

Systematic Reviews

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Trusted evidence. Informed decisions. Better health.



Objectives

- Introduction to systematic reviews
- Steps of a systematic review
- Tools/resources for conducting and using systematic reviews



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What is a systematic review?

A systematic review attempts to collate all of the available evidence that meet pre-defined eligibility criteria to answer a specific research question.



Key features of a systematic review

- clearly stated objectives
- pre-defined eligibility criteria
- explicit, reproducible methodology
- systematic search
- assessment of validity of included studies
- systematic synthesis and presentation of findings



Why do we need systematic reviews?



- Sheer amount and flow of information/ research
- Variable quality of research outputs
- Problems of publication bias
- Limitations of single studies



Why systematic reviews?

- efficient way to access the body of research
 - saves time required for searching
 - critical appraisal
 - interpretation of results
- explore differences between studies
- reliable basis for decision making
 - unbiased selection of relevant information
 - useful for health care, policy, future research



Limitations of single studies

- Single studies can misrepresent the balance of research evidence
- Illuminate only one part of a policy issue
- Sample-specific
- Time-specific
- Context-specific
- Often of poor methodological quality
- Consequently, <u>biased</u> when attempting to make generalisable statements



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Steps of a Systematic Review

- 1. define the question
- 2. plan eligibility criteria
- 3. plan methods
- 4. search for studies
- 5. apply eligibility criteria
- 6. collect data
- 7. assess studies for risk of bias
- 8. analyse and present results
- 9. interpret results and draw conclusions
- **10**. improve and update review



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A broad or narrow question?

	Narrow	Broad	
Advantages	easy to writeeasy to read	 comprehensive generalisable	
Disadvantages	need multiple reviews	 complex may miss subgroup effects	

- may be selectively defined
 - Overview of Reviews may be preferable



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Components of a question

- describe the following components in detail
- consider variations you may wish to explore in the review
 - **P** population
 - **intervention**
 - **C** comparison
 - **O** outcomes



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A rigorous approach to searching

- a limited search may find an unrepresentative set of studies
 - incomplete results
 - selection bias
 - reduced generalisability
- balance sensitivity with efficiency



Fishing for information





Fishing the River Nairn by Duncan Brown www.flickr.com/photos/cradlehall/3789625428/



Ø

Fishing for information



Research Ship Sonne In Auckland I (crop) by Ingolfson http://commons.wikimedia.org/wiki/File:Research_Ship_Sonne_In_Auckland_I_(crop).jpg



Steps of a Systematic Review

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Minimising bias in selection

- selecting studies involves judgement, and is highly influential on the outcomes of the review
- compare each record with pre-specified eligibility criteria
- two authors should independently select studies
 - pilot selection on a few papers first



What about studies with no usable data?

- studies must be included in the review if they meet your criteria
 - results reported in non-standard ways should still be reported in the review
 - studies that do not report outcomes of interest may have measured them – beware of selective reporting
 - studies that did not measure outcomes of interest may only be excluded if outcomes were pre-specified as part of your eligibility criteria



PRISMA flow chart



See <u>www.prisma-statement.org</u>



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Tools/Resources

1. Conducting systematic reviews



The Cochrane Collaboration's mission is to promote evidence-informed health decision-making by producing high-quality, relevant, accessible systematic reviews and other synthesised research evidence.

https://www.cochrane.org/



The Campbell Collaboration is an international research network that produces systematic reviews of the effects of interventions in Business and Management, Crime & Justice, Disability, Education, International Development, Knowledge Translation and Implementation, and Social Welfare.

https://www.campbellcollaboration.org/



The Cochrane Handbook for Systematic Reviews of Interventions

- essential guidance for entire review process
- available
 - online <u>www.cochrane.org/handbook</u>
 - also lists what's new and future corrections
 - via Help menu in RevMan





Cochrane Interactive Learning



https://training.cochrane.org/interactivelearning



Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

The PRISMA Statement aims to help authors improve the reporting of systematic reviews (SR) and meta-analyses by promoting transparency of reporting for methods and results.

http://www.prisma-statement.org/





PRISMA

RANSPARENT REPORTING of SYSTEMATIC REVIEWS and META-ANALYSES



Tools/Resources

2. Using reviews



AMSTAR

A MeaSurement Tool to Assess systematic Reviews

- Aims to help users differentiate between systematic reviews, focusing on their methodological quality and expert consensus.
- 16 questions to assess a systematic review
- <u>https://amstar.ca/Amstar_Checklist.php</u>

Shea BJ et al. BMJ. 2017 Sep 21;358:j4008.



AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or nonrandomised studies of healthcare interventions, or both

For Yes		Optional (recommended)		
	Population	 Timeframe for follow-up 		Yes
	Intervention			No
	Comparator group			
Ū.	Outcome			
2.	Did the report of the review con- established prior to the conduct from the protocol?	ntain an explicit statement that the review t of the review and did the report justify	v metho any sign	ds were ificant deviation
For Part	ial Yes:	For Yes:		
The auth	nors state that they had a written	As for partial yes, plus the protocol		
protocol followin	or guide that included ALL the g:	should be registered and should also have specified:		
				Yes
	review question(s)	 a meta-analysis/synthesis plan, 		Partial Yes
	a search strategy	if appropriate, and		No
	inclusion/exclusion criteria	a plan for investigating causes		
	a risk of bias assessment	instification for any deviations		
		from the protocol		
3.	Did the review authors explain	their selection of the study designs for in	clusion i	in the review?
For Yes	, the review should satisfy ONE o	f the following:		
	Explanation for including only R	CTs		Yes
	OR Explanation for including on	ly NRSI		No
	OR Explanation for including bo	th RCTs and NRSI		



AMSTAR 2 critical domains

- Protocol registered before commencement of the review (item 2)
- Adequacy of the literature search (item 4)
- •Justification for excluding individual studies (item 7)
- •Risk of bias from individual studies being included in the review (item 9)
- •Appropriateness of meta-analytical methods (item 11)
- •Consideration of risk of bias when interpreting the results of the review (item 13)

 Assessment of presence and likely impact of publication bias (item 15)



Four tools to find systematic reviews and primary studies

- 1. Health systems evidence, McMaster University
- 2.Epistemonikos, Universidad Pontifica de Santiago, Chile
- 3. Health evidence, McMaster University
- 4. Social Systems Evidence, McMaster University



http://www.healthsystemsevidence.org



Search tips



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			Technologies	>
1. Year: 2007 Quality: Not available			Sectors	>
HIV testing Health reform description Singapore			Providers	>
The Health Minister has indicated that he is ?seriously considering? making HIV testing	part of		AREA OF FOCUS	
2. Year: 2009 Quality: 8/10			Countries	>
HIV interventions to reduce HIV/AIDS stigma: A systematic review			Country groupings	>
Systematic review of effects USA (7); China (2); Thailand (2); UK (1); Tanzania (1); Be (1)	otswana (1); Canada (1); Greece (1); Indi	a (1); Nigeria (1); South Africa	WHO regions	>
We reviewed the literature to determine the effectiveness of HIV -related interventions in trial (RCT), pretest-posttest with a non-randomized control group, or pret	reducing HIV/AIDS stigma. Studies select	ted had randomized controlled	World Bank regions	>
3. Year: 2012 Quality: 9/9			United Nations regional groups	>
Telephone communication of HIV testing results for improving knowledge of H	HIV infection status		LMICs	>

Systematic review of effects | USA (1)



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USER-FRIENDLY SUMMARY International Initiative for Impact Evaluation

> SCIENTIFIC ABSTRACT PubMed Publisher

FULL-TEXT REPORT No free full-text search report available

CITATION

Sengupta S, Banks B, Jonas D, Miles MS, Smith GC. HIV interventions to reduce HIV/AIDS stigma: A systematic review. AIDS and Behavior. 2011;15(6):1075-1087.

DOI

10.1007/s10461-010-9847-0

TYPE OF DOCUMENT

Systematic review of effects

LAST YEAR LITERATURE SEARCHED

2009

QUALITY RATING 8/10 (AMSTAR rating from McMaster Health Forum)

COUNTRIES IN WHICH STUDIES (INCLUDED IN THE SYNTHESIS) WERE CONDUCTED

Botswana(1); Canada(1); China(2); Greece(1); India(1); Nigeria(1); South Africa(1); Tanzania (United Republic of)(1); Thailand(2); United Kingdom(1); United States(7)

Botswana: Norr KF, et. al.

Canada: Gill NJ, Beazley RP

China: Wu S, et. al.; Yang Y, Zhang KL

Greece: Merakou K, Kourea-Kremastinou J

India: Pisal H, et. al.

Nigeria: Fawole IO, et. al.



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Last year Last 5 years Last 10 years Custom range			Systematic review ealth systems for ystematic review Year Authors Journal Links thout references () Primary study \checkmark	 acilitators and barriers to the integration of HIV and chronic disease services: a <i>N</i>. 2017 Watt N, Sigfrid L, Legido-Quigley H, Hogarth S, Maimaris W, Otero-García L - More Health policy and planning Pubmed, DOI, PubMed Central 			

HIV/AIDS Community Health Information System.



https://www.healthevidence.org/

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Use Evidence

The National Collaborating Centre for Methods and Tools (NCCMT) offers free, online products



Results for: hiv

Returned 551 results

	Article	<u>Authors</u>	<u>Date</u>	Rating
1	Self-management interventions for adolescents living with HIV: A systematic review	Crowley T, et al.	2021	_
2	The effects of HIV self-testing on the uptake of HIV testing, linkage to antiretroviral treatment and social harms among adults in Africa: A systematic review and meta-analysis	Njau B, et al.	2021	_
3	Sexual health interventions delivered to participants by mobile technology: A systematic review and meta- analysis of randomised controlled trials	Berendes S, et al.	2021	_
4	The effectiveness of peer-support for people living with HIV: A systematic review and meta-analysis	Berg RC, et al.	2021	-1
5	Examining the effects of HIV self-testing compared to standard HIV testing services in the general population: A systematic review and meta-analysis	Jamil MS, et al.	2021	

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		System a	arrangements	>
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Interventions that address intimate partner violence and HIV among women: A systematic review		PERSPECT	TIVES	
Systematic review of effects South Africa (6); USA (4); Uganda (2); India (1); Mongolia (1)		Populatio	ons	2
Recognizing the high prevalence of human immunodeficiency virus (HIV)-positive women and girls who both IPV and HIV among women. We identified studies that met our inclusion criteria, including to IPV and HIV. In this artic	d 14	Outocrea		
2. Year: 2018 Quality: 8/11		Outcome	es	
The effect of gonder on food incogurity among HIV/ infected people		Discipline	les	>



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