and use

Can we trust medical research literature?

Poor reporting and its consequences

Iveta Simera

June 2015, WCRI Rio

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CSM

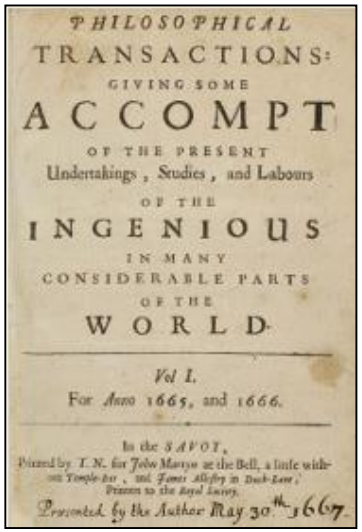
Disclosure

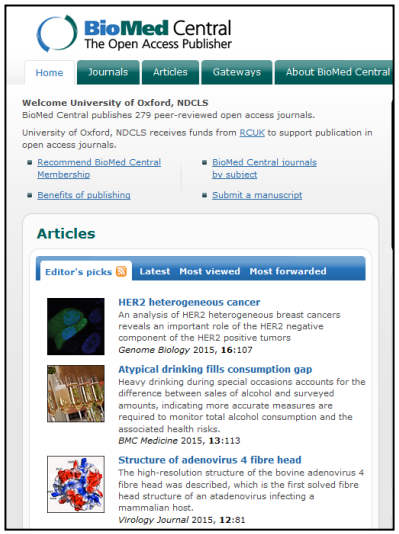
- Deputy Director, UK EQUATOR Centre
- EQUATOR is funded by grants from the UK NIHR, MRC, CSO, and PAHO
- My salary is fully paid from the EQUATOR programme grants
- No paid consultation for industry
- Workshops & seminars for journals

- Co-editor in Chief, *Research Integrity and Peer Review* (published by BiomedCentral)

Research article

- Still a key vehicle for communicating research findings


PHILOSOPHICAL
TRANSACTIONS:
GIVING SOME
ACCOMPT
OF THE PRESENT
Undertakings, Studies, and Labours
OF THE
INGENIOUS
IN MANY
CONSIDERABLE PARTS
OF THE
WORLD.
Vol I.
For Anno 1665, and 1666.
In the SAVOY,
Printed by T. N. for John Martyn at the Bell, a little without Temple-Bar, and James Allestry in Duck-Lane; Printers to the Royal Society.
Presented by the Author May 30th 1667.



- Scientific manuscripts should present sufficient data so that the reader can
  - Fully evaluate the information
  - Reach his or her own conclusions about methods and results (their reliability and relevance)

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How well are users' needs satisfied?

- Focus on reliability and usability

The systematic review process

- Should be based on a protocol

- Key steps:
  - Formulation of a clear question
  - Eligibility criteria for studies
  - Search for potentially relevant studies
  - Selection of studies into the review
  - Extraction of data
  - Assessment of methodological quality of included studies (risk of bias)
  - Synthesis of findings (possibly using meta-analysis)
  - Presentation of data and results
  - Interpretation and drawing conclusions

Search for relevant studies

- Is all research published?
- Non-publication of research is very common
  - Failure to publish a report of a completed study (even if presented at a conference)
  - Large number of studies investigating publication bias

BMJ 2013:

585 large RCTs

Registered on Clinicaltrials.gov

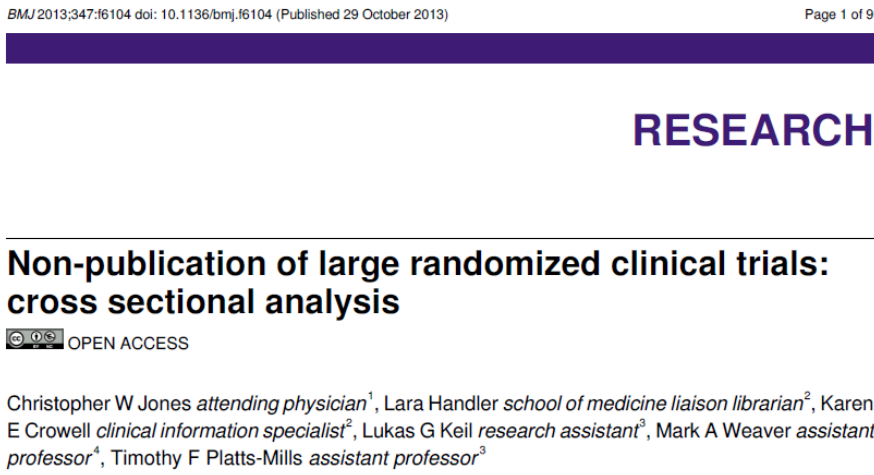
Completed before 2009

Search in Nov 2012:

171 (**29**%) unpublished

(almost **300k** participants)

- **138 (78%) no results available** on clintrials.gov



BMJ 2013;347:f6104 doi: 10.1136/bmj.f6104 (Published 29 October 2013) Page 1 of 9

RESEARCH

Non-publication of large randomized clinical trials: cross sectional analysis

OPEN ACCESS

Christopher W Jones *attending physician*[1], Lara Handler *school of medicine liaison librarian*[2], Karen E Crowell *clinical information specialist*[2], Lukas G Keil *research assistant*[3], Mark A Weaver *assistant professor*[4], Timothy F Platts-Mills *assistant professor*[3]

Search for relevant studies

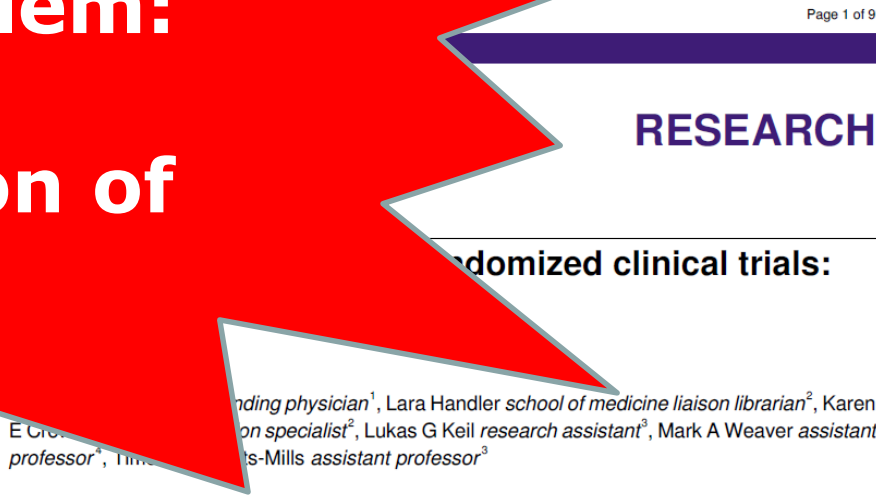
- Is all research published?
- Non-publication of arc y common
  - Fai publish ete dy (ev
  - Large
  - Es ed

SERIOUS problem:

Non-publication of research

(almo k participants)

- 138 (78%) **no results available** on clintrials.gov


Page 1 of 9

RESEARCH

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on specialist[2], Lukas G Keil *research assistant*[3], Mark A Weaver *assistant professor*[4], Tim
s-Mills *assistant professor*[3]

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Selection of studies

- Eligibility criteria – population, intervention, etc.

Poor description of non-pharmacological interventions: analysis of consecutive sample of randomised trials

OPEN ACCESS

Tammy C Hoffmann *associate professor of clinical epidemiology*, Chrissy Erueti *assistant professor*, Paul P Glasziou *professor of evidence-based medicine*

- Hoffmann et al, BMJ 2013;347:f3755
  - 133 RCT of NPI published in 2009 in 6 gen med j
  - Only 53/137 (**39%**) interventions were adequately described

Selection of studies

- Eligibility criteria – population, int ention, etc.

SERIOUS problem:

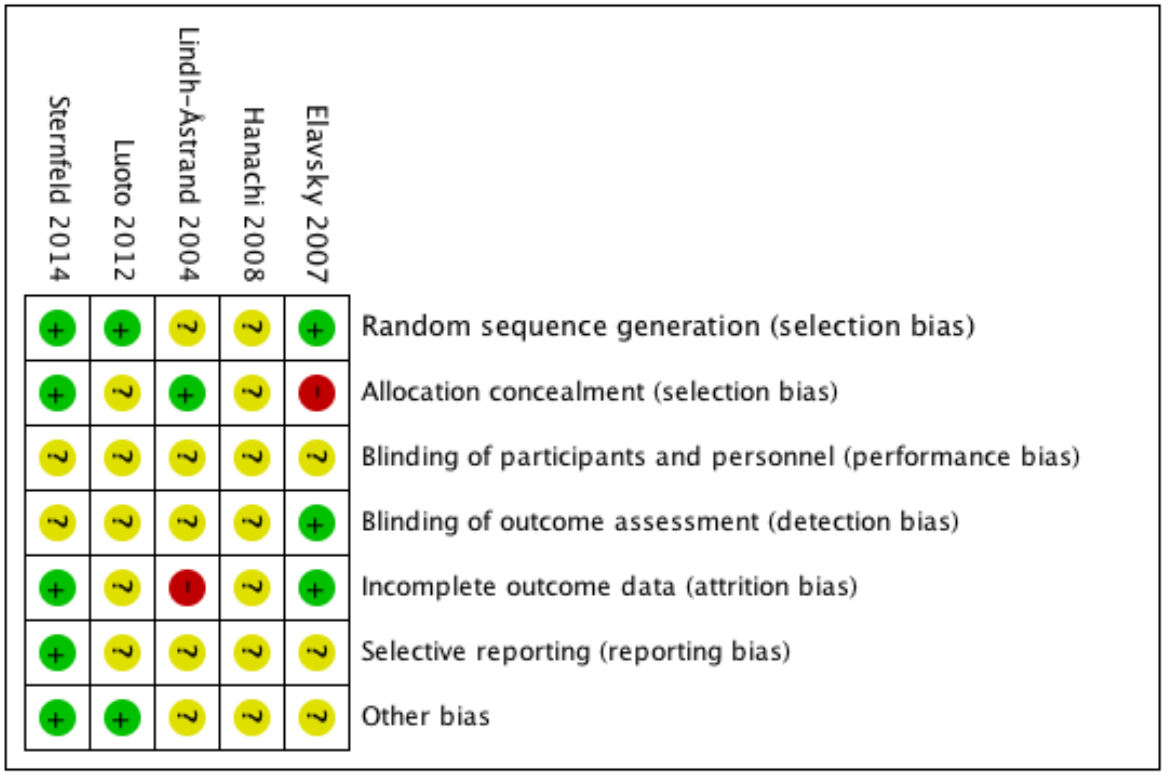
Poor description of interventions

– equately

Assessing risk of bias

A critical element of a systematic review

- Risk of bias results from suboptimal methods
- Methods need to be reported well to allow assessment of risk of bias



Exercise for vasomotor menopausal symptoms

Amanda Daley[1,*], Helen Stokes-Lampard[1] Database Title , Adèle Thomas[2], Christine MacArthur[3]

Editorial Group: Cochrane Menstrual Disorders and Subfertility Group

Published Online: 28 NOV 2014

Assessed as up-to-date: 3 MAR 2014

DOI: 10.1002/14651858.CD006108.pub4

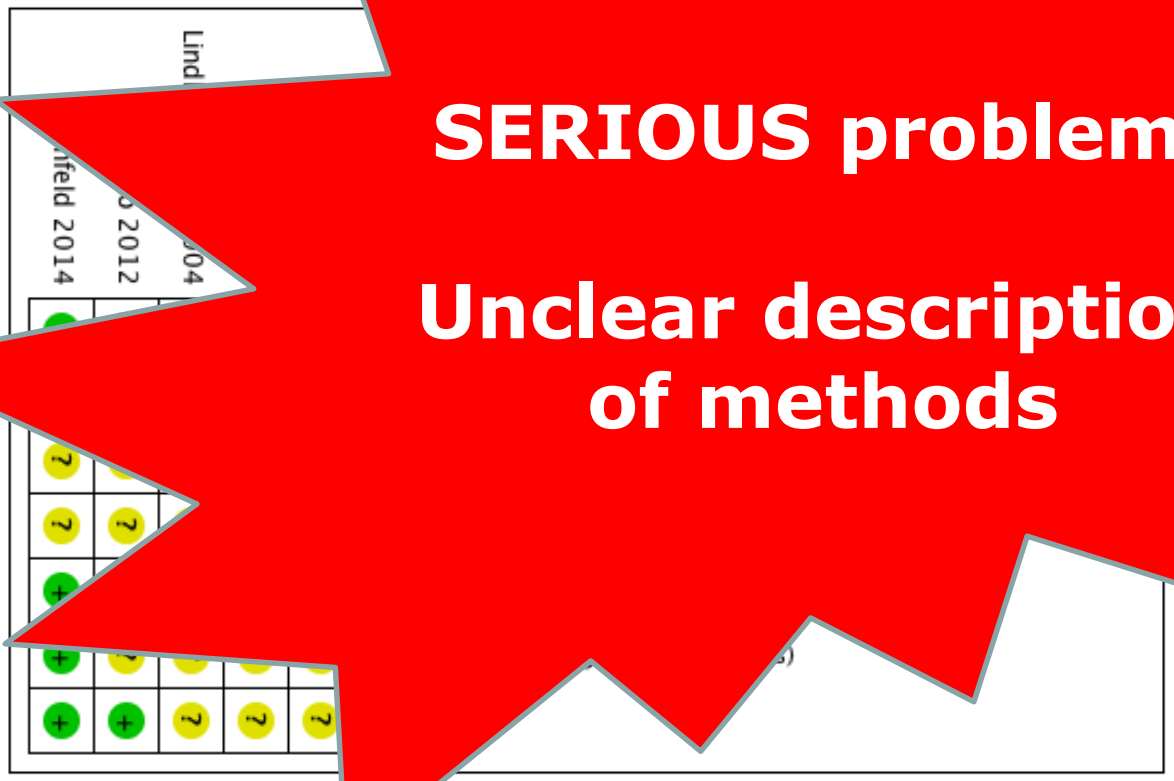
Assessing risk of bias

A critical element of a systematic re w

- Risk of bias results fro uboptim ds
- Met ds need to be r assessm t of risk of bi

SERIOUS problem:

Unclear description of methods



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Extraction of data

Influence of Behavioral Theory on Fruit and Vegetable Intervention Effectiveness Among Children: A Meta-Analysis

Cassandra S. Diep, PhD[1,2]; Tzu-An Chen, PhD[1]; Vanessa F. Davies, MSc[1,3]; Janice C. Baranowski, MPH, RD[1]; Tom Baranowski, PhD[1]

Journal of Nutrition Education and Behavior • Volume 46, Number 6, 2014

- 443 screened articles (included 29 in the review)
  - "Approximately 29 % of screened articles were excluded because they did not have means and standard deviations of diet in each group at baseline and post-intervention available" approx. **150** papers

Poor reporting of adverse effects

SEVIER

Journal of Clinical Epidemiology 68 (2015) 144–153

Epidemiolo

ORIGINAL ARTICLES

Side effects are incompletely reported among systematic reviews in gastroenterology

Suzanne E. Mahady[a,b,*], Timothy Schlub[a], Lisa Bero[c], David Moher[d], David Tovey[e], Jacob George[b], Jonathan C. Craig[a,f]

- 78 SR of RCTs of gastroenterology interventions 2008-2012:
  - 26 (33%) did not refer to harms of the intervention anywhere in the article
  - AE data presented in result section frequently misrepresented in the discussion:
    - Results: "adverse events were not well reported"
    - Discussion: "adverse events are minimal and the risk benefit ration is good"

Poor reporting of adverse effects

Reporting deficiencies – a big problem for systematic reviews

- Key steps:
  - Formulation of a clear question
  - Eligibility criteria for studies
  - **Search** for potentially relevant studies
  - **Selection** of studies into the review
  - **Extraction of data**
  - Assessment of methodological quality of included studies (**risk of bias**)
  - **Synthesis** of findings (possibly using meta-analysis)
  - Presentation of data and results
  - Interpretation and drawing conclusions

Deficiencies in research literature

- **Non-reporting (or delayed reporting) of whole studies**
- **Incomplete repo**
- **Selective report**
- **Misleading repo**

Non-reporting (or delayed reporting) of whole studies:

- Often studies with 'disappointing' results

Incomplete reporting:

- Omission of crucial aspects of research

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discrepancies between abstract and full text, etc.)

- Misrepresentation of study design (e.g. study claiming it is an RCT when it is not)
- Unacknowledged discrepancies between sources of information (publication conflicts with study protocol or information in the trial register)

All of these are very common!

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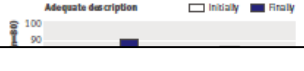
ANALYSIS

What is missing from descriptions of treatment in trials and reviews?

Replicating non-pharmacological treatments in practice depends on how well they have been described in research studies, say **Paul Glasziou** and **colleagues**

Have you ever read a trial or review and wondered exactly how to carry out treatments such as a "behavioural intervention"

receiving numerous requests for additional details from doctors and patients, the author



Exercise prescription: a case for standardised reporting

Susan Carolyn Slade, Jennifer Lyn Keating

ABSTRACT

Background Structured, regular exercise is recommended to improve health outcomes. Exercise takes many forms and varies in type, intensity, duration and frequency. The authors used the example of exercise for chronic health conditions to examine how se programmes are described and summarised in matic reviews.

ods Two independent reviewers conducted ew of exercise reporting practices using the nce of exercise effects for chronic conditions as the e material. Inclusion criteria: systematic reviews ummarised the effects of exercise programmes ults with chronic health conditions. Exclusion

exercise is beneficial for people with cystic fibrosis, chronic obstructive pulmonary disease, intermittent claudication, knee osteoarthritis and low back pain.[1]

Exercise is a non-specific term. It includes activities that vary in type, frequency, intensity, mode and environmental requirements. It may be conceptualised as a series of specific movements to train or develop the body with routine practice or as any kind of physical training to promote physical health.[12–14] Exercise can vary with respect to the type of muscle contraction, load, speed and range of movement, number of repetitions and sets, order of exercises and rest times. It is used to

ARTICLE

Adequacy of Published Oncology Randomized Controlled Trials to Provide Therapeutic Details Needed for Clinical Application

Jennifer M. Duff, Helen Leather, Edmund O. Walden, Kourtney D. LaPlant, Thomas J. George Jr

Manuscript received July 9, 2009; revised March 15, 2010; accepted March 16, 2010.

Correspondence to: Thomas J. George Jr, MD, FACP, Division of Hematology Oncology, Department of Florida, PO Box 100278, Gainesville, FL 32610-0278 (e-mail: thom.george@medicine.ufl.edu).

Background Randomized controlled trials (RCTs) improve clinical care through evid RCT result reporting, but specific details of therapeutic administration pr tion of the trial design. We assess the reporting methodology in RCTs p

Methods Ten essential elements of RCT reporting were identified and included maximum number of cycles, premedication, growth factor support, pati adjustments for hematologic and organ-specific toxicity. All therapy-ba 2005 and 2008 in the *New England Journal of Medicine* (*NEJM*), *Journal of Clinical Oncology* (*JCO*), *Journal of*

Clin Chem Lab Med 2012;50(3):411–413 © 2012 by Walter de Gruyter • Berlin • Boston. DOI 10.1515/cclm-2011-0904

An appeal to medical journal editors: the need for a full description of laboratory methods and specimen handling in clinical study reports

Reporting of adverse events in randomized controlled trials of highly active antiretroviral therapy: systematic review

Michal Y. Chowers[1,2*], Bat Sheva Gottesman[1,2], Leonard Leibovici[1,3], Ulrike Pielmeier[4], Steen Andreassen[4] and Mical Paul[1,3]

[1]*Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel;* [2]*Meir M*
[3]*Rabin Medical Center, Beilinson Campus, Petah-Tiqva, Israel;* [4]*Center for Support, Aalborg University, Aalborg, Denma*

Received 5 February 2009; returned 3 April 2009; revised 20 April 2009;

Objectives: Our objectives were to systematically assess the quality of (AEs) in publications of randomized trials of highly active antiretrovir examine whether reporting quality affects the effect estimates reported for

Methods: We searched the PubMed, Cochrane library and EMBASE December 2008. We included all published randomized controlled trials ment-naive adult HIV-infected individuals, with 48 weeks' follow-up. The extracted according to CONSORT guidelines. We pooled the relative r results by sponsorship and different reporting methods.

Results: Forty-nine trials, including 19882 patients, published betwee inclusion criteria. Only one of the trials reported on AE collection metho only AEs attributed to drugs, 17 of which did not refer to the attribution nearly always selective and selection criteria were highly variable, based rence threshold. Presentation of AEs above an occurrence threshold

OPEN ACCESS Freely available online

Publication Bias in Antipsychotic Trials: Efficacy Comparing the Published Literat Food and Drug Administration Database

Lee Shapley[5]

regon, United States of America, 2 Departme
ealth Care, Oregon Health & Science Universi
edical Center, Portland, Oregon, United Sta

RESEARCH ARTICLE Open Access

Electronic search strategies to identify reports of cluster randomized trials in MEDLINE: low precision will improve with adherence to reporting standards

Monica Taljaard[1,2*], Jessie McGowan[1,3,4,5], Jeremy M Grimshaw[1,6], Jamie C Brehaut[1,2], Andrew McRae[7], Martin P Eccles[8], Allan Donner[7,9]

of evidence-based medicine, yet a g
g regulatory agencies, e.g., the US
h data in journal articles can be ch
tent to which it inflates apparent

Fixing medical research literature

No single (or simple) solution

Non-reporting (or delayed reporting) of whole studies:

- Often studies with 'disappointing' results

Incomplete reporting:

- Omission of crucial aspects of research methods (study participants, interventions, randomization in trials, etc.)
- Incomplete results: data cannot be included in meta-analysis
- Inadequate reporting of harms

Selective reporting:

- Outcomes
- Analyses (e.g. subgroups, alternative analyses)

Misleading reporting:

- Misinterpretation of study findings "spin" (e.g. presenting study in more positive way; discrepancies between abstract and full text, etc.)
- Misrepresentation of study design (e.g. study claiming it is an RCT when it is not)
- Unacknowledged discrepancies between sources of information (publication conflicts with study protocol or information in the trial register)

Possible solutions