The systematic review: ‘My supervisor has told me how to do one, but how do I write one?’

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The systematic review

Systematic (i.e. standardised and objective) reviews enable researchers to synthesise information, and identify critical areas for future research. They are ‘research-based research’, with their units of analysis original primary studies (Ferreira Gonzalez et al. 2011: 689).

[A meta-analysis is a SR which uses statistical methods to combine the results of studies (Ferreira Gonzalez et al. 2011), and can be used alone or in combination with a SR.]
Along with meta-analyses, SRs are recognised as the ‘gold standard’ for reviewing healthcare research, and are given as much scholarly credit as primary research studies.
Hope you are very well.

Since the beginning of this semester I have been working on the systematic review protocol and surveying all the journals and databases.

Now, I am on the last stage which is the studies selection and data extraction.

until now I have not write any thing as [supervisor] will give me four months just writing.

From next month I will start writing so I need to see you before I start so we could discuss the general outline.
A systematic review aims to answer a research question or (dis)prove a claim by:

- exhaustive searching for all potentially relevant articles;
- selecting articles using explicit and reproducible criteria (which are included in the review);
- describing the design and implementation of the studies;
- synthesising the data; and
- interpreting the results.
Findings of SRs can increase the validity of conclusions of primary studies and, by dissemination, assist the practice of **evidence-based practice** and **decision-making**.
SR tools and checklists – see examples on handout

These may follow a precise format, as in the case of Cochrane Reviews, or follow a guideline such as PRISMA (Moher et al. 2009).
Example of a PRISMA flowchart
(circoutcomes.ahajournals.org)
So, abundant advice on how to DO one
The SR as a powerful discourse

PhD students – increasingly encouraged/enticed to do systematic reviews (Bearman et al. 2012).

The SR a powerful and important form of discourse which research students in many fields need to read and potentially write.
Genre confusion?

Narrative/traditional review, integrative review, modern focussed review, systematic narrative review, meta-analysis, overview, systematic review, realist review
The SR as a subject of linguistic research

The SR has excited little linguistic research – very little on how to WRITE one.

Mungra (2006) is a notable exception, examining:

**Macrostructure** and **rhetorical moves** in SR and meta-analysis papers (compared with the primary research article) concerning 3 clinical pathologies.

The SR as a collaborative affair – a challenge for students to write

“This collaboration would work better if you kept your ideas to yourself.”
Issues identified by Mungra (2006) - studying SRs on 3 clinical pathologies

Is the SR framework fixed?
What is the macrostructure of an SR?
What rhetorical patterns (moves) are present?

AND, for pedagogical purposes:

How can the discourse be foregrounded?
Difficulties in readily identifying SRs

- ‘SR’ not always in title or abstract
- SRs can be called ‘overviews’
- Some ‘reviews’ are not SRs
- Some claim to be SRs but use a quality standard for a meta-analysis
- Some SRs are meta-analyses, or include meta-analyses – not revealed until Methods
Following Mungra, a sub-set of SRs was analysed

A healthcare journal, *Ageing Research Reviews*, was selected. Papers from 2011-2013, which were clearly SRs, were reviewed and the macrostructure and rhetorical moves were analysed. Evaluative expressions in discussion sections were also identified and categorised.
Findings: Macrostructure and rhetorical moves in 16 healthcare journal articles

www.phdpublished.com
Introduction (Moves 1, 2, 3)

**Move 1: Establishing a territory, e.g. centrality, significance claim**

‘Vitamin D insufficiency and deficiency [...] are a major health care problem’ (Schaft et al.)

**Move 2: Establishing a niche: gap or question – population and context, the exposure of interest (intervention, test, etc.); the event of interest (e.g., cardiovascular mortality)**

‘In the literature, there is no consensus on the presence of an association between vitamin D levels and cognition ….’ (Schaft et al.)

**Move 3: Occupying a niche: defining the purpose**

‘to increase actual knowledge about this association we conducted a systematic review ….’ (Schaft et al.)
Methods (Moves 4, 5)

**Move 4: Search strategy for selection of studies**

Step 1: identification of databases used; identification and justification of RAs, or RCTs if available and appropriate, with inclusion and exclusion criteria (decisions on language, data sources), showing data flow/search strategy diagram (OPT)

‘We sought studies from a wide range of databases, including …’ (Shamilyan et al.)

Articles were included without language, methodology or date restriction’ (Bolignano et al.)

‘Studies were excluded if they met the following criteria: 1) animal studies, … ’ (Schaft et al.)
Step 2: dealing with how aberrations or disagreements between the researchers were resolved (if applicable)

‘The two reviewers discussed their findings and consulted K.J.M.J. and K.G.M.M. in case agreement could not be reached.’ (Siccama et al.)

Step 3 (may follow Step 1 OR may be conflated with Move 5, Step 1): defining extraction of parameters or subgroups to be compared; include data extraction form (OPT)

‘The following data were extracted from each included study: (i) study characteristics, (ii) study sample characteristics …’ etc. (Schaft et al.)
Move 5: Procedures used in data synthesis

Step 1 (OR may be conflated with Move 4, Step 3): extraction of data from publications and researcher blinding for quality control (if applicable); identification of quality standard used; include data extraction form (OPT)

‘The following items were independently extracted from each study by two reviewers (R.N.S. and N.A.F.V.) based on STARD and QUADAS’ (Pieper et al.)

Step 2: data synthesis and statistical modelling (esp. for M-As) and software used (for M-As)

‘We used the chi-square exact test to analyze potential associations between study variable and outcome direction’ (Schaft et al.)
Results (Move 6)

**Move 6: Data description**

Step 1: presentation of tables, include data extraction form (OPT), evaluation of methodological quality

‘Of the included 26 publications, 16 publications used a qualitative approach; four used a quantitative one; whereas six use a mixed method one’.

Step 2: synthesising comment on each result/groups of results

‘Although people with dementia were involved in all publications, their role differed depending on the aim of researchers.’

Step 3: generalising comments from the data tables (can be merged with Move 7-1

‘Most publications did not ask the question of impact on the person of dementia explicitly’
Discussion (Moves 7, 8, 9)

**Move 7:** Evaluating the findings and making claims, indicating whether the findings are in accord with current understandings

**Step 1:** restating the purpose and the hypothesis expected

‘In this systematic review we debated the association between vitamin D and cognition’ (Schaft et al.)

**Step 2:** making a claim generated by data from Move 6-3

‘The main finding of the 25 included cross-sectional studies was a statistically significant worse outcome on one or more cognitive function tests or a higher frequency of dementia with lower vitamin D levels or intake in 18 out of 25 (72%) studies.’ (Schaft et al.)

**Step 3:** indicating limitation to the claim

‘However it is currently not possible to differentiate between the barriers or motivators that are typical of the oldest old’ (Beart et al.)
**Move 8: Overview of study outcomes** (Move 8 sometimes co-occurs with findings under 7-2)

**Step 1:** (Clinical) applications and recommendations

‘For long-term transplant management, everyday independence, rehabilitation and improvement of health-related quality of life is …’ (Kniepiess et al.)

**Step 2:** Strengths of study (academic credentialling) (OPT)

*For the first time, all articles on the diagnostic accuracy of existing CDRs for VTE in elderly suspected patients have been systematically evaluated in a single study’* (Siccama et al.)
Move 9: Limitations of the study and problem areas for further study

‘Finally our study included English language articles only, which may have been a potential source of bias’ (Siccama et al.)

‘For future research inclusion of a core set of outcome measures would be necessary to compare the outcome measures of different cognitive intervention programs’ (Reijnders et al.)
General differences from Mungras’s findings

MUNGRA
- All had a structured abstract
- No TOC
- Orientation to finding robust data for risk reduction (54%), best therapy (38%), outcomes (30%) and measurement standards (8%)
- RCTs the primary focus
- Quality standard not highlighted
- No information re Move position of data extraction form

CLEREHAN
- Structured abstract only in 7/16
- TOC in 4/16
- Orientation to finding robust data for best treatments/interventions (45%), followed by an evaluation of patient outcomes (35%), and measurement standards (30%)
- A range of study methodologies identified
- 8/16 followed a quality standard (PRISMA, etc.)
- Form appears either in Move 4-3, 5-1 or 6-1
Further observations

- Two rejected the IMRD framework and used a topic-driven framework instead.
- Given the macrostructure, there was some uncertainty regarding whether the search strategy was a method or a result – 5 flowcharts of search strategy were found under Results.
- Only 11/16 commenced Results section with an overview of the results of the lit search; the others zeroed in on a particular area, e.g. ‘Study Designs’.
- 10/16 did not canvass the resolution of disagreements (Move 4, Step 2).
- In Move 9, 10/16 included strengths as well as limitations.
Academic credentialling (strengths of study) in Discussion

- Discourse community membership
  ‘We previously have reported …’ (Hilderink et al.)

- Revealing others’ weakness
  ‘The poor quality of the studies threatens the generalisability of the findings’ (Malderen et al.)

- Hedging/modesty
  ‘In general, we can conclude that …’ (Beart et al.)
Contribution to field

‘Currently, a nationwide study is in progress to validate …’ (one of the authors, date) ‘(Siccama et al.)

‘A better understanding … will help researchers …’ (de Vries et al.)

‘… thus facilitating further good quality research’ (Spector et al. 2012)

‘There is a need for a robust contemporary measure which incorporates …’(Author & Author, date)’ (Spector et al.)
Self-evaluation boosters

• Rigour in reviewing the data

• Strength of search strategy

• Originality

‘This review gives an exhaustive / comprehensive overview’

‘We used an elaborate search strategy (Albers et al)/ ‘we searched for publications that are often not searched in SRs (Pieper et al.)

‘For the first time’/‘This study is the first to/one of the first to …’ / 'To the author’s[sic] knowledge, this is the first time …’

10/10/14
Conclusions

- The Mungra model for writing a SR would appear to be broadly applicable, but would need some modifications for specific use (e.g. her Move 8 re-shaped into two steps).

- The SR macrostructure and rhetorical functions will vary according to discipline (affecting SR methodology) and purpose (such as ‘best therapy’).

- Students need to understand that, even within one journal, there may be variable acceptance standards for an SR (e.g. exclusions, use of standard, salience of limitations, etc.).
While the IMRD appears to be the common framework, topic-based patterns may be acceptable (topic-based tends to remove subjectivity—no option for academic credentialling and self-evaluation boosting in Discussion).

If using IMRD, students need to consider whether the search strategy, as expressed in the data flow diagram is their *method* or the *outcome* of their method.

Students would do well to consider including strengths of their SR—highlighted in Disc. either in Move 7, Step 1 or in Move 8, as suggested above.

Even in this most objective genre of medical research discourse, it can be observed that the rhetorical moves still provide a space for subjectivity.