Overview of session

1. Write the key sections of a research article efficiently and effectively

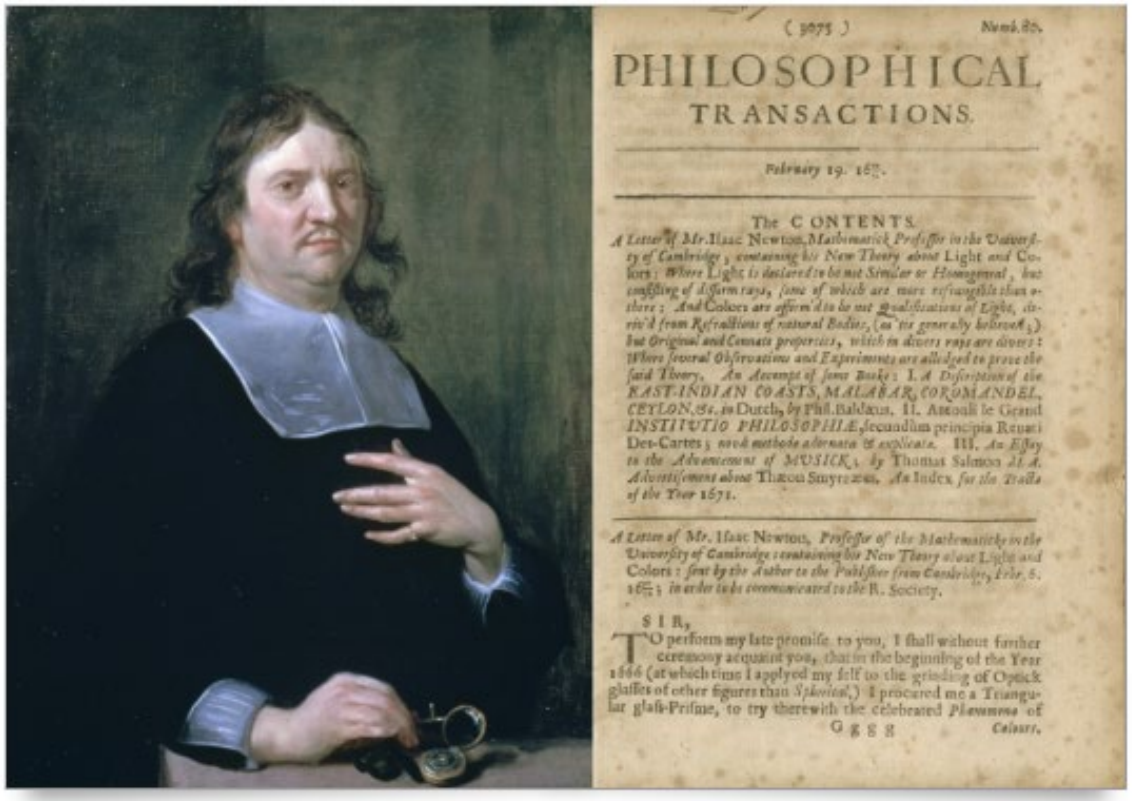
2. Use reporting guidelines such as PRISMA, CONSORT and STROBE to guide the writing task, assist publication, & improve the impact of your research. (Tammy Hoffmann)

3. Respond to and provide constructive peer review. (Virginia Barbour)

25 minutes each with Q&A (please post in chat as we go).

Write the key sections of a research article efficiently and effectively

Paul Glasziou, Bond University



(3075) Numb. 80.

PHILOSOPHICAL TRANSACTIONS

February 19. 167⅚.

The CONTENTS.

A Letter of Mr. Isaac Newton, Mathematick Professor in the University of Cambridge; containing his New Theory about Light and Colors: Where Light is declared to be not Simple or Homogeneal, but consisting of difform rays, some of which are more refrangible than others: And Colors are affirm'd to be not Qualifications of Light, deriv'd from Refractions of natural Bodies, (as 'tis generally believed,) but Original and Connate properties, which in divers rays are divers: Where several Observations and Experiments are alledged to prove the said Theory. An Accompt of some Books: I. A Description of the EAST-INDIAN COASTS, MALABAR, COROMANDEL, CEYLON, &c. in Dutch, by Phil. Baldæus. II. Abrahã le Grand INSTITUTIO PHILOSOPHIÆ, secundum principia Renati Des-Cartes; novâ methodo adornata & explicata. III. An Essay to the Advancement of MUSICK, by Thomas Salmon M. A. Advertisement about Theatra Smyrnæa. An Index for the Tralls of the Year 1671.

A Letter of Mr. Isaac Newton, Professor of the Mathematicks in the University of Cambridge; containing his New Theory about Light and Colors: sent by the Author to the Publisher from Cambridge, Febr. 6. 167⅚; in order to be communicated to the R. Society.

SIR,

TO perform my late promise to you, I shall without further ceremony acquaint you, that in the beginning of the Year 1666 (at which time I applyed my self to the grinding of Optick glasses of other figures than Spherical,) I procured me a Triangular glass-Prisme, to try therewith the celebrated Phænomena of Colours.

G g g g

1665

Philosophical Transactions

Philosophical Transactions of the Royal Society begins publication under the editorial guidance of Henry Oldenburg, Secretary of the Royal Society. This journal is now the oldest scientific journal in continuous publication in the world and established the concepts of scientific priority and peer review.

Portrait of Henry Oldenburg (left) by Jan van Cleve, 1668; and contents page of Philosophical Transactions of the Royal Society, Volume 6 (right).

https://commons.wikimedia.org/wiki/File:Antonius_van_Leeuwenhoek,_Mezzotint_by_J._Verkolje,_1686,_af_Wellcome_V0003466.jpg

Reproducibility, 1677 - Animalcules

Oldenburg (JRS editor) wrote to Leeuwenhoek, asking him to ***'acquaint us with his method of observing, that others may confirm such Observations as these'***

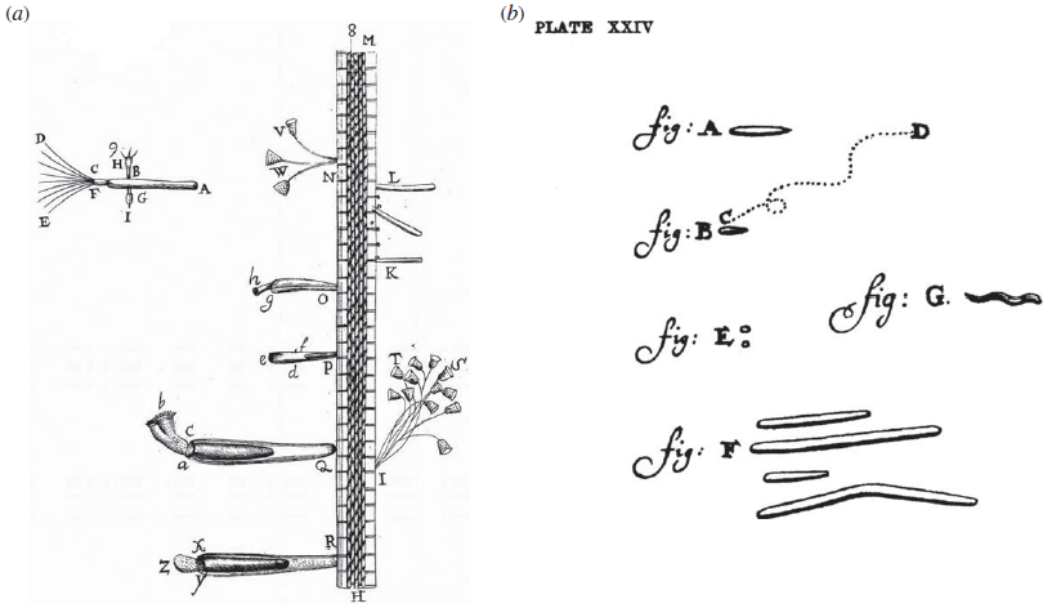
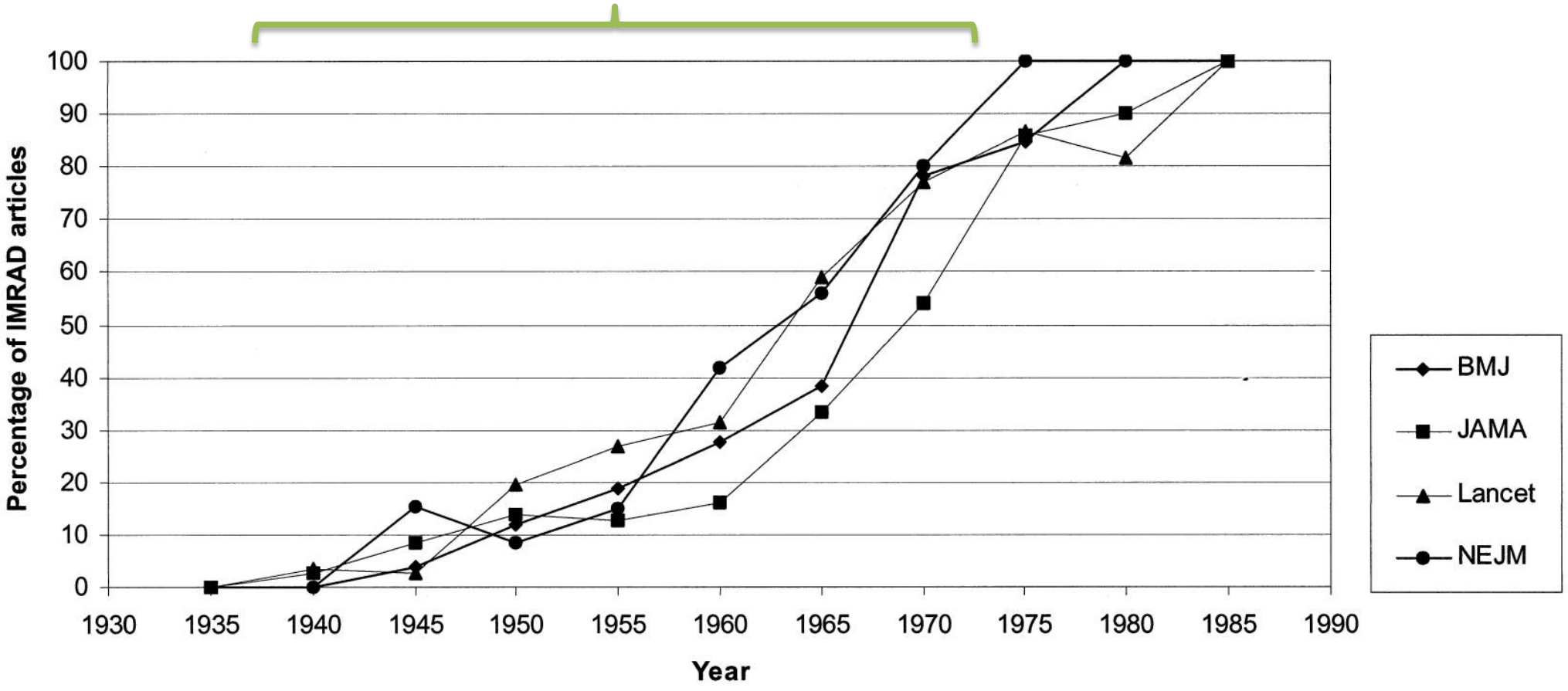


Figure 3. (*a*) Rotifers, hydra and vorticellids associated with a duckweed root, from a Delft canal. From Leeuwenhoek [16]. (*b*) Bacteria from Leeuwenhoek's mouth; the dotted line portrays movement. From Leeuwenhoek [17]. Copyright © The Royal Society.

The 40 years for uptake of “IMRD”

(**I**ntroduction, **M**ethods, **R**esults, **D**iscussion)



Sollaci LB, Pereira MG. The introduction, methods, results, and discussion (IMRAD) structure: a fifty-year survey. J Med Libr Assoc. 2004

The “wineglass” model

Introduction

1. The problem
The story so far
leading to …
Our question

Methods

2. How we did the research

Results

3. What we found

Discussion

4. Main findings
Strengths, weaknesses
Findings of others
Further research

RESEARCH ARTICLE Open Access

A randomised controlled trial of dietary improvement for adults with major depression (the ‘SMILES’ trial)

Felice N. Jacka[1,4,9,10,13*], Adrienne O’Neil[1,2,13], Rachelle Opie[5,13], Catherine Itsiopoulos[5], Sue Cotton[3], Mohammedreza Mohebbi[1], David Castle[4,11], Sarah Dash[1,13], Cathrine Mihalopoulos[7], Mary Lou Chatterton[7], Laima Brazionis[5,6], Olivia M. Dean[1,4,12,13], Allison M. Hodge[8] and Michael Berk[1,3,12,13]

Abstract

Background: The possible therapeutic impact of dietary changes on existing mental illness is largely unknown. Using a randomised controlled trial design, we aimed to investigate the efficacy of a dietary improvement program for the treatment of major depressive episodes.

Methods: ‘SMILES’ was a 12-week, parallel-group, single blind, randomised controlled trial of an adjunctive dietary intervention in the treatment of moderate to severe depression. The intervention consisted of seven individual nutritional consulting sessions delivered by a clinical dietician. The control condition comprised a social support protocol to the same visit schedule and length. Depression symptomatology was the primary endpoint, assessed using the Montgomery–Åsberg Depression Rating Scale (MADRS) at 12 weeks. Secondary outcomes included remission and change of symptoms, mood and anxiety. Analyses utilised a likelihood-based mixed-effects model repeated measures (MMRM) approach. The robustness of estimates was investigated through sensitivity analyses.

Results: We assessed 166 individuals for eligibility, of whom 67 were enrolled (diet intervention, $n = 33$; control, $n = 34$). Of these, 55 were utilising some form of therapy: 21 were using psychotherapy and pharmacotherapy combined; 9 were using exclusively psychotherapy; and 25 were using only pharmacotherapy. There were 31 in the diet support group and 25 in the social support control group who had complete data at 12 weeks. The dietary support group demonstrated significantly greater improvement between baseline and 12 weeks on the MADRS than the social support control group, $t(60.7) = 4.38$, $p < 0.001$, Cohen’s $d = -1.16$. Remission, defined as a MADRS score <10, was achieved for 32.3% ($n = 10$) and 8.0% ($n = 2$) of the intervention and control groups, respectively (χ^2 (1) = 4.84, $p = 0.028$); number needed to treat (NNT) based on remission scores was 4.1 (95% CI of NNT 2.3–27.8). A sensitivity analysis, testing departures from the missing at random (MAR) assumption for dropouts, indicated that the impact of the intervention was robust to violations of MAR assumptions.

Conclusions: These results indicate that dietary improvement may provide an efficacious and accessible treatment strategy for the management of this highly prevalent mental disorder, the benefits of which could extend to the management of common co-morbidities.

Improving Reporting: brief history

1930s: IMRaD structure paper
(Introduction; Methods; Results; Discussion)

1987: Structured Abstracts

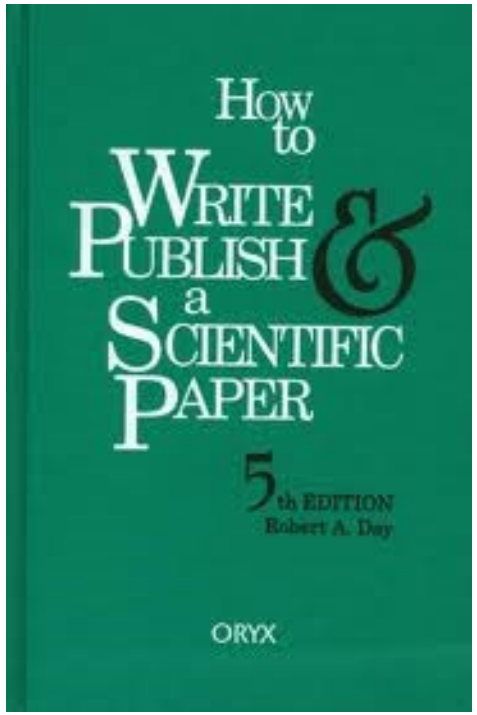
1996: CONSORT for reporting for Trials

2006: EQUATOR Network

(over 100 reporting guidelines) ->

www.equator-network.org/

What goes in each IMRD section?



What goes in each IMRD section?

The CONSORT checklist 2010 (25 items)

Protocol

TITLE & ABSTRACT

INTRODUCTION

- Background
- Objectives

METHODS

- Trial design
- Participants
- Interventions
- Outcomes
- Sample size
- Randomization
  - **Sequence generation**
  - **Allocation concealment**
  - **Implementation**
- Blinding (Masking)
- Statistical methods

RESULTS

- Participant flow
- Recruitment
- Baseline data
- Numbers analyzed
- Outcomes and Estimation
- Ancillary analyses
- Harms

DISCUSSION

- Limitations
- Generalisability
- Interpretation

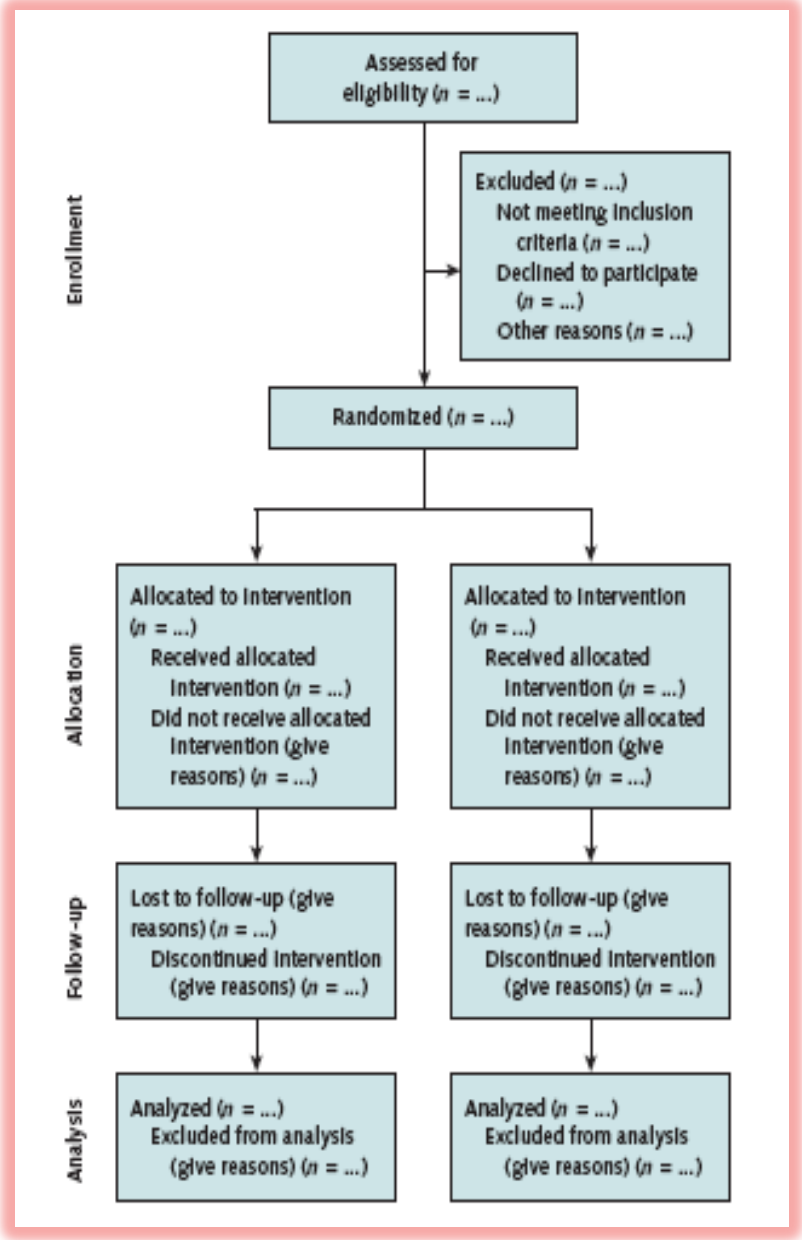
OTHER INFORMATION

- Registration
- Protocol Funding

CONSORT 2010 for clinical trial reporting

Table. CONSORT 2010 Checklist of Information to Include When Reporting a Randomized Trial*

Section/Topic	Item Number	Checklist Item	Reported on Page Number
Title and abstract	1a	Identification as a randomized trial in the title	
	1b	Structured summary of trial design, methods, results, and conclusions (for specific guidance, see CONSORT for abstracts [21, 31])	
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale	
	2b	Specific objectives or hypotheses	
Methods			
Trial design	3a	Description of trial design (such as parallel, factorial), including allocation ratio	
	3b	Important changes to methods after trial commencement (such as eligibility criteria), with reasons	
Participants	4a	Eligibility criteria for participants	
	4b	Settings and locations where the data were collected	
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	
Outcomes	6a	Completely defined prespecified primary and secondary outcome measures, including how and when they were assessed	
	6b	Any changes to trial outcomes after the trial commenced, with reasons	
Sample size	7a	How sample size was determined	
	7b	When applicable, explanation of any interim analyses and stopping guidelines	
Randomization			
Sequence generation	8a	Method used to generate the random allocation sequence	
	8b	Type of randomization; details of any restriction (such as blocking and block size)	
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	
	11b	If relevant, description of the similarity of interventions	
Statistical methods	12a	Statistical methods used to compare groups for primary and secondary outcomes	
	12b	Methods for additional analyses, such as subgroup analyses and adjusted analyses	
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analyzed for the primary outcome	
	13b	For each group, losses and exclusions after randomization, together with reasons	
Recruitment	14a	Dates defining the periods of recruitment and follow-up	
	14b	Why the trial ended or was stopped	
Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	
Numbers analyzed	16	For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups	
Outcomes and estimation	17a	For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)	
	17b	For binary outcomes, presentation of both absolute and relative effect sizes is recommended	
Ancillary analyses	18	Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing prespecified from exploratory	
Harms	19	All important harms or unintended effects in each group (for specific guidance, see CONSORT for harms [28])	
Discussion			
Limitations	20	Trial limitations; addressing sources of potential bias; imprecision; and, if relevant, multiplicity of analyses	
Generalizability	21	Generalizability (external validity, applicability) of the trial findings	
Interpretation	22	Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence	
Other Information			
Registration	23	Registration number and name of trial registry	
Protocol	24	Where the full trial protocol can be accessed, if available	
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	



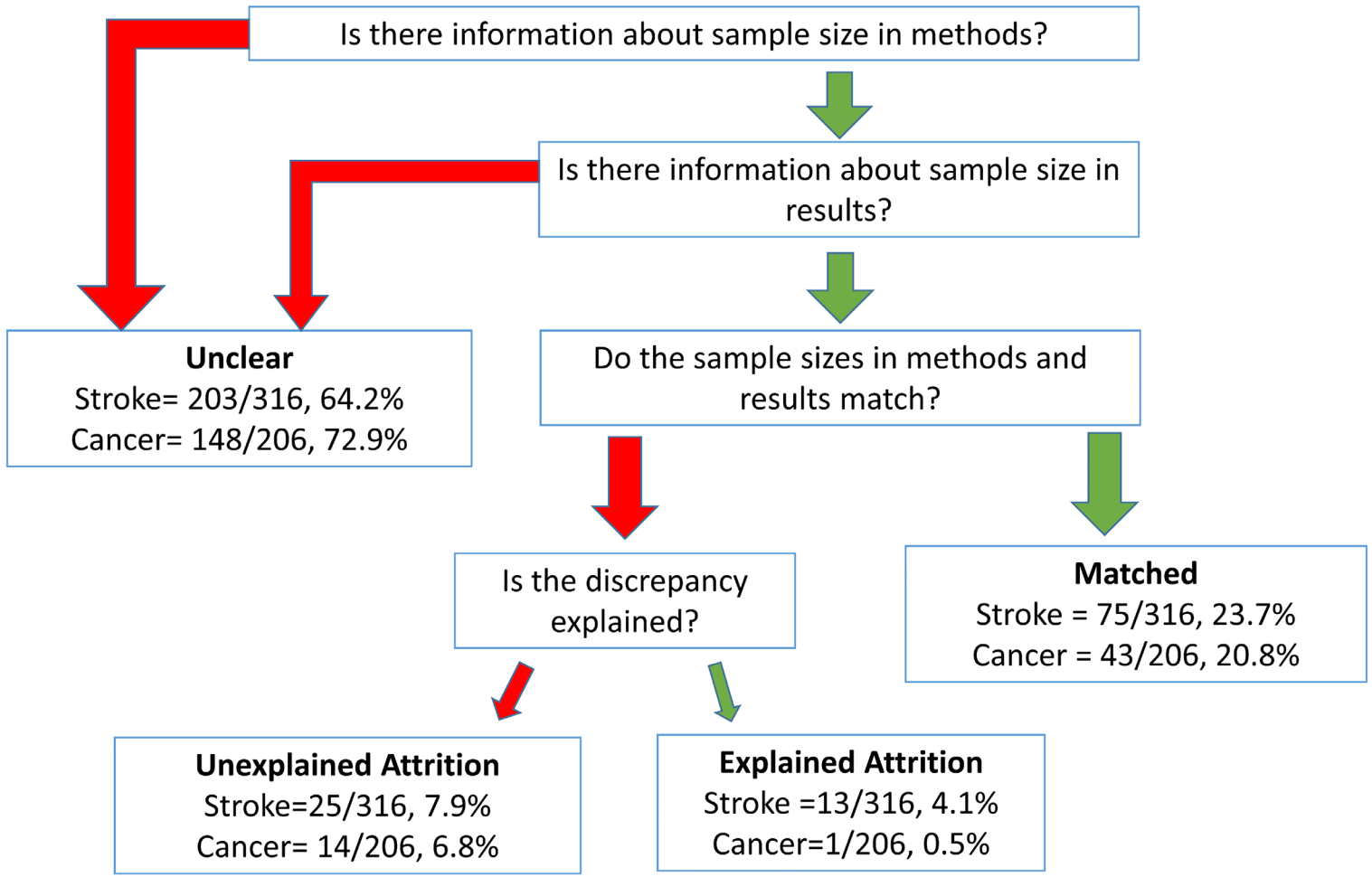
Schulz KF, et al. BMJ 2010;340:c332; Moher D, et al. BMJ 2010;340:c869. www.consort-statement.org

META-RESEARCH ARTICLE

Where Have All the Rodents Gone? The Effects of Attrition in Experimental Research on Cancer and Stroke

Constance Holman, Sophie K. Piper, Ulrike Grittner, Andreas Antonios Diamantaras, Jonathan Kimmelman, Bob Siegerink, Ulrich Dirnagl

Published: January 4, 2016 • https://doi.org/10.1371/journal.pbio.1002331



Reporting Guidelines: Checklist or Scaffolding?

EQUATOR resources in German | Portuguese | Spanish

Librarian Network Contact

ials

Reporting guidelines for main study types

Randomised trials	CONSORT	Extensions
Observational studies	STROBE	Extensions
Systematic reviews	PRISMA	Extensions
Study protocols	SPIRIT	PRISMA-P
Diagnostic/prognostic studies	STARD	TRIPOD
Case reports	CARE	Extensions
Clinical practice guidelines	AGREE	RIGHT
Qualitative research	SRQR	COREQ
Animal pre-clinical studies	ARRIVE	
Quality improvement studies	SQUIRE	
Economic evaluations	CHEERS	

Make your own template!

- Find your reporting guideline
- Put into IMRD format
- Use it as a guide

Reporting guidelines for main study types

Randomised trials	CONSORT	Extensions
Observational studies	STROBE	Extensions
Systematic reviews	PRISMA	Extensions
Study protocols	SPIRIT	PRISMA-P
Diagnostic/prognostic studies	STARD	TRIPOD
Case reports	CARE	Extensions
Clinical practice guidelines	AGREE	RIGHT
Qualitative research	SRQR	COREQ
Animal pre-clinical studies	ARRIVE	
Quality improvement studies	SQUIRE	
Economic evaluations	CHEERS	

SUPPLEMENT 1: COREQ 32-ITEM CHECKLIST

Tong A, Sainsbury P, Craig J. (2007) Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. International Journal for Quality in Healthcare: 19:349 – 357

COREQ (32 items)

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
1. Inter viewer/facilitator	Which author/s conducted the interview?	9
2. Credentials	What were the researcher's credentials?	7, 9
3. Occupation	What was their occupation at the time of the study?	9
4. Gender	Was the researcher male or female?	9
5. Experience and training	What experience or training did the researcher have?	9
6. Relationship with participants established	Was a relationship established prior to study commencement?	9
7. Participant knowledge of the interviewer	What did the participants know about the researcher?	8,9
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator?	9
Domain 2: study design		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study?	6
10. Sampling	How were participants selected?	8
11. Method of approach	How were participants approached?	8
12. Sample size	How many participants were in the study?	8
13. Non-participation	How many people refused to participate or dropped out? Reasons?	8
14. Setting of data collection	Where was the data collected?	9
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	9
16. Description of sample	What are the important characteristics of the sample?	8,9 and Table 1
17. Interview guide	Were questions, prompts, guides provided by the authors?	9 and Table 2
18. Repeat interviews	Were repeat interviews carried out?	9
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	10
20. Field notes	Were field notes made during and/or	10

STROBE Checklist [OVERVIEW]

1. TITLE and ABSTRACT

INTRODUCTION

2. Background/rationale
3. Objectives

METHODS

4. Study design
5. Setting
6. Participants
7. Variables
8. Data sources/measurement
9. Bias
10. Study size
11. Quantitative variables
12. Statistical methods

RESULTS

13. Participants
14. Descriptive data
15. Outcome data
16. Main results
17. Other analyses

DISCUSSION

18. Key results
19. Limitations
20. Interpretation
21. Generalisability

OTHER INFORMATION

22. Funding

I+M = Protocol

The basics of writing a paper
5. IMRaD (**Discussion**)

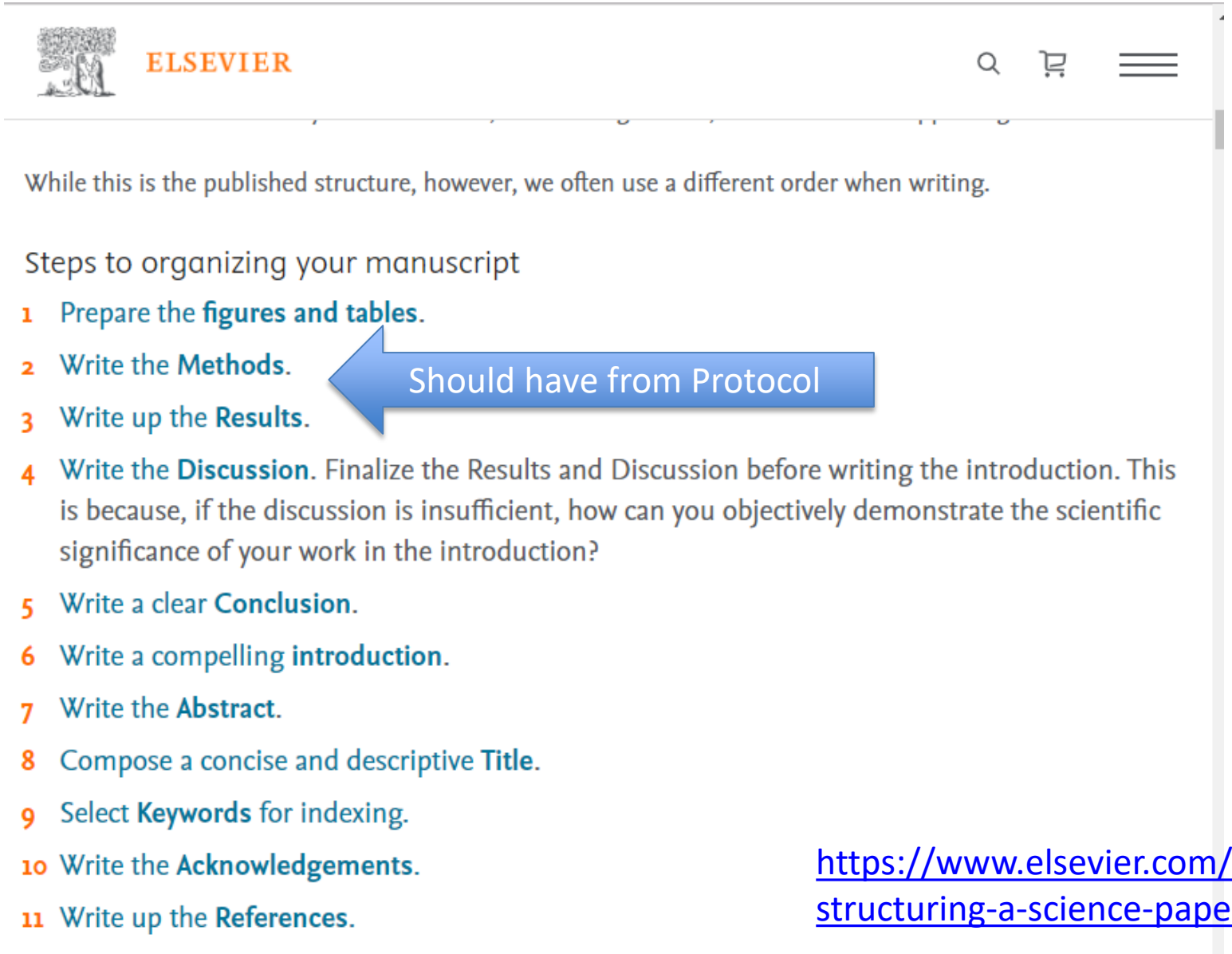
TIP: Use these as temporary headings & delete later

1. Statement of MAIN findings
2. Discuss strengths and weaknesses (limitations)
3. Relationship to other studies, discussing particularly any differences in results
4. Meaning of the study+others: possible mechanisms and implications for clinicians or policymakers
5. Unanswered questions and future research

What order do you write IMRD in?

and how do you organize the process?

Order of writing/reporting??



https://www.elsevier.com/connect/11-steps-to-structuring-a-science-paper-editors-will-take-seriously

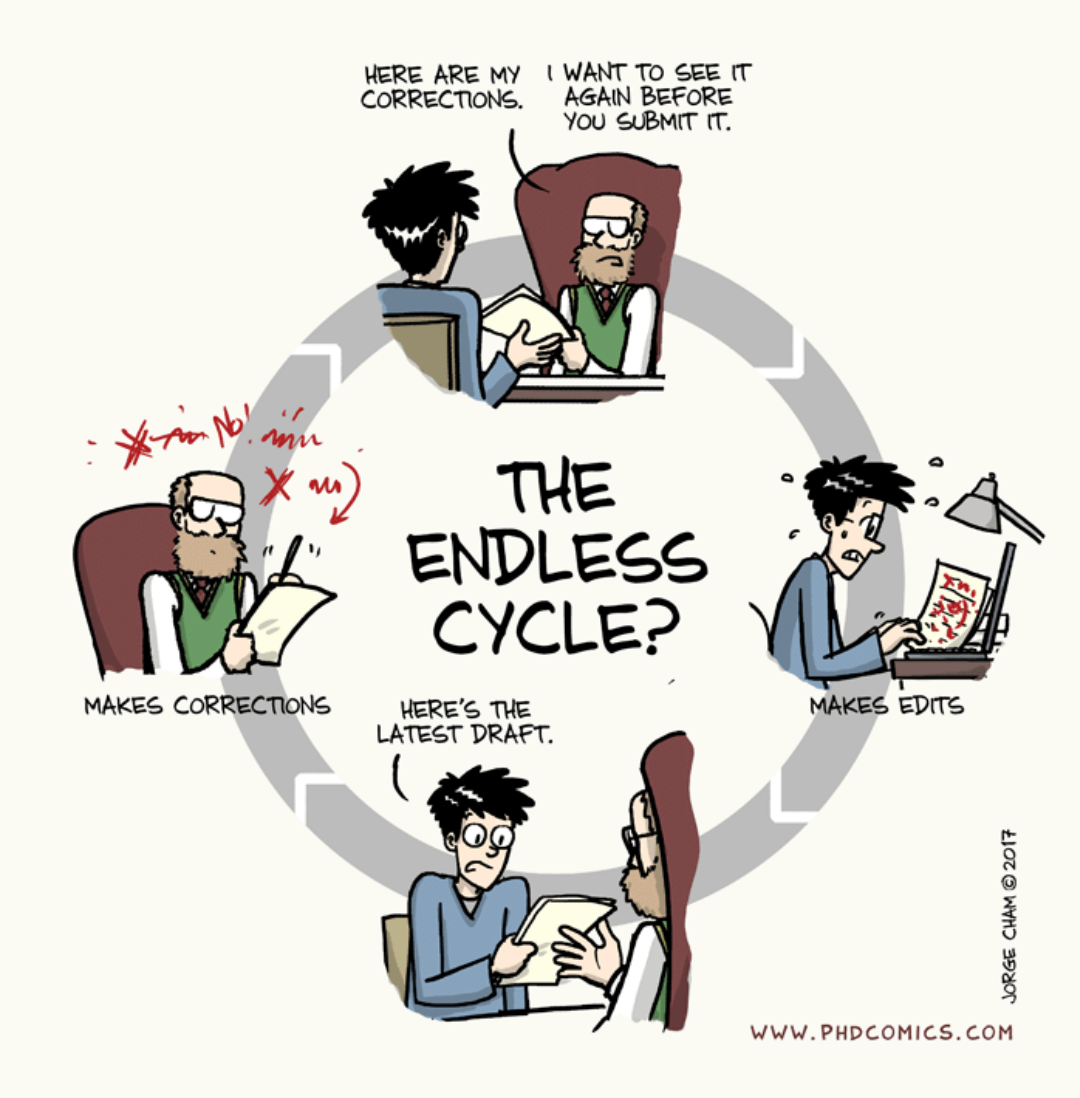
Tips for efficient writing

- Use the Reporting Checklist as a template
  (and delete unnecessary headings later)
- Protocol = the Introduction & Methods (so re-use when writing the final paper).
- Write & revise the I, M, R, D etc in order that suits you (and allocate to team members – easier with agreed template!).

List of websites

- EQUATOR reporting guidelines
  - http://www.equator-network.org/
- Penelope
  - **www.peneloperesearch.com/#home-section**
- Writing tips
  - https://www.elsevier.com/connect/11-steps-to-structuring-a-science-paper-editors-will-take-seriously

Questions?



How many drafts do you do?