

Systematic reviews

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Bias in systematic reviews

- Inclusion criteria
- Inadequate search strategy
- Publication bias
- Quality



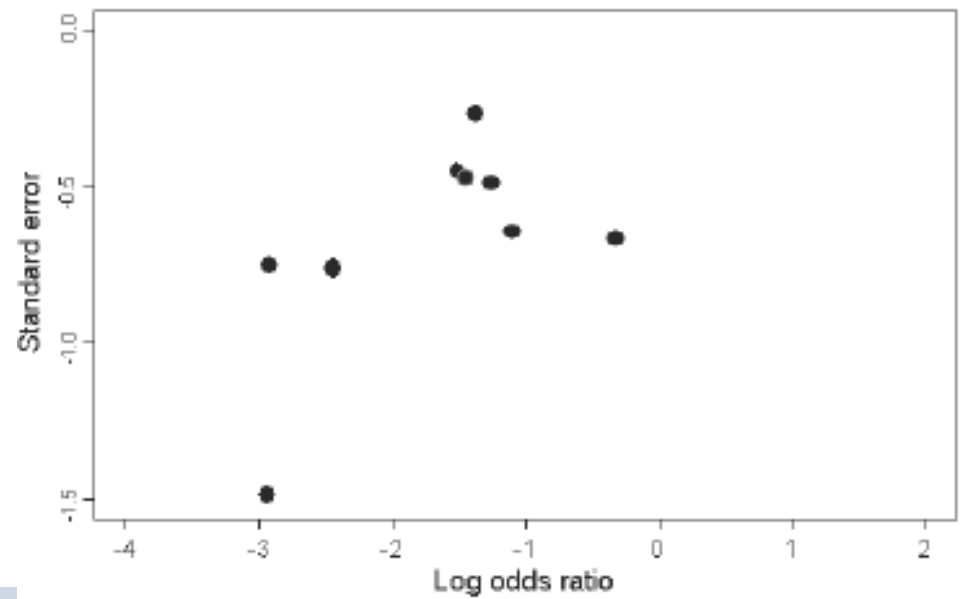
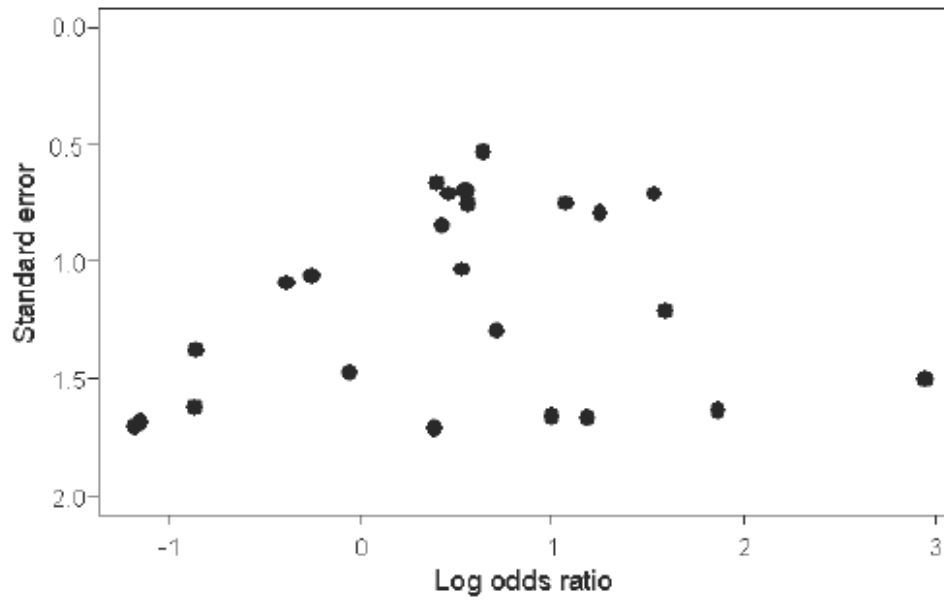
Inclusion criteria

- Reviews should have a focused clinical question (use PICO)
- Prone to bias if reviewers use study results to select studies for inclusion in the review
- Reasons for excluding studies should be explicitly stated
 - e.g. a clinical scenario where it's not possible to use RCTs, therefore justification for pseudo-RCT, cohort, etc is needed



Publication bias

- Positive studies are more likely to be;
 - Published (publication bias)
 - Published rapidly (time lag bias)
 - Published in English (language bias)
 - Published more than once
 - Cited by others (citation bias)
- Funnel plots can help determine if publication bias is an issue in a review





Quality

Differences observed between 2 groups may be due to;

- True difference
- Random variation
- Bias
- Confounding



Types of bias

STUDY PROCESS	SOURCES OF BIAS
Allocation of subjects to groups	
Implementation of interventions	
Follow up of participants	
Evaluation of outcomes	



Types of bias

STUDY PROCESS	SOURCES OF BIAS
Allocation of subjects to groups	Selection bias
Implementation of interventions	
Follow up of participants	
Evaluation of outcomes	



Randomisation and concealment

Randomise

Enter the information below for the subject you wish to randomise. All fields are required.

Site Bristol

Date of birth (dd/mm/yyyy) 16/04/1993

Sex Male

HbA1c % < 7.5

Log mean standardized ACR 1.2-1.7

Duration of disease, years 5-10

Total cholesterol < 4.46

Does the patient meet all inclusion criteria? ☐ No ☒ Yes

Has written informed consent been obtained? ☐ No ☒ Yes

Does the patient meet any exclusion criteria? ☒ No ☐ Yes

Randomise

<< < April 1993 > >>

M	T	W	T	F	S	S
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2





Types of bias

STUDY PROCESS	SOURCES OF BIAS
Allocation of subjects to groups	Selection bias
Implementation of interventions	Performance bias
Follow up of participants	
Evaluation of outcomes	



Performance bias





Moseley B, et al. A controlled trial of arthroscopic surgery for osteoarthritis of the knee. New England Journal of Medicine 2002;347:81-88



OA patients

Surgery

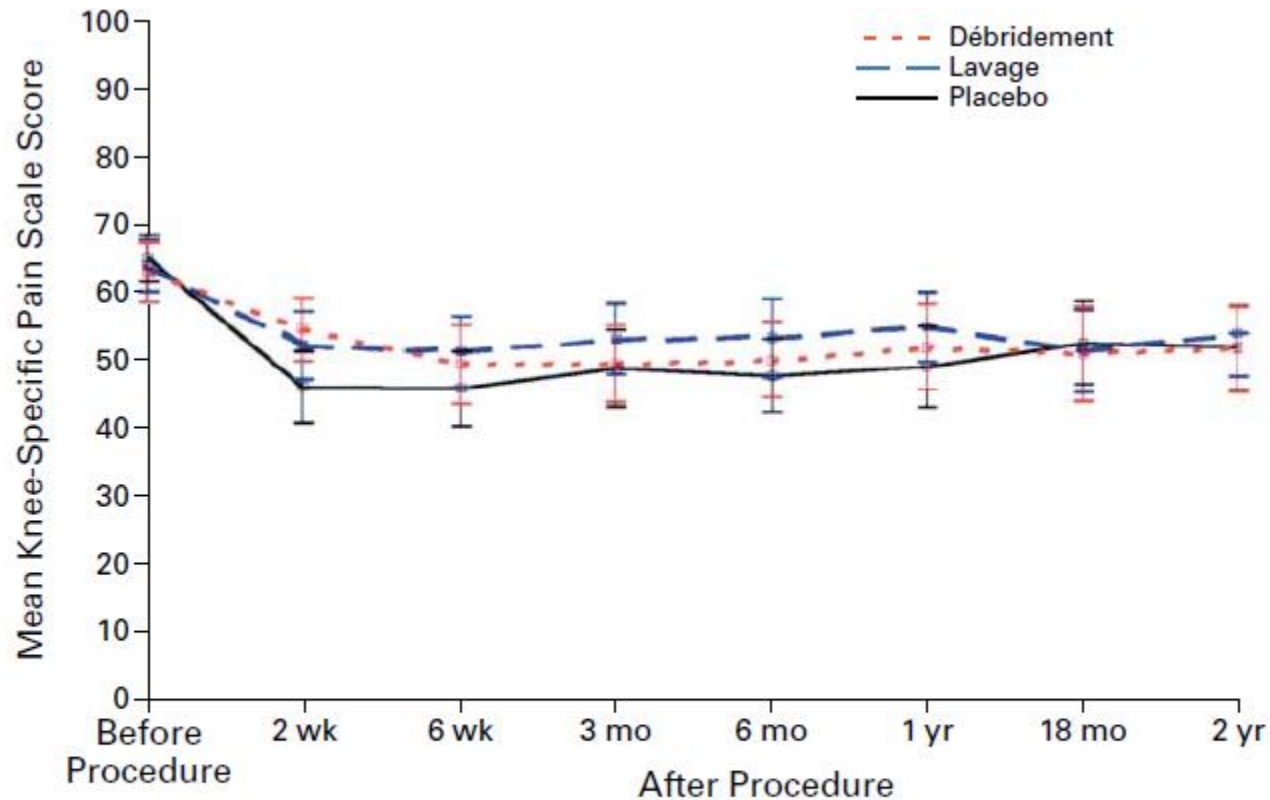
Randomisation

'Sham' surgery





Moseley B, et al. A controlled trial of arthroscopic surgery for osteoarthritis of the knee. New England Journal of Medicine 2002;347:81-88



No. AT RISK

Placebo	60	59	57	56	57	53	52	55
Lavage	61	59	57	59	59	57	56	55
Débridement	58	59	59	58	56	50	51	53



Types of bias

STUDY PROCESS	SOURCES OF BIAS
Allocation of subjects to groups	Selection bias
Implementation of interventions	Performance bias
Follow up of participants	Attrition bias
Evaluation of outcomes	



Attrition bias

Relates to withdrawals, or drop-outs, from a study

Number of drop outs and reasons must be given to identify;

- Missing data
- Adverse events
- Motivation

Overcome by performing an intention-to-treat analysis



Types of bias

STUDY PROCESS	SOURCES OF BIAS
Allocation of subjects to groups	Selection bias
Implementation of interventions	Performance bias
Follow up of participants	Attrition bias
Evaluation of outcomes	Detection bias



Bias in study designs

Detection bias is also known as assessment bias

- An investigator may distort or misclassify the outcome measured if participant group is known
- Why?





Minimising bias

SOURCES OF BIAS	PROCESS
Selection bias	Randomisation with concealment
Performance bias	Double blinding Use of placebo
Attrition bias	Analysis of subjects as randomised (ITT)
Detection bias	Blinded outcome assessment



Fast versus slow band-aid removal

Fast versus slow bandaid removal: a randomised trial

Jeremy S Furyk, Carl J O'Kane, Peter J Aitken, Colin J Banks and David A Kault



Applying dressings to wounds is a common practice throughout the world, both in and out of hospitals. At times, removing such dressings can be more painful than the wound itself.¹ Research on dressing removal has often focused on expensive new products² and, although speed of dressing removal has been controlled for in some studies² (implying that speed is a factor), we are not aware of any research directed specifically at different speeds of dressing removal. There are Internet sites addressing how to reduce the pain associated with removal of certain brands of dressings, such as Band-Aid (Johnson & Johnson, New Brunswick, NJ, USA) (eg, <http://www.wikihow.com/Remove-a-Band-Aid>); however, there is no consensus on the issue of speed

ABSTRACT



MJA 2009; 191: 682-683



Confounding factors

- High body hair score
- Perceptions on the issue
- Perception of pain
- Skilled versus unskilled band-aid removers
- Limitations of the study
 - Blinding
 - Healthy volunteers
 - Medical students



Recall / response bias

Maybe effected by;

- Memory
- Intention
 - How many cigarettes / day do you smoke?

