

Integrating qualitative evidence syntheses with intervention effect findings

Prof Angela Harden (a) and *Prof James Thomas* (b)

(a) Professor of Health Sciences, School of Health Sciences, City, University of London angela.harden@city.ac.uk

(b) Professor of Social Policy and Research, Social Research Institute, University College London james.thomas@ucl.ac.uk

Trusted evidence.
Informed decisions.
Better health.



Conflict of Interest Statement

We have no actual or potential conflicts of interest in relation to this presentation
Angela Harden and James Thomas



Overview of whole program

1. Introduction to qualitative research and qualitative evidence synthesis (28th October 2021)
2. Question formulation and searching for qualitative evidence (15th November 2021)
3. Selecting studies and methodological limitations (13th December 2021)
4. Making sense of Framework and Best Fit Framework synthesis (20th January 2022)
5. Thematic Synthesis (24th February 2022)
6. Meta-ethnography (17th March 2022)
7. GRADE CERQual (25th April 2022)
- 8. Integrating qualitative and quantitative syntheses (16th May 2022)**



Webinar outline

- Introduction to the workshop (5 mins)
- The big picture: why integrate (10 mins)
- Overview of integration designs, methods and tools (10 mins)
- Examples (20 mins)
- Questions (10-15 mins)



A close-up photograph of a camera lens, showing the intricate details of the glass elements and the metal housing. The lens is positioned on the left side of the frame, with its front element prominently displayed. The background is a soft, out-of-focus bokeh of purple and blue lights, creating a dreamy and artistic atmosphere. The overall composition is clean and modern, suitable for a professional presentation or a creative advertisement.

The big picture: Why integrate?

An brief introduction of key issues



Acknowledgements

MRC methodology project 'MACH' -
Mark Peticrew, Alison O'Mara-Eves, Theo
Lorenc, G.J. Melendez-Torres, Sian
Thomas, Lambert Felix, Katy Sutcliffe,
Dylan Kneale

Papers / thinking from many people
including Diane Finegood, Penelope
Hawe, Harry Rutter, Alan Shiell + many
more

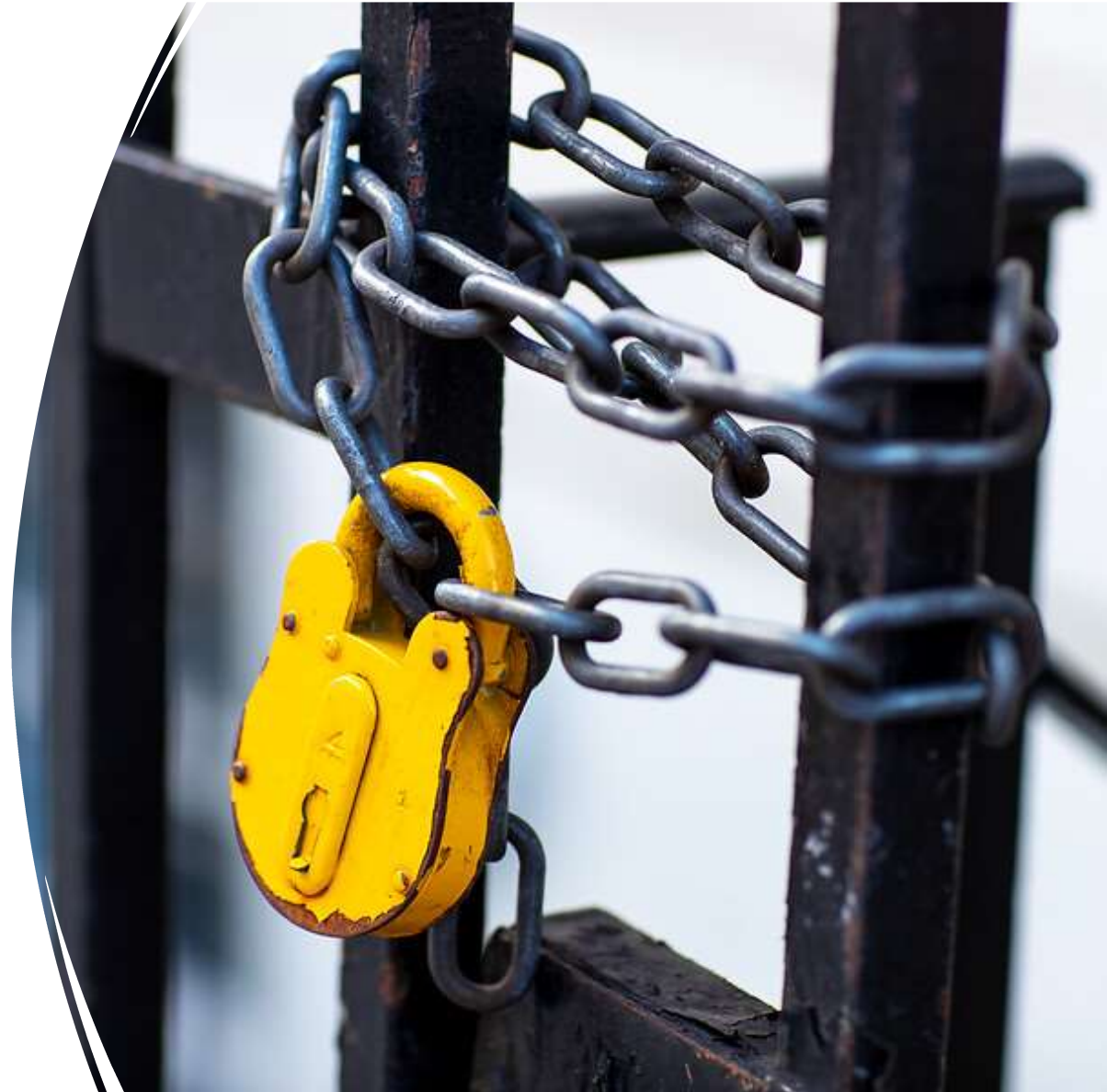
All images © UCL Digital Media, 2019
unless otherwise stated

Epistemic security

- Challenge: we need to consider how to provide evidence to inform real world decisions

BUT

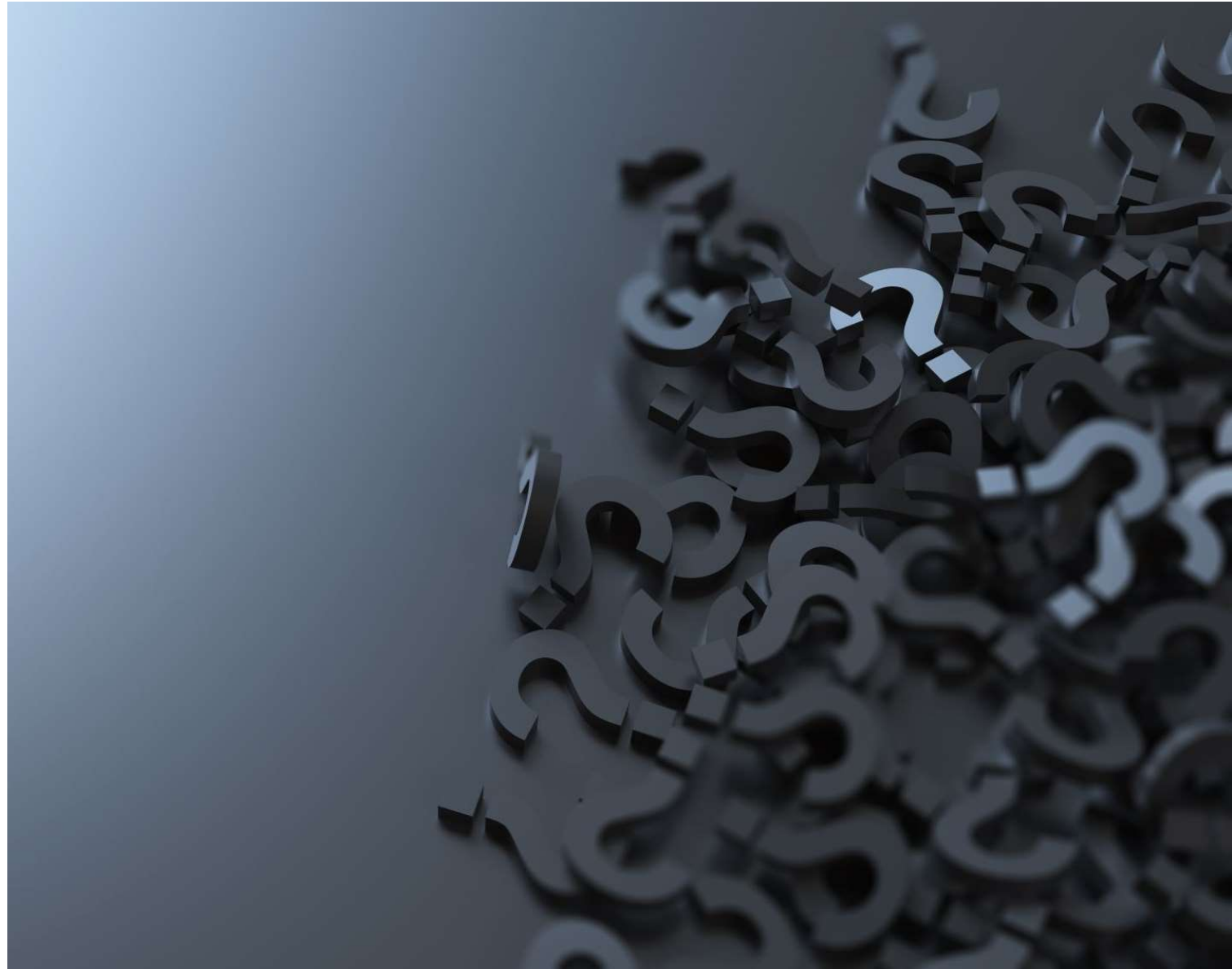
- We are more secure with some accounts than others
 - Epistemic security in causal thinking
 - Counterfactual and probabilistic accounts
 - Regularity and mechanistic accounts
 - Epistemic (in)justice in selecting which perspectives are important



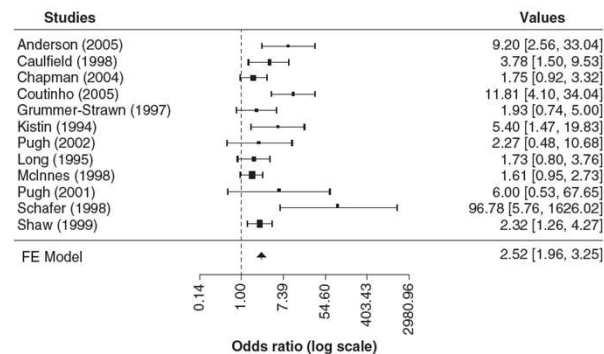
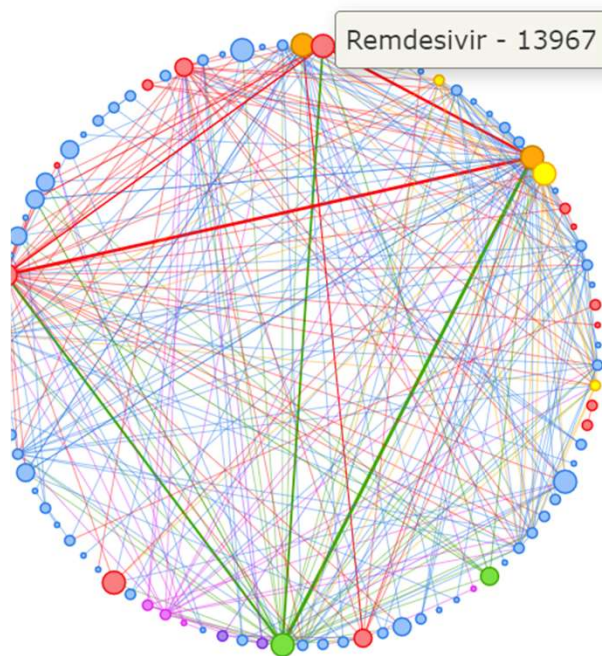
Types of question

Is intervention a better
than intervention b?

Which intervention should I
choose for treating
condition x in this
population?



Conventional and new approaches to answer conventional questions



Traditional pair-wise comparisons

Network meta-analysis

Both provide strong causal claims



Simple – and strong – causal model

- The synthesis of randomized trials provides strong evidence of effect
- This works when we can be fairly certain that our cause is the reason we see an effect – we have a strong counterfactual
- The question then is:
 - how often the cause has the effect of interest
 - how large is the effect?
 - and how consistent?

Face masks / coverings

- A simple mechanism: a barrier preventing / reducing SARS-CoV-2 from entering or leaving the mouth / nose
- Some studies address an exact question of efficacy – finding that masks can indeed prevent virus particles from moving in both directions
- Question: do masks ‘work’?

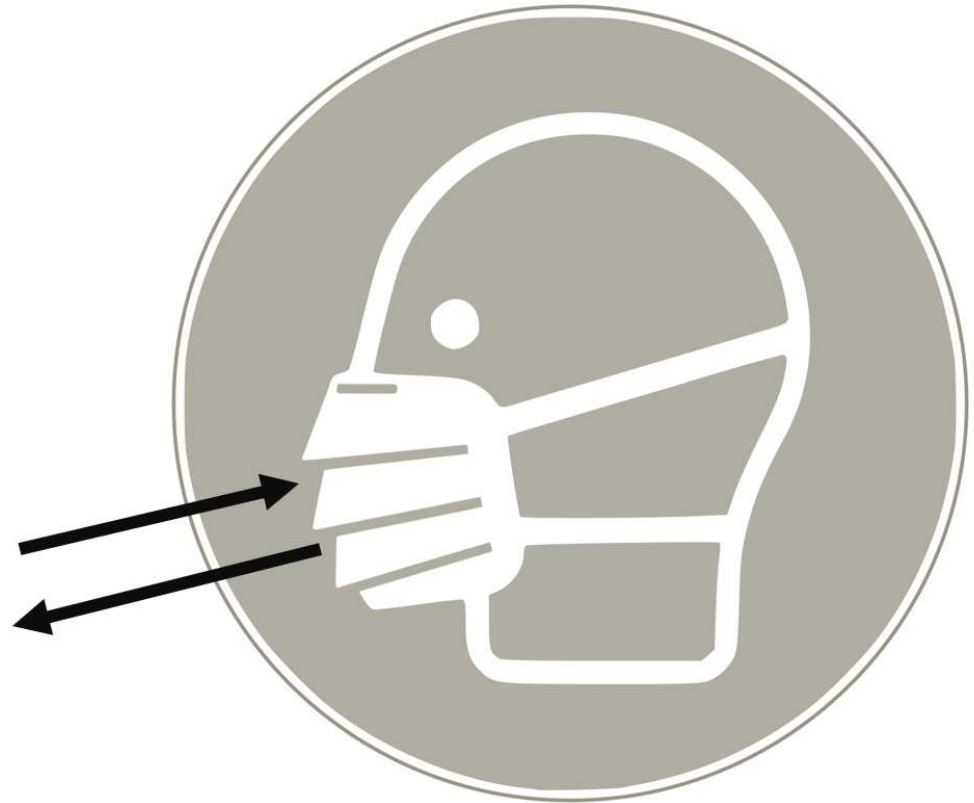


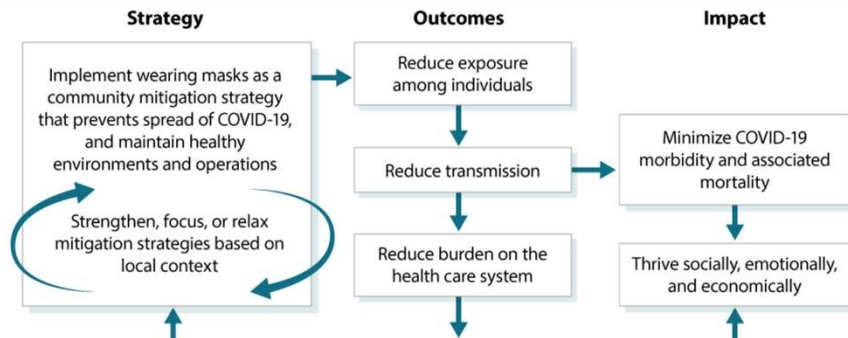
Image from: https://en.wikipedia.org/wiki/Face_masks_during_the_COVID-19_pandemic

“Do masks work..?”

Moving from understanding the action of a barrier to a policy of using that barrier...

Approach for the Monitoring and Evaluation of Wearing Masks

Governments, organizations, and individuals support and promote community mitigation across settings and sectors with special attention to disproportionately affected populations



Critical considerations

- Ensure individual and community ability to adopt and sustain wearing masks
- Mitigate adverse effects and impacts on health disparities and social determinants of health
- Foster mental and emotional health and resilience
- Minimize negative physical, mental, and emotional challenges related to wearing masks

Image from: <https://www.cdc.gov/coronavirus/2019-ncov/php/mask-evaluation.html>



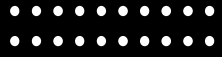


Source: Dr Ellie Murray's Twitter profile



... do masks work?

When (even 'simple') interventions are introduced into complex contexts, they can generate unintended consequences

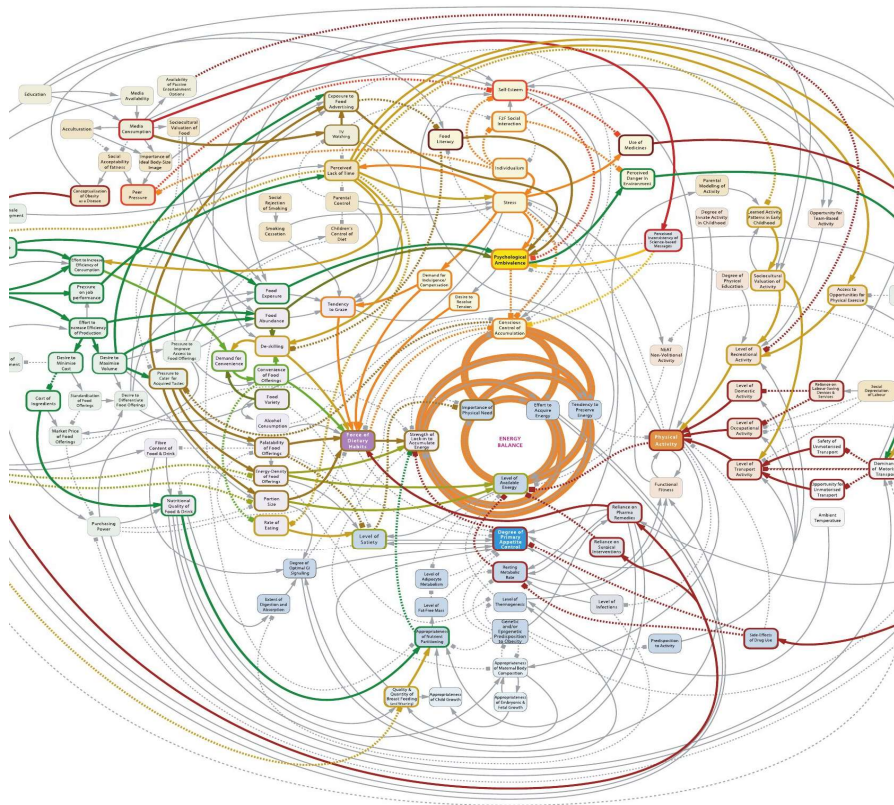


'Complex' intervention

- Non-linear effects
- Phase changes
- Feedback loops
- Causal pathways less well understood
- Less predicabile



Challenging to understand causality in linear, predictable ways...

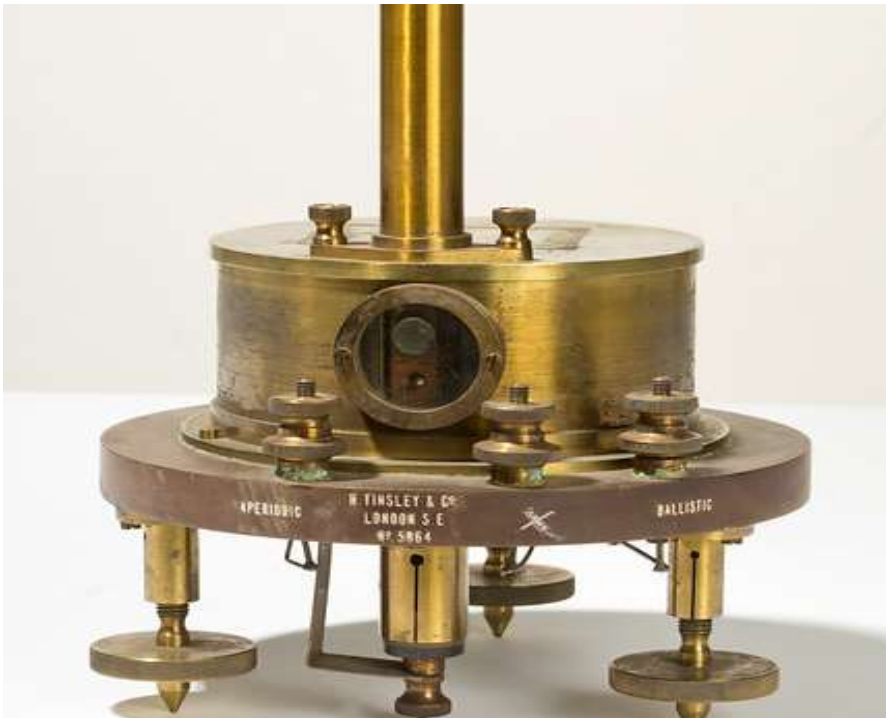


- The linear model of causation can break down when:
 - there are long causal pathways between intervention and outcome
 - there are many possible factors influencing intervention outcome
 - intervention replication is rare / impossible
 - ‘examples’ of interventions differ
 - selection of components
 - lots of heterogeneity



How does / did the intervention work?

- Under what circumstances does the intervention work
- What is the relative importance of, and synergy between, different components of multicomponent interventions?
- What are the mechanisms of action by which the intervention achieves an effect?
- What are the factors that impact on implementation and participant responses?
- What is the feasibility and acceptability of the intervention in different contexts?
- What are the dynamics of the wider system?



Focus of enquiry changes

- Questions change from looking at how often / reliable / large a given effect is
- Because there is no single effect
- Questions focus on explanation and understanding
- Why was the effect observed in that situation?
- What drives differences in outcomes between studies?



Integrating different types of evidence can help

- Individual studies may struggle to cover all of the 'angles' necessary
- BUT
- Synthesising different types of evidence can enable reviewers to include more of the relevant evidence base
- Systematic reviews are traditionally good at addressing questions of size and consistency of effect,
- BUT
- Are less good at questions of how and why we see variations in effect



Cochrane Methods
Qualitative and
Implementation

Challenges for evidence synthesis

High conventional epistemic security takes few risks, but comes at a high cost in terms of utility

Arguably, this paradigm means abandoning the possibility of evidence-informed policy & practice in many areas

Integrating different types of evidence overcomes limitations in 'mono-method' reviews, and leads to more useful / useable reviews



Overview of approaches, methods and tools

*For integrating qualitative evidence syntheses with
intervention effect findings*

Acknowledgement: this part of the webinar builds on a previous workshop on the same topic

- Harden A, Noyes J, Sutcliffe K, Pantoja T, Thomas J, Garside R (2019) Working with diverse evidence in Cochrane Reviews: methods and tools to support integration of qualitative and quantitative evidence. Workshop prepared for the *Cochrane Colloquia Santiago*, 23rd October.



A reminder: What is qualitative evidence synthesis?

Qualitative
Evidence
Synthesis

The process by which individual studies addressing issues of context, process and experience are identified, brought together and combined into a whole to produce new or enhanced understanding

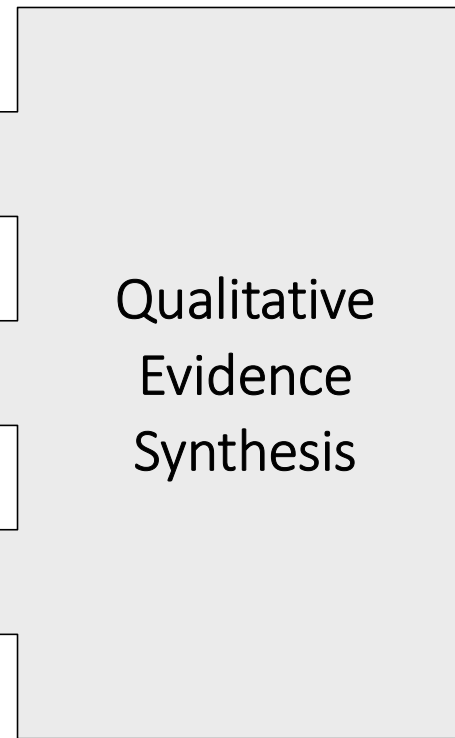
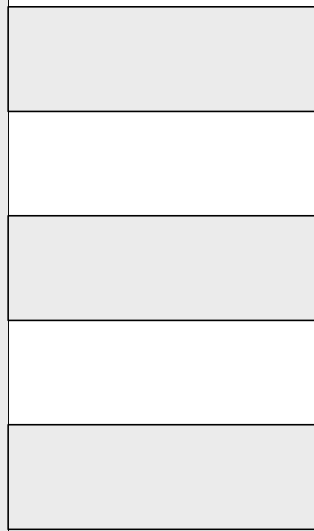


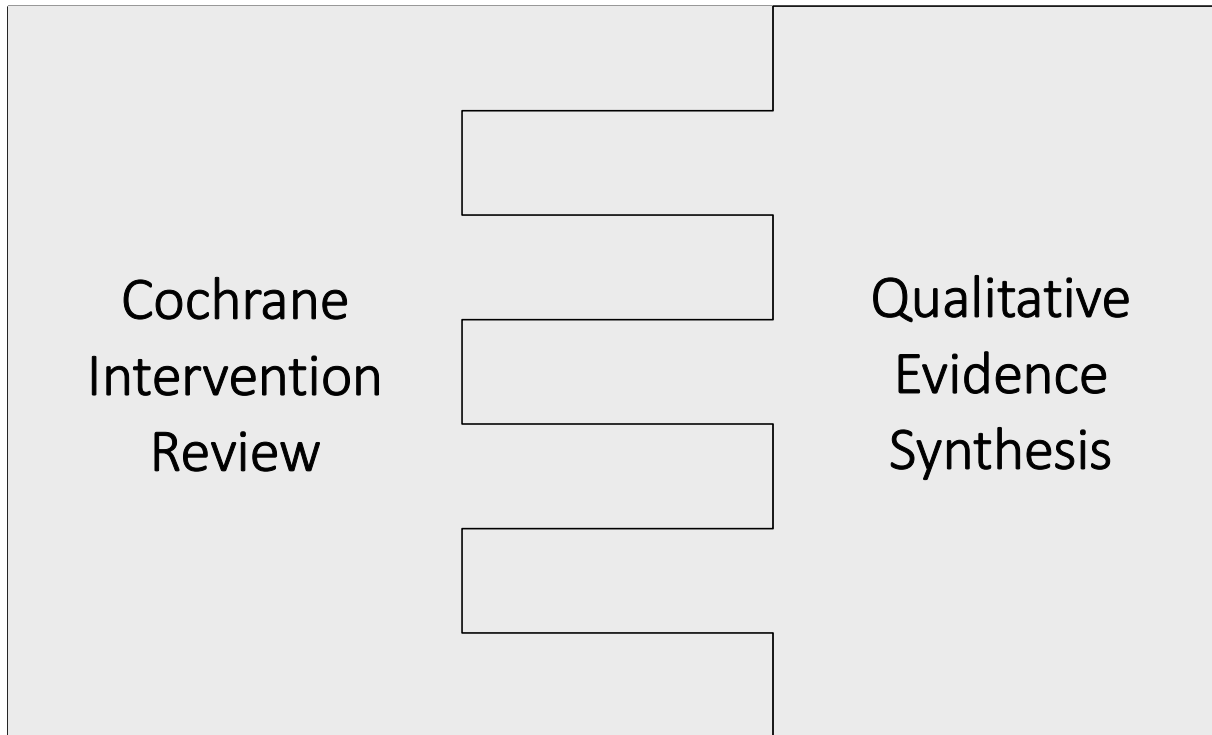
Why integrate?

Qualitative
Evidence
Synthesis

Intervention
Effects
Review







JCE
JOURNAL OF CLINICAL EPIDEMIOLOGY

Articles and Issues ▾ Collections For Authors ▾ Journal Info ▾ Subscribe More Periodicals ▾

All Content Search Advanced Search

< Previous Article **May 2018** Volume 97, Pages 70–78 Next Article >

Cochrane Qualitative and Implementation Methods Group guidance series—paper 5: methods for integrating qualitative and implementation evidence within intervention effectiveness reviews

Angela Harden, James Thomas, Margaret Cargo, Janet Harris, Tomas Pantoja, Kate Flemming, Andrew Booth, Ruth Garside, Karin Hannes, Jane Noyes

PlumX Metrics

DOI: <https://doi.org/10.1016/j.jclinepi.2017.11.029> | Check for updates

Article Info

Abstract Full Text References Supplemental Materials

Abstract

The Cochrane Qualitative and Implementation Methods Group develops and publishes guidance on the synthesis of qualitative and mixed-method evidence from process evaluations. Despite a proliferation of methods for the synthesis of qualitative research, less attention has focused on how to integrate these syntheses within intervention effectiveness reviews. In this article, we report updated guidance from the group on approaches, methods, and tools, which can be used to integrate the findings from quantitative studies evaluating intervention effectiveness with those from qualitative studies and process evaluations. We draw on

BMJ Global Health

Analysis

Synthesising quantitative and qualitative evidence to inform guidelines on complex interventions: clarifying the purposes, designs and outlining some methods

Jane Noyes,¹ Andrew Booth,² Graham Moore,³ Kate Flemming,⁴ Özge Tunçalp,⁵ Elham Shakibazadeh⁶

To cite: Noyes J, Booth A, Moore G, *et al*. Synthesising quantitative and qualitative evidence to inform guidelines on complex interventions: clarifying the purposes.

ABSTRACT

Guideline developers are increasingly dealing with more difficult decisions concerning whether to recommend complex interventions in complex and highly variable

Summary box

▶ When combined in a mixed-method synthesis, quantitative and qualitative evidence can potentially con-

Chapter 21: Qualitative evidence

Jane Noyes, Andrew Booth, Margaret Cargo, Kate Flemming, Angela Harden, Janet Harris, Ruth Garside, Karin Hannes, Tomás Pantoja, James Thomas

Key Points:

- A qualitative evidence synthesis (commonly referred to as QES) can add value by providing decision makers with additional evidence to improve understanding of intervention complexity, contextual variations, implementation, and stakeholder preferences and experiences.
- A qualitative evidence synthesis can be undertaken and integrated with a corresponding intervention review; or
- Undertaken using a mixed-method design that integrates a qualitative evidence synthesis with an intervention review in a single protocol.
- Methods for qualitative evidence synthesis are complex and continue to develop. Authors should always consult current methods guidance at methods.cochrane.org/qi.

Cite this chapter as: Noyes J, Booth A, Cargo M, Flemming K, Harden A, Harris J, Garside R, Hannes K, Pantoja T, Thomas J. Chapter 21: Qualitative evidence. In: Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.0 (updated July 2019). Cochrane, 2019. Available from www.training.cochrane.org/handbook.

Guidance on integration from our Cochrane QIMG

Opportunities for integration

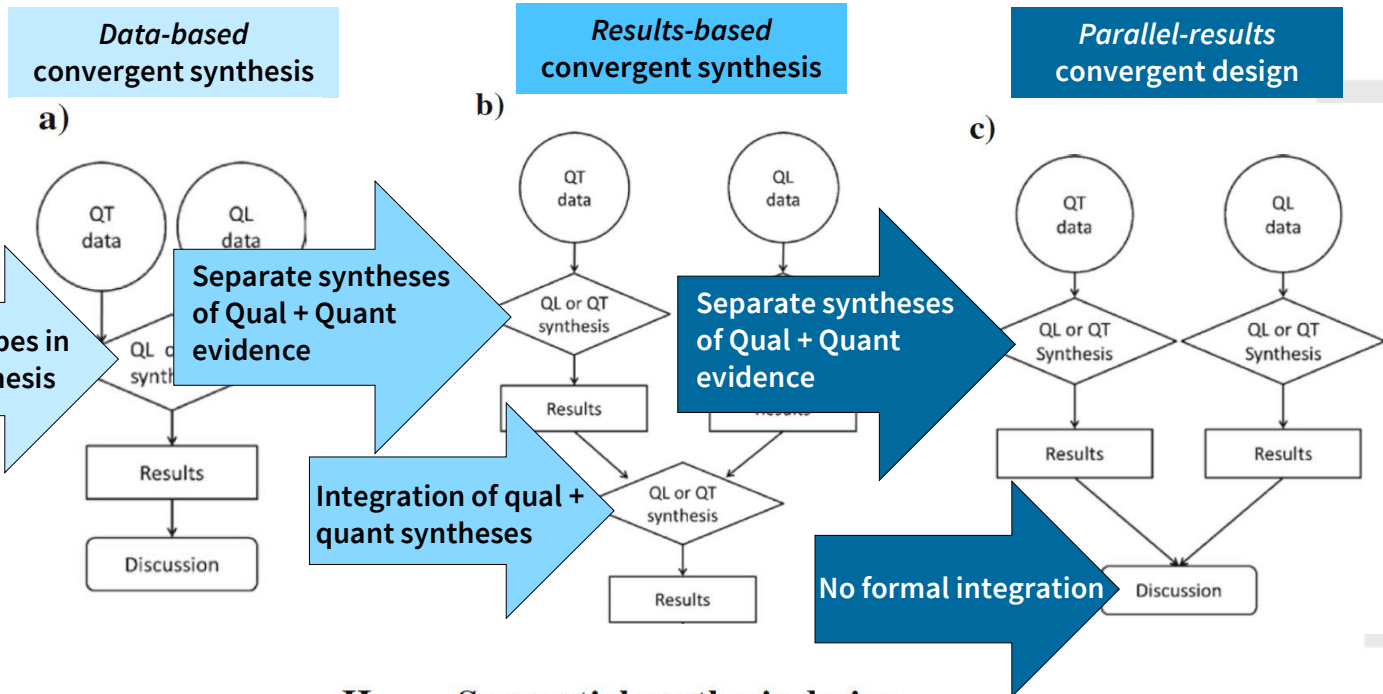
- (1) Conducting a “post hoc” qualitative evidence synthesis linked to a completed Cochrane effectiveness review
- (1) Conducting a new Cochrane review which plans to integrate a synthesis of qualitative evidence with an effectiveness synthesis from its beginning.

The main challenge in both scenarios is how to get the different types of research evidence within, or across, the reviews to “speak” to each other.

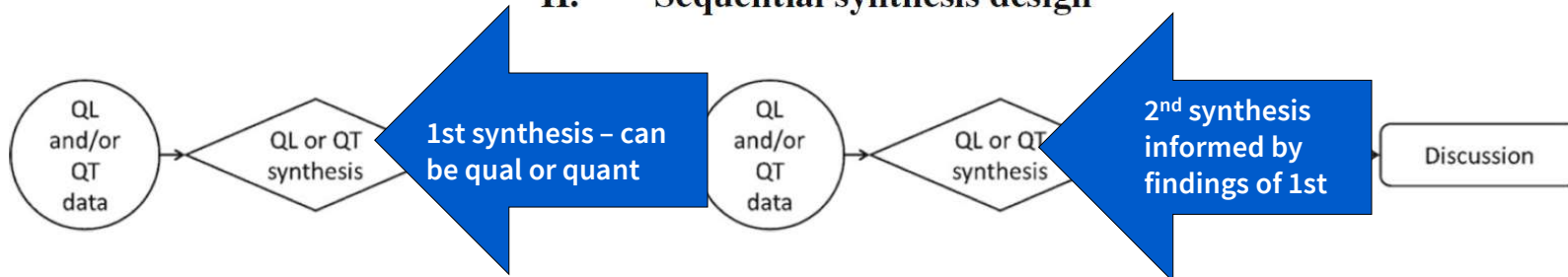


Designs for integration

I. Convergent synthesis design



II. Sequential synthesis design



Hong, Q. N., Pluye, P., Bujold, M. & Wassef, M. 2017. Convergent and sequential synthesis designs: implications for conducting and reporting systematic reviews of qualitative and quantitative evidence. *Systematic Reviews*, 6, 61.

Methods and tools for integration¹

Using a logic model or other type of conceptual framework	Analysing programme theory	Juxtaposing findings in a matrix	Testing hypotheses generated from QES with effectiveness data	Qualitative comparative analysis (QCA)
Framework to capture how an intervention works/is implemented and used as common scaffold which the different syntheses can feed into.	Theories underlying how interventions are expected to work are surfaced; findings from the different syntheses are used to examine whether and how the theory works in practice	Themes from a QES are compared with findings on intervention effectiveness. Matches, gaps and mismatches identified.	Hypotheses on intervention effectiveness generated by QES tested by grouping studies according to the presence or absence of the proposition specified by the hypotheses	QES identifies range of features important for intervention success; QCA then uses data from trials to examine whether these features <i>were</i> associated with success

¹Harden et al. (2018) Cochrane Qualitative and Implementation Methods Group guidance series—paper 5: methods for integrating qualitative and implementation evidence within intervention effectiveness reviews [Journal of Clinical Epidemiology 97](#), Pages 70-78

Community engagement to reduce inequalities in health: a systematic review, meta-analysis and economic analysis

A O'Mara-Eves,¹ G Brunton,¹ D McDaid,²
S Oliver,¹ J Kavanagh,¹ F Jamal,³ T Matosevic,⁴
A Harden³ and J Thomas^{1*}

¹Evidence for Policy and Practice Information and Co-ordinating Centre (EPPI-Centre), Social Science Research Unit, Institute of Education, London, UK

²Personal Social Services Research Unit and European Observatory on Health Systems and Policies, London School of Economics and Political Science, London, UK

³Institute for Health and Human Development, University of East London, London, UK

⁴Personal Social Services Research Unit, London School of Economics and Political Science, London, UK

*Corresponding author

Declared competing interests of authors: none

Published XXXX 2013
DOI: 10.3310/phrXXXX

This report should be referenced as follows:

O'Mara-Eves A, Brunton G, McDaid D, Oliver S, Kavanagh J, Jamal F, *et al*. Community engagement to reduce inequalities in health: a systematic review, meta-analysis and economic analysis. *Public Health Res* 2013;1(X).



PUBLIC HEALTH RESEARCH

VOLUME 1 ISSUE 4 NOVEMBER 2013
ISSN 2050-4381

Table 14 Primary health issues targeted by the interventions in studies included in the meta-analysis (n= 131)

Primary health issue	Frequency	%
Substance abuse	18	13.7
Cardiovascular disease	14	10.7
Breastfeeding	13	9.9
Obesity prevention/weight reduction	13	9.9
Smoking cessation	12	9.2
Public health/health promotion/prevention	8	6.1
Antenatal (prenatal) care	7	5.3
Cancer prevention	6	4.6
Diabetes prevention/management	6	4.6
Physical activity	6	4.6
Healthy eating/nutrition	5	3.8
Parenting	5	3.8
Immunisation	4	3.1
Injury prevention	4	3.1
Smoking/tobacco prevention	3	2.3
Child illness and ill health	2	1.5
Disabilities and chronic illness	2	1.5
Child abuse prevention	1	0.8
Hypertension	1	0.8
Infant mortality	1	0.8

E.g. a systematic review addressing complex questions

131 studies in the meta-analysis

- Approximately 50% ‘sound’ in terms of RoB

At least 200 possible covariates

We need > 10 times more research

PUBLIC HEALTH RESEARCH
VOLUME 1 ISSUE 4 NOVEMBER 2013
ISSN 2050-4381

Table 14 Primary health issues targeted by the interventions in studies included in the meta-analysis (n=131)

TABLE 15 Intervention settings of studies included in the meta-analysis (n=131)

TABLE 16 Intervention strategies of studies included in the meta-analysis (n=131)

TABLE 18 Comparison group types used in the studies included in the meta-analysis (n=131)

TABLE 19 Allocation methods used in the studies included in the meta-analysis (n=131)

TABLE 17 Intervention deliverers for studies included in the meta-analysis (n=131)

Who delivered the intervention	Frequency	%
Community member	58	44.3
Peer		37.4
Health professional		18.3
Community member		13.7
Other		13.0
Researcher	7	5.3
Counsellor	6	4.6
Health promotion practitioner		
Parent	4	3.1
Religious leader	4	3.1
Counsellor	2	1.5
Social worker	2	1.5
Other	17	13.0
Not clear	10	7.6

Note: More than one intervention deliverer type could be selected for each intervention and so percentages do not sum to 100%.

+ many more...

E.g. a systematic review addressing complex questions

131 studies in the meta-analysis

- Approximately 50% 'sound' in terms of RoB

At least 200 possible covariates

We needed >> 10 times more research

Data

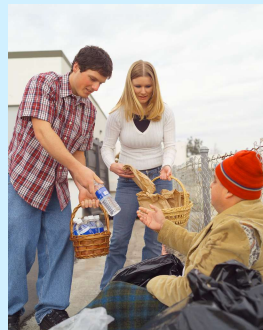
Theoretical Perspectives from literature review team & advisors

Intervention descriptions

Intervention processes participation rates, perspectives*

Intervention outcomes categories, effect sizes

Intervention costs/benefits*



Slide from: Rees, Sutcliffe, Thomas (2013) Configurational 'qualitative' synthesis for evidence-based policy & practice... 21st Cochrane Colloquium, Quebec

Syntheses

Community engagement to reduce health inequalities

Theoretical synthesis

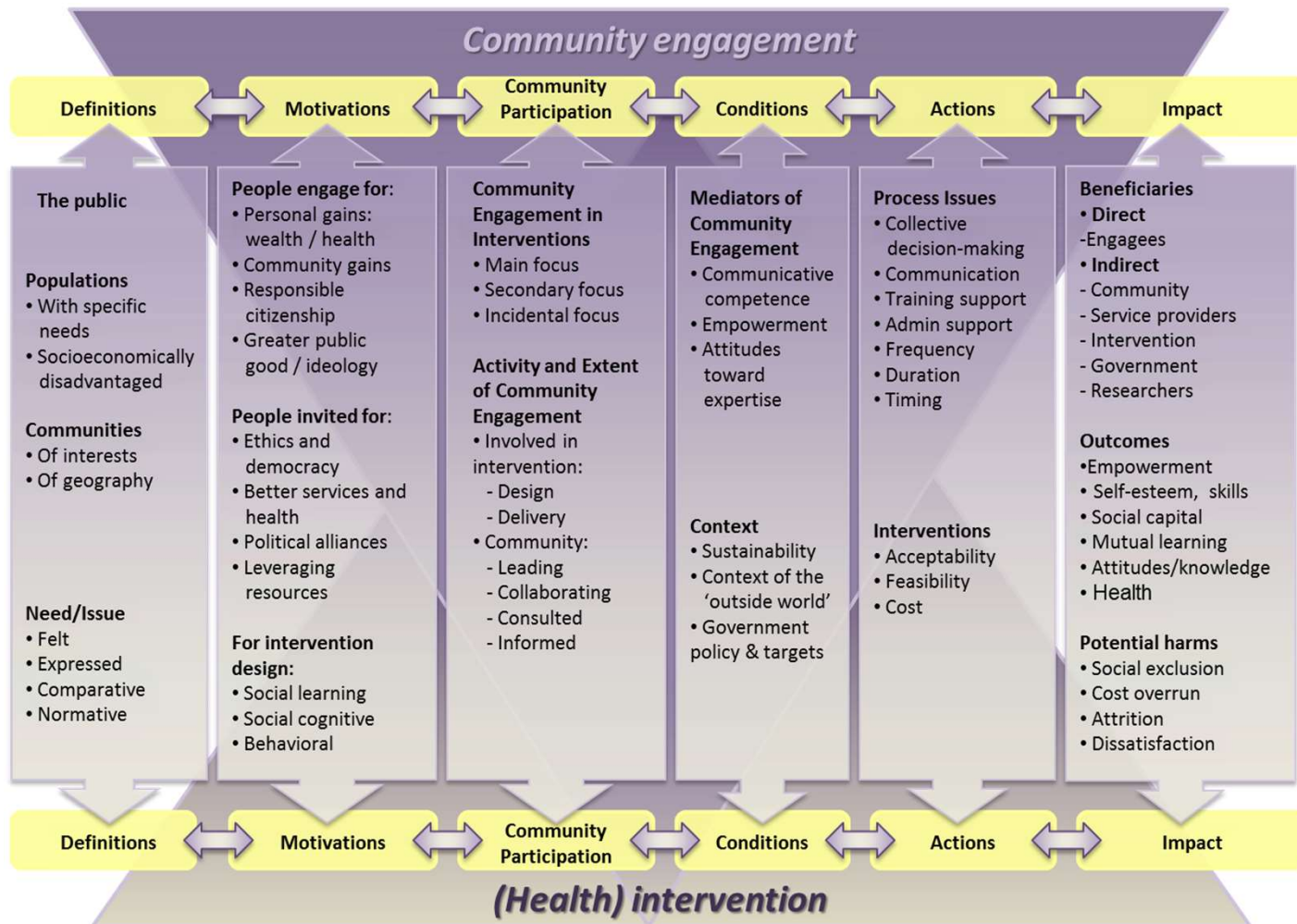
Meta-analysis but huge heterogeneity

Explored variations in intervention effects in a theoretically grounded way

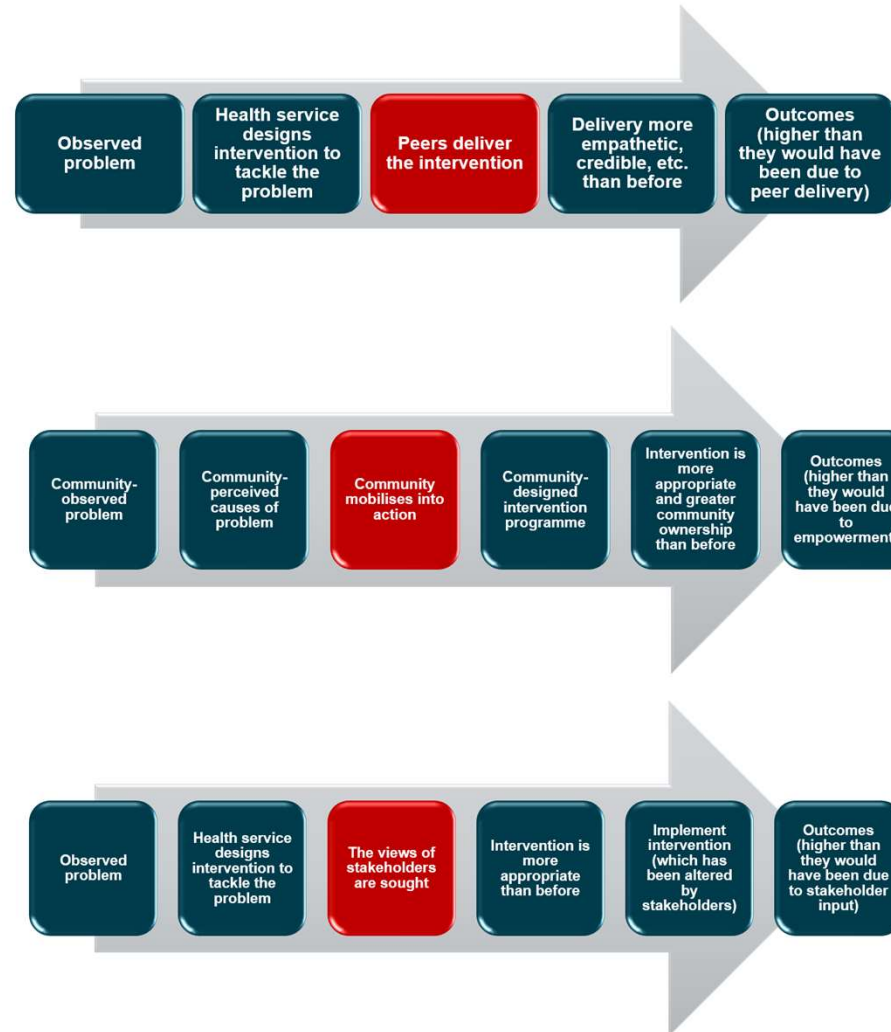
Theories of change operationalised into an analytical model

**also synthesised separately*

Community Engagement in Interventions: Conceptual Framework



Developed specific theories of change





Cochrane Methods
Qualitative and
Implementation

Analysing programme theory



Trusted evidence.
Informed decisions.
Better health.

English

Title Abstract Keyword

Cochrane Reviews ▾ Trials ▾ Clinical Answers ▾ About ▾ Help ▾

Cochrane Database of Systematic Reviews

School feeding for improving the physical and psychosocial health of disadvantaged students

Cochrane Systematic Review - Intervention | Version published: 24 January 2007 [see what's new](#)

Am scores 12 [View article information](#)

✉ Betsy Kristjansson | Mark Petticrew | Barbara MacDonald | Julia Krasevec | Laura Janzen | Trish Greenhalgh
George A Wells | Jessie MacGowan | Anna P Farmer | Beverley Shea | Alain Mayhew | Peter Tugwell | Vivian Welch

[View authors' declarations of interest](#)

Abstract available in [English](#) | [Español](#)

Background

Early malnutrition and/or micronutrient deficiencies can adversely affect physical, mental, and social aspects

Realist review to understand the efficacy of school feeding programmes

A recent Cochrane review found that school feeding programmes significantly improve the growth and cognitive performance of disadvantaged children. **Trisha Greenhalgh**, **Elizabeth Kristjansson**, and **Vivian Robinson** look more closely at the highly heterogeneous trials to see what works, for whom, and in what circumstances

Our Cochrane review of school feeding programmes in disadvantaged children included trials from five continents and spanned eight decades.¹ Although we found that the programmes have significant positive effects on growth and cognitive performance, the trials had many different designs and were implemented in varying social contexts and educational systems; by staff with different backgrounds, skills, and cultural beliefs; and with huge variation in the prevailing social, economic, and political context. Simply know-

Trisha Greenhalgh professor of primary health care, Department of Primary Care and Population Sciences, University College London, London N19 5LW

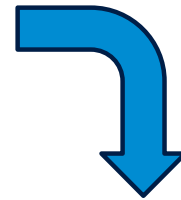
Elizabeth Kristjansson associate professor, School of Psychology and Institute of Population Health, University of Ottawa, Canada K1N 6N5

Vivian Robinson doctoral candidate, Institute of Population

Box 1 | Process factors that seem to enhance efficacy of school feeding programmes

Strong process evidence across many trials

- Target group has clear nutritional deficiency (usually, inadequate energy intake) and trial is oriented to correcting this rather than to short term hunger relief
- Well organised schools that form part of an efficient distribution chain for the supplement
- Intervention developed with local teams rather than designed by distant experts



Juxtaposing findings in a matrix

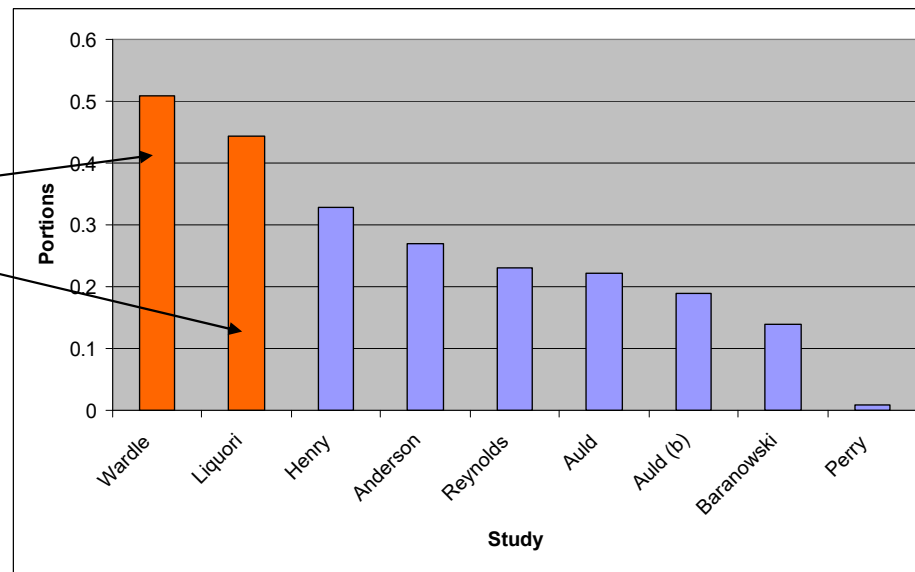
From synthesis of qualitative research on children's perspectives	Trials	
	Good quality	Other
Recommendation for interventions		
Do not promote fruit and vegetables in the same way	0	0
Brand fruit and vegetables as an 'exciting' or child-relevant product, as well as a 'tasty' one	5	5
Reduce health emphasis in messages to promote fruit and vegetables particularly those which concern future health	5	6

Thomas J, Harden A, Oakley A, Oliver S, Sutcliffe K, Rees R, Brunton G, Kavanagh F. (2004) Integrating Qualitative Research with trials in systematic reviews: an example review from public health shows how integration is possible and some potential benefits. *BMJ* 328: 1010-12

Testing hypotheses generated through QES

Increase (standardised portions per day) in vegetable intake across trials

Little or no emphasis on health messages



Thomas J, Harden A, Oakley A, Oliver S, Sutcliffe K, Rees R, Brunton G, Kavanagh F. (2004) Integrating Qualitative Research with trials in systematic reviews: an example review from public health shows how integration is possible and some potential benefits. *BMJ* 328: 1010-12

Qualitative Comparative Analysis (QCA)

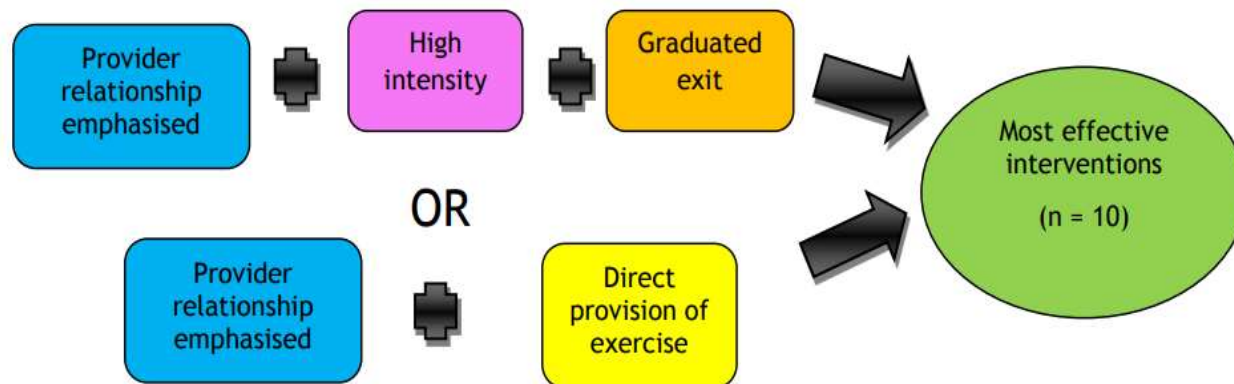
Table 3.7: Configurations represented in the provider alliance model

Direct provision of exercise	Provider relationships	Graduated exit	High intensity	Number of most effective interventions	Number of least effective interventions
Present	Present	Present	Present	5	0
Present	Present	Absent	Present	1	0
Present	Present	Absent	Absent	1	0
Absent	Present	Present	Present	3	0
Present	Absent	Present	Present	0	1
Absent	Present	Present	Absent	0	1
Absent	Present	Absent	Absent	0	5
Absent	Absent	Absent	Present	0	1
Absent	Absent	Absent	Absent	0	2

Sutcliffe et al. (2016) What are the critical features of successful Tier 2 weight management programmes?: A systematic review to identify the programme characteristics, and combinations of characteristics, that are associated with successful weight loss. London: EPPI-Centre, Social Science Research Unit, UCL Institute of Education, University College London.

QCA can identify combinations of intervention components leading to high or least effectiveness

Figure 3.3: Provider alliance pathways to high effectiveness



Sutcliffe et al. (2016) What are the critical features of successful Tier 2 weight management programmes?: A systematic review to identify the programme characteristics, and combinations of characteristics, that are associated with successful weight loss. London: EPPI-Centre, Social Science Research Unit, UCL Institute of Education, University College London.



QCA in a Cochrane review

Cochrane Systematic
Review-
Intervention Version
published: 28 January
2019
<https://doi.org/10.1002/14651858.CD011651.pub2>



School-based self-management interventions for asthma in children and adolescents: a mixed methods systematic review (Review)

Harris K, Kneale D, Lasserson TJ, McDonald VM, Grigg J, Thomas J

Factors to consider in choice of methods and tools for integration

	Strengths	Limitations
Using a conceptual framework such as a logic model	Facilitates holistic integration Development of framework is flexible	May 'squeeze' data into model Qual and Quant may not correspond/both exist
Analysing programme theory	Facilitates holistic integration Formalises analysis and testing of theory	Expertise in programme theory required (e.g. realist evaluation)
Juxtaposing findings from across syntheses in a matrix	Matrix relatively simple; does not require specialist skills or software Can aid explorations of heterogeneity in trials and identify research gaps.	Intervention characteristics are examined one by one
Testing hypotheses using sub-group analysis	Hypotheses from qualitative synthesis can be tested statistically	Requires sufficient numbers of trials to conduct sub-group analysis Intervention characteristics are examined one by one
Qualitative comparative analysis	Able to examine multiple features across multiple contexts	Requires a relatively large number of trials, Expertise in QCA required

Appraisal questions

Integration approach: Which approach is used to integrate the findings of the qualitative and quantitative syntheses ?

Method / tool: What is the method or tool used in each review to integrate the qualitative and quantitative evidence?

Execution / reporting: How explicit / systematic is the procedure for integrating the qualitative and quantitative syntheses? How transparently do the authors of each review report the process of integration?

Diversity of perspective: In what ways has integrating different types of evidence into the review increased the diversity of perspectives included?

Findings: How informative / illuminating are the findings of the integrated evidence? How might this 'mixed' evidence support improved decision-making?

Thank you!

angela.harden@city.ac.uk

james.thomas@ucl.ac.uk

