table>
PICO is useful for quantitative and many qualitative topics, but for some very qualitative topics it help to use a variation called PICo

Qualitative and textual reviews: use **PICo** instead

**P**- Population

**I** - Phenomenon of Interest

**Co**- Context

- Re-focus to **phenomena of Interest**, not intervention,
- and **Context** not comparator

The phenomena of **Interest** relates to a defined event, activity, experience or process

**Context** is the setting or distinct characteristics
• What are caregivers' experiences of providing home-based care to persons with HIV/AIDS in Africa?

Source: Aromataris 2012
What’s my topic?

• Understand your topic before you start!(Read about it in books etc. if necessary)
• Use your PICO or PICo analysis to generate search terms (keywords)
• Think of possible alternative words/phrases for the same concepts
• In both qualitative (PICo) and quantitative (PICO) questions, the main aim is to completely clarify and define your question so that both you and a reader have no confusion about the exact topic of your research. This is then a solid foundation to proceed to develop a literature search strategy and to define your criteria to include or exclude articles that you find in your research.

Clearly defined research question  Clear search strategy

Are you a bit unsure about the real difference between qualitative and quantitative research?
Watch this very informative video:
https://www.youtube.com/watch?v=2X-QSU6-hPU
Where to search – the major databases

- **CINAHL** (via EBSCO) [some full-text, links to others]
- **Scopus** (contains PubMed records) [links to full-text]
- **PubMed (=Medline)** [links to full-text]
- **Informit Health Collection** (Australian) [some full-text, links to others]
- **Google Scholar** [links to full-text]

**also available...**
- **Health Source: Nursing/Academic** (EBSCO) [some full-text, links to others]

*these databases find articles from our full-text suppliers*

*Practice these rather than the USC DISCOVER search. (PubMed will always be available free after you graduate wherever you work. CINAHL will also to be available in hospitals etc.)*
Search strategy

All databases use the same syntax...

**AND** Combine different concepts
e.g. Hand and injury

**OR** Add similar concepts e.g. cat or feline

**NOT** Exclude concepts
e.g. bones not ulna
Example: Our PIco search in CINAHL

Searching: CINAHL with Full Text

- **caregiver***
- **HIV OR AIDS patient***
- **africa***

Refine Search

- **105 Results for...**
  - Boolean/Phrase: 
    - caregiver* AND (HIV OR AIDS patient*) AND africa

Limiters
- Peer Reviewed

Refine your results
- Full Text
- References Available
- Abstract Available
- 1993 Publication Date 2013

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1. [Food meanings in HIV and AIDS caregiving trajectories: Riga](#)
   (includes abstract) Makoae, Mokhantsos G; Psychology, Health & Medicine, 2013
   
   The article describes the caregiving responsibility to provide food for chronically ill patients. Subjects: Food Supply; HIV Infections; Caregiver Burden; Family; Stress.
   
   Database: CINAHL with Full Text

   ![Add to folder]

2. [Experiences of HIV/AIDS home-based caregivers in Vhembe](#)
   (includes abstract) Mashau NS; Davhana-Maselele M; Curationis, 2009 Dec
   
   The purpose of this study was to explore and describe the experiences of HIV/AIDS caregivers. Subjects: Caregivers; HIV Infections; Home Nursing; Volunteer Workers.
   
   Database: CINAHL with Full Text

   ![Add to folder]  Cited References: (25)
Advanced Search Techniques

Truncation (*) and Wildcard (?)
Useful for word variant searching
(Symbols may vary between resources)
E.g. wom?n; fluid* (for fluid, fluids, fluidics..)
(For Google, use ~ e.g. ~fluid)
(check out the help / search tips on the database you are using)
Think of alternative words, phrases, synonyms etc....to capture all important aspects of your topic

**Examples:**

Teenagers, teens, adolescents, adolescent, adolescence, youth, young adults

Rural, regional, remote, country, outback

Laughter, humour, humor, comedy, comic
Advanced Search Techniques (continued)

- Thesaurus --directs you to correct subject terms (like PubMed’s MeSH system). Usually more accurate than keyword searching
- (Not available in every database)
- Use database features like “Limits” to target your search
- Specialized medical databases (PubMed, CINAHL) have special tools for nursing/health searching

Want to master PubMed searching using the MeSH controlled vocabulary?:
Watch this wonderful short tutorial:
https://www.youtube.com/watch?v=uyF8uQY9wys
One type of Hierarchy of Evidence (Quantitative) (there are several)

<table>
<thead>
<tr>
<th>Rank</th>
<th>Methodology</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
</table>
| 1    | Systematic review, meta-analysis| **Systematic review**: review of a body of data that uses explicit methods to locate primary studies, and explicit criteria to assess their quality.  
**Meta-analysis**: systematic review that uses statistical methods to combine data, and analyse and summarise the results of the studies included.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Cochrane Collaboration                                                                                                   |
| 2    | Randomised controlled trials (RCT)| Experiment in which individuals are randomly allocated to either a control group or a group that receives a specific intervention. Randomisation reduces the likelihood of bias. The strength of evidence is considerably boosted by the presence of at least one properly designed RCT of appropriate size.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Articles published in peer-reviewed research journals                                                                 |
| 3    | Cohort study                     | Evidence from well-designed trials without randomisation.  
**Cohort study**: observational study in which a defined group of people (the cohort) is followed over time. The people are selected on the basis of their exposure to a particular agent and followed up later for specific outcomes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Articles published in peer-reviewed journals                                                                |
| 4    | Case-control studies             | Evidence from well-designed trials without randomisation.  
**Case-control study**: study that compares people in two groups with and without a specific condition or disease, all taken from the same population. Usually analysed retrospectively.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Articles published in peer-reviewed journals                                                                |
| 5    | Cross-sectional survey           | Survey or interview of a sample of the population to measure the distribution of interest at a particular point in time.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Articles published in peer-reviewed journals                                                                |
| 6    | Case-report                      | A report based on a single patient or subject.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Articles published in peer-reviewed journals                                                                |
| 7    | Expert opinion                   | Consensus of experience and opinions from respected authorities, based on clinical evidence, descriptive studies or reports from committees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Articles published in peer-reviewed journals                                                                |
| 8    | Anecdotal                        | Informal account of evidence in the form of an anecdote or hearsay, eg: “My granny says the best treatment is to rub it with onions”. The term “anecdotal evidence” is often used in contrast to “scientific evidence”. Anecdotal evidence focuses on experience rather than more formal scientific evidence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Source of informal verbal communication                                                                                   |

Put another way...

Systematic Reviews and Meta-analyses

Randomized Controlled Double Blind Studies

Cohort Studies

Case Control Studies

Case Series

Case Reports

Ideas, Editorials, Opinions

Animal research

In vitro ('test tube') research
A hierarchy of evidence (qualitative)

<table>
<thead>
<tr>
<th>Study type</th>
<th>Features</th>
<th>Limitations</th>
<th>Evidence for practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalizable studies</td>
<td>Sampling focused by theory and the literature, extended as a result of analysis to capture the diversity of experience. Analytic procedures comprehensive and clear. Located in the literature to assess relevance to other settings.</td>
<td>Main limitations are in reporting when the word length of articles does not allow a comprehensive account of complex procedures.</td>
<td>Clear indications for practice or policy may offer support for current practice, or critique with indicated directions for change.</td>
</tr>
<tr>
<td>(level I)</td>
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<tr>
<td>Conceptual studies</td>
<td>Theoretical concepts guide sample selection, based on analysis of literature. May be limited to one group about which little is known or a number of important subgroups. Conceptual analysis recognizes diversity in participants’ views.</td>
<td>Theoretical concepts and minority or divergent views that emerge during analysis do not lead to further sampling. Categories for analysis may not be saturated.</td>
<td>Weaker designs identify the need for further research on other groups, or urge caution in practice. Well-developed studies can provide good evidence if residual uncertainties are clearly identified.</td>
</tr>
<tr>
<td>(level II)</td>
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<tr>
<td>Descriptive studies</td>
<td>Sample selected to illustrate practical rather than theoretical issues. Record a range of illustrative quotes including themes from the accounts of “many,” “most,” or “some” study participants.</td>
<td>Do not report full range of responses. Sample not diversified to analyze how or why differences occur.</td>
<td>Demonstrate that a phenomenon exists in a defined group. Identify practice issues for further consideration.</td>
</tr>
<tr>
<td>(level III)</td>
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<tr>
<td>Single case study</td>
<td>Provides rich data on the views or experiences of one person. Can provide insights in unexplored contexts.</td>
<td>Does not analyze applicability to other contexts.</td>
<td>Alerts practitioners to the existence of an unusual phenomenon.</td>
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<tr>
<td>(level IV)</td>
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</table>
Put another way...

A hierarchy of evidence-for-practice in qualitative research–study types and levels.

Rank 1- Systematic review or Meta-analysis (Can be quantitative or qualitative or mixed)

Exercise for osteoarthritis of the knee

Mathea Frances1, Sara McConnell2

1Faculty of Health Sciences, University of Sydney, Sydney, Australia. 2Department of Medicine, St Joseph's Health Care Centre, Toronto, Canada

Abstract

Background

Biomechanical factors, such as reduced muscle strength and joint malalignment, have an important role in the initiation and progression of knee osteoarthritis (OA). Currently, there is no known cure for OA, however, disease-related factors, such as impaired muscle function and reduced fitness, are potentially amenable to therapeutic exercise.

Objectives

To determine whether land-based therapeutic exercise is beneficial for people with knee OA in terms of reduced joint pain or improved physical function.
Systematic review – review of a body of data that uses stated methods to locate primary studies and stated criteria to assess their quality.

Meta-analysis (quant) and meta-synthesis (qual) – systematic review that uses statistical or other analysis methods to synthesize data and summarise the results.
Note: Info at this Level is not ‘wrong’ necessarily, but does not fulfill the Criteria on which to base serious decisions on patient or client welfare! Further evidence needed to back up the claims here.

Running on Air
The G-Trainer® takes athletes to a whole new level.

BY JODAI SAREMI, DPM

In 2008, the FDA approved a NASA-developed design for a new treadmill that promises to revolutionize how personal trainers and physical therapists approach athletic performance improvement and injury rehabilitation. The G-Trainer treadmill from Alter-G allows controlled progressive weight-bearing by using air pressure to support with a corresponding amount of air pressure by up to 80 percent in 1-percent increments. The amount of air pressure buoying up the body can be gradually decreased as the person gets stronger and able to bear more weight. This contrasts with water therapy, where the amount of buoyancy cannot be controlled.
Anecdotal evidence – opinion based on experience rather than formal science. Can include many popular magazine articles.

Note: Many Evidence Hierarchy schemes place laboratory and animal model experiments at this level!

e.g. It is not valid to infer that a drug’s effect on cells in a test tube (in vitro) will have the same effect in a living human (in vivo). [A common mistake in newspaper reports of medical “breakthroughs”]
Different search tools operate at different levels of evidence synthesis.

- **CINAHL, Pubmed etc**
- **Cochrane, JBI**
- **eTG and other guidelines**

Source: [http://guides.library.upenn.edu/content.php?pid=192036&sid=1610308](http://guides.library.upenn.edu/content.php?pid=192036&sid=1610308)
Health professionals should base their decisions on good evidence.

Systematic reviews (e.g. Cochrane), meta-analyses/syntheses and RCT’s (randomized controlled trials) are usually regarded as the best forms of evidence.

Remember that CINAHL (and PubMed) has limits that allow you to narrow your search to different types of evidence-based studies.
Evaluation

Always evaluate every article you want to use—is it really reliable?

- Who wrote it? (believable authors?)
- Date (not outdated?)
- Subject coverage (relevant?)
- Bias (impartial?)
- Format (academic layout, clear methods etc.)
- Referenced (sources documented?)
- Peer-reviewed (academically evaluated?)
- Appropriate study design (fits inclusion criteria?)
Some books on evidence-based health practice


Getting Help

Ask a Librarian:
In Person at the Information Desk By Telephone
5430 2803
Email InfoDesk@usc.edu.au Or ‘Ask A Librarian’ online
HEIDI drop-in Tuesdays E1 Nursing area 9.30-11.30am