AIM

- Clarify the different types of review: strengths and weaknesses
- Clarify how these reviews fit with APAC Accreditation Standards for honours and masters research projects
- Provide some guidance on how to review & write a systematic review or meta-analysis for publication in a scholarly journal.
REVIEW TYPES

- Literature review
- Scoping review
- Systematic review
- Meta-analysis
LITERATURE REVIEW

- “Individual intensive empirical literature review” (APAC: Hons)
- “Critical review” (APAC: Masters)
- “traditional” “narrative” “qualitative”
- Not expected to be systematic, descriptive, when published often by ‘experts’
SCOPING REVIEW

It needs to:

- cover key concepts
- sources and types of evidence available
- explore complex areas OR areas which have not been reviewed comprehensively before
- rigorous
- transparent
- replicable (systematic)

Scoping reviews are a type of systematic review
SCOPING REVIEW: EXAMPLE

Objective: Provide a synthesis of information gathered about the use of resilience in the literature concerning the transition to parenthood.

Research question 1: In what ways has the concept of resilience been used in this literature?

Research question 2: To what extent are researchers using theory to underpin their work?
SYSTEMATIC REVIEW

- Review that has been conducted in a systematic manner!

- Is set-out like other studies: intro, method, results, discussion qualitative summary of the results of empirical/original research

- Differs from a narrative review: it is comprehensive/exhaustive, rates methodological quality & weights results accordingly

META-ANALYSIS

- statistical analysis of data obtained from empirical studies
- data from multiple studies are pooled & analysed
- quantitative review
- main statistic: effect sizes
- number of different effect sizes available, depending on the study design/data
META-ANALYSIS: EXAMPLES


Honours Research Project

4.1.11 The research project must include an individual research question, individual intensive empirical literature review, individual data analysis, individual reporting of results and discussion...

- A meta-analysis at Honours level MEETS APAC standards
- A systematic review would likely NOT meet the requirement for “data analysis”
APAC ACCREDITATION STANDARDS

Master of Psychology Research Project

5.3.13 The research project must take the form of one or more of the following:

- a program evaluation study;
- a study based on experimental single case design;
- a critical review, pilot study and full grant application;
- a critical review and a meta analysis;
- a critical review and secondary data analyses;
- a traditional empirical research project; or
- a literature review and an article suitable for submission to a peer-reviewed international scientific journal

- A meta-analysis MEETS APA standards
- A systematic review (including a scoping review) would meet the last criteria
PROPOSED STANDARDS

Honours

“Undertake research to investigate a question relevant to the discipline of psychology.”

“A program must ensure graduates are competent in research methods and their application to psychological questions”

Masters

“APAC requires that the psychology programs at the Professional Competencies for Specialised Areas of Practice level leading to Area of Practice endorsement must ensure graduates: are competent to evaluate and apply research”

Overall requirement

“The AOU must provide evidence of how students are offered opportunities to undertake research as part of their curriculum and meet the expectation of competencies in research.”
Most scientists regarded the new streamlined peer-review process as ‘quite an improvement.’
REPORTING STANDARDS

JARS
- Journal Article Reporting Standards

MOOSE
- Meta-analysis of Observational Studies in Epidemiology

PRISMA
- Preferred Reporting Items for Systematic Reviews and Meta-analyses

MARS
- Meta-analysis Reporting Standards
Specify that the manuscript describes a research synthesis: whether it is literature review, meta-analysis, systematic review etc.

Examples:
- Psychosocial characteristics of spinal cord injury pain: a meta-analysis
- Utilising the ICF to understand depressive symptomatology in adults with multiple sclerosis: an exploratory systematic review
ABSTRACT

- Background/Objective
  Problem under investigation

- Methods
  Study eligibility
  Sample characteristics
  Search process
  Meta-analytic methods (if applicable)

- Main results

- Conclusions
  Theoretical/practical implications
Objective: Although the association between spinal cord injury pain and psychosocial correlates has been identified, the full range of psychological and social difficulties for those who experience acute and/or persistent pain is unclear...

Methods: Nineteen studies that examined persistent neuropathic, nociceptive or mixed pain subtypes in adults with a newly acquired or chronic injury ($N_{participants} = 2934$) were identified from electronic database searches. Mean differences between SCI pain and no pain groups on self-reported psychosocial outcomes were calculated...

Results: ...Emotional functions were the most frequent psychosocial outcomes assessed, with pain contributing to heightened stress ($d = -0.85$), depression ($d = -2.49$) anxiety ($d$ range = -16 0.85 to -1.45)....

Conclusions: Multi-component treatments which target mood disturbance and foster community connections are important in SCI pain management. However, to improve the comparability of future studies, SCI pain research must adopt definitions of pain consistent with the International Spinal Cord Injury Pain Classification along with validated outcomes which map onto the ICF framework.
INTRODUCTION

State the research question (refer to theoretical/practical issues)

Example: ‘Most individuals with a spinal cord injury (SCI) will experience neuropathic and/or nociceptive (i.e. musculoskeletal, visceral) pain of varying intensity, quality and constancy. For many, this results in a pain continuum, from acute biomedical treatment through to management of persistent pain. SCI pain management is further complicated by a multitude of cognitive, emotional, behavioural and social factors that can adversely affect, or buffer the pain experience. To ensure optimal pain management, an investigation of the psychosocial characteristics of both acute and persistent pain conditions following SCI is therefore required.

Aim(s) and hypotheses (if applicable)

Example: ‘This paper will quantitatively review the available data to map the onset and maintenance of psychosocial difficulties in spinal cord injury pain.’
METHODS: CRITERIA

- Inclusion and exclusion criteria of primary studies
- Operational definition of independent (predictor) and dependent (outcome) variable(s)
- Eligible populations
- Eligible research design (e.g. randomisation only, minimum sample size)
- Time period in which studies needed to be conducted
- Subgroup analyses, if any
- PICO criteria (participants, intervention, co-intervention, outcome)
METHODS: SEARCH STRATEGY

- List of electronic databases searched
- Keywords used in database searches (incl. logic grid as Appendix)
- Other efforts to retrieve available studies (e.g. listserv queries, authors contacted, reference lists of identified studies).
- Whether search was limited to studies published in English (incl. reason why)
METHODS: DETERMINING ELIGIBILITY

- How were studies screened? (i.e. title, abstract and/or full text examined)?
- Number of reviewers involved in search process.
  If > 1 reviewer, how were disagreements resolved (i.e. consensus decision)?
- Number of citations included
- Number of citations excluded
Online Search: 18413 results identified
PubMed (9598), PsycINFO (741), Embase (8074)

3063 duplicates removed

15350 titles and abstracts screened using the inclusion and exclusion criteria

15222 irrelevant titles and abstracts excluded

128 full text articles searched and read for eligibility using inclusion and exclusion criteria

113 articles excluded:
- dissertation n = 16
- pain not defined n = 1
- duplicate n = 5
- mixed disability sample n = 34
- qualitative study n = 1
- nil standardised measure n = 10
- insufficient data n = 10
- single SCI group n = 36

Final sample of 15 independent studies included in review

Figure X: Flow chart of study selection process
<table>
<thead>
<tr>
<th>Article details</th>
<th>Screening</th>
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</table>
METHODS

- Assessment of study quality (important for systematic reviews)

- If a quality scale was employed, description of criteria and the procedures for application (e.g. no. of reviewers, inter-rater agreement)
STATISTICAL METHODS: EFFECT SIZE METRICS

- Effect sizes formulas (e.g. means and SDS, use of univariate $F$ to calculate effect size $d$ etc)
- Effect size averaging and/or weighting method(s)
- How effect size confidence intervals (or standard errors) were calculated
- How studies with more than one effect size were handled
STATISTICAL METHODS

- Were fixed or random effects models used and why?
- How was heterogeneity in effect sizes estimated/assessed?
- Statistical programs or software packaged for analyses?
- Tests of publication bias?
RESULTS

- Table giving descriptive information for each study, including effect size and sample size.
- Assessment of study quality, if any
RISK OF BIAS ASSESSMENT

Cochrane Collaboration Risk of Bias Tool

- Selection bias
- Performance bias
- Detection bias
- Attrition bias
- Reporting bias
- Other sources of bias

Legend:
- Yellow: Unclear
- Red: High risk of bias
- Green: Low risk of bias
## QUALITY RATING

<table>
<thead>
<tr>
<th></th>
<th>Reporting</th>
<th>External Validity</th>
<th>Internal Validity</th>
<th>Power</th>
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<td>Hypotheses/Aims/Objectives</td>
<td>Outcomes</td>
<td>Sample</td>
<td>Intervention</td>
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</table>

Note: ⚫ present; ⚫ present, with some limitations; ⚫ not present or unable to determine

Quality Index Rating Scale by Downs and Black (1998)
RESULTS

- Tables and/or graphic summaries to summarise:
  - Overall characteristics of the studies (e.g. sample ns, sample characteristics, study design features etc)
  - Overall effect size estimates, including measures of uncertainty (i.e. confidence intervals)

- Results of subgroup analyses, including no. of studies and total sample size per subgroup analysis

- Assessment of publication bias (e.g. Fail safe N statistic)
<table>
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<th>N&lt;sub&gt;studies&lt;/sub&gt;</th>
<th>N&lt;sub&gt;participants&lt;/sub&gt;</th>
<th>Prevalence</th>
<th>95% CI</th>
<th>N&lt;sub&gt;fs&lt;/sub&gt;</th>
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**Prevalence**

![Forest Plot](image-url)
DISCUSSION

- Statement of major findings
  Compare/contrast to available research
  Alternative explanation for observed results

- Generalisability of results

- Limitations of review

- Implications for future research, theory, policy, practice
RESOURCES

Software:

**MIX Pro** (on pcs in room 251)*

**CMA** Comprehensive Meta-analysis (license to purchase)

**RevMan** (Free)*

**ESCI** (Free)*

**Effect size calculator** (Free)*

**Covidence** (data extraction – license to purchase)

**Forest Plot Viewer** (graphing tool, also known as Meta Data viewer).

*Cochrane Handbook*

*Joanna Briggs Institute Reviewers Manual*
www.Meta-Analysis-Workshops.com (based on Borenstein text)

JBI Comprehensive Systematic Review Training
REFERENCES


