Informed Health Choices

You can’t make informed choices without information

For decisions to be well-informed and not misinformed

- The **information needs to be trustworthy and understandable**

But that’s not enough

- **People need to be enabled to assess the trustworthiness** of health claims and the evidence used to support those claims

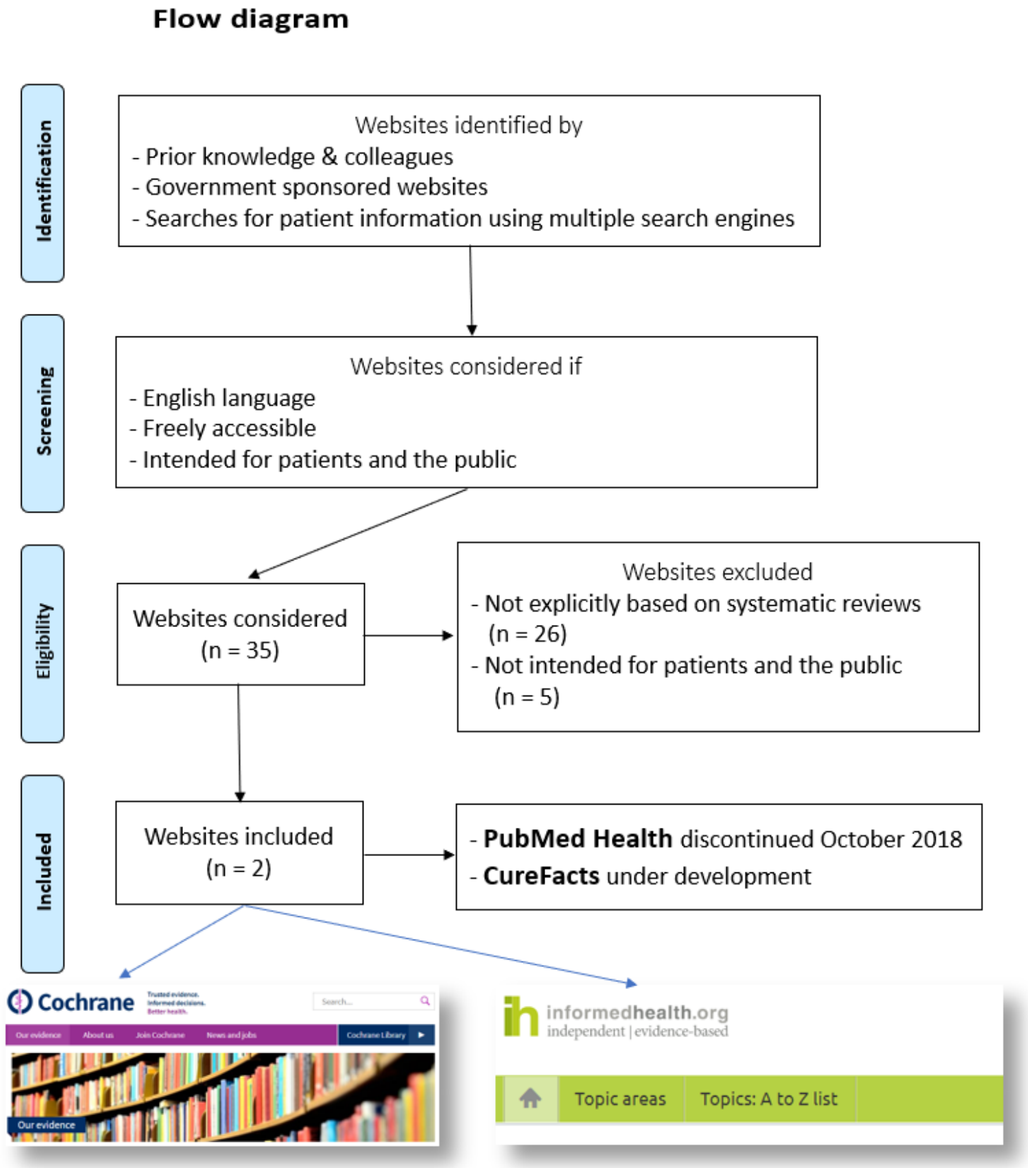
A global problem

It is possible for patients and the public to access trustworthy information about the effects of treatments, but . . .

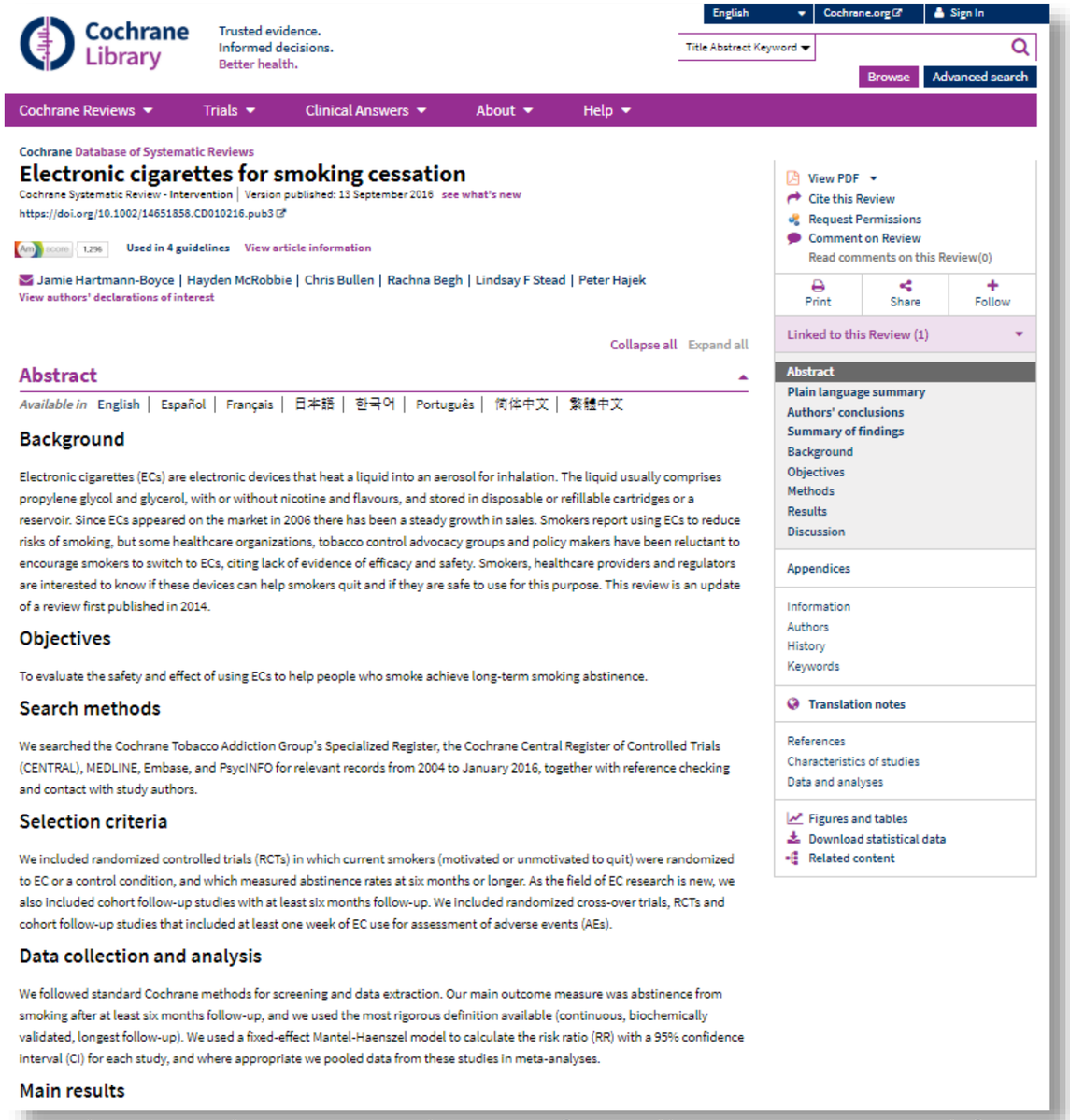
Oxman and Paulsen *BMC Medical Informatics and Decision Making* (2019) 19:35
https://doi.org/10.1186/s12911-019-0772-5

BMC Medical Informatics and Decision Making

- It is not easy to find and
- Information about the size of effects and the certainty of the evidence is not reported consistently



Redesigning reviews could help



Sarah Rosenbaum, et al. User-friendly reporting and formatting of Cochrane Reviews of interventions: Final report. 2019

How should evidence-based information about the effects of healthcare interventions be communicated?

Objective

- To provide guidance to those communicating evidence-based information about the effects of interventions intended to inform decisions about healthcare

Methods

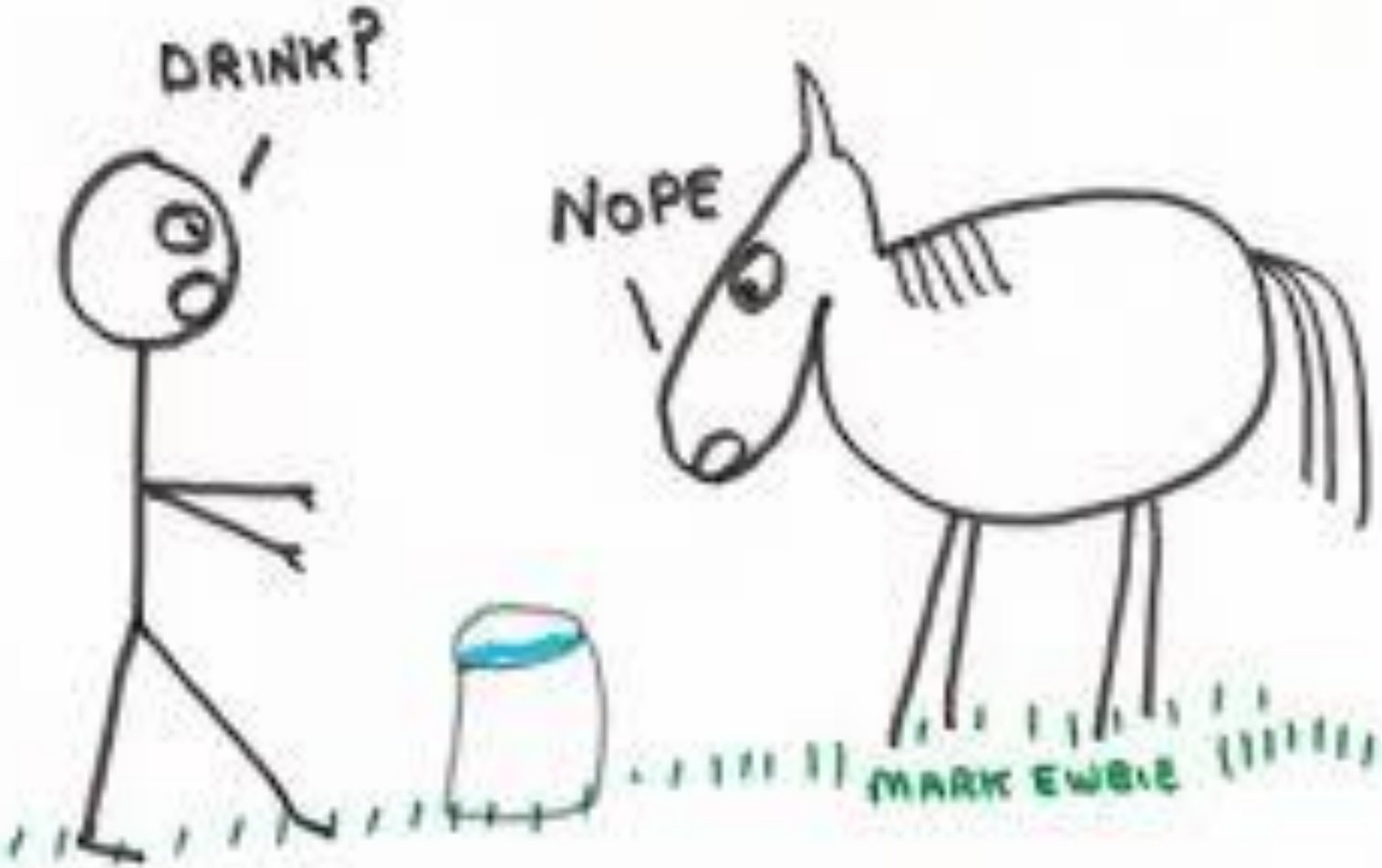
- We used an iterative, informal consensus process to synthesize our recommendations, based on our own experience and research, and on the literature we examined
- After agreeing on a set of recommendations, we compared these to recommendations made by others
- We sought structured feedback from people with relevant expertise, including people who prepare and use information about the effects of interventions for the public, health professionals, or policymakers

How should evidence-based information about the effects of healthcare interventions be communicated?

Checklist for communicating effects
Make it easy for your target audience to quickly find and determine the relevance of the information, and to find the key messages.
1. Clearly state the problem and the options (interventions) that are addressed, using language that is familiar to your target audience – so that people can determine if the information is relevant to them.
2. Present information in layers using language that is appropriate for your audience – so that they can easily and
For each outcome, help your target audience to understand the size of the effect and how sure we can be about that; and avoid presentations that are misleading.
4. Explicitly assess and report the certainty of the evidence.
5. Use language that is consistent and easy to understand.
Help your target audience to put information about the effects of interventions in context, and to understand why the information is trustworthy.
9. Provide relevant background information, help people weigh the advantages against the disadvantages of interventions, and provide a sufficient description of the interventions.
10. Tell your audience how the information was prepared, what it is based on, the last search date, who prepared it and whether the people who prepared the information had conflicts of interest.

		Examples
Make sure you know your audience	• Consider your target audience and their information needs. • Consider establishing an advisory group with people from your target audience, if you have not already done this. • Consider other ways of involving members of your target audience in preparing the information.	Summary of Findings tables for Cochrane reviews [24], SUPPORT Summaries [44,45], Plain language summaries [36, 46], Evidence-based policy briefs [47]
Design and user test your format template	• Develop a template and guidance for those responsible for preparing the information, if you do not have this. • Take account of recommendations 1-9 in the template and guidance. • Make sure it includes dates (recommendation 10). • Prepare prototypes, get feedback from your advisory group, and user test prototypes.	Summary of Findings tables for Cochrane reviews [24], SUPPORT Summaries [44,45], Interactive Summary of Findings [48], Plain language summaries [36, 46], Rapid responses [27], Evidence-based policy briefs [47], EPOC guidance [49]
Organise an editorial process and training	• Establish an editorial process. • Train the people who will be preparing the information.	SUPPORT Summaries [44,45], Rapid responses [27], Evidence-based policy briefs [47]
Make it easy for your target audience to find information	• Make it easy for your target audience to recognise that the information is for them. • Make it easy for your target audience to find information when they need it.	Review of websites that provide evidence-based information about treatment effects [21]
Tell your audience how you prepared the information	• Tell your audience how you prepared the information	Summary of Findings tables for Cochrane reviews [24], Plain language summaries [36, 46], Rapid responses [27], Evidence-based policy briefs [47]
Feedback, iteration, and evaluation	• Produce information iteratively by collecting feedback on each individual piece of information. • Make changes, if needed to your template as well as to individual pieces of information. • Evaluate again, if needed. • Establish routines for updating, if this is planned.	Summary of Findings tables for Cochrane reviews [24], SUPPORT Summaries [44,45], Plain language summaries [36, 46], Rapid responses [27]

Trustworthy and accessible information is not sufficient

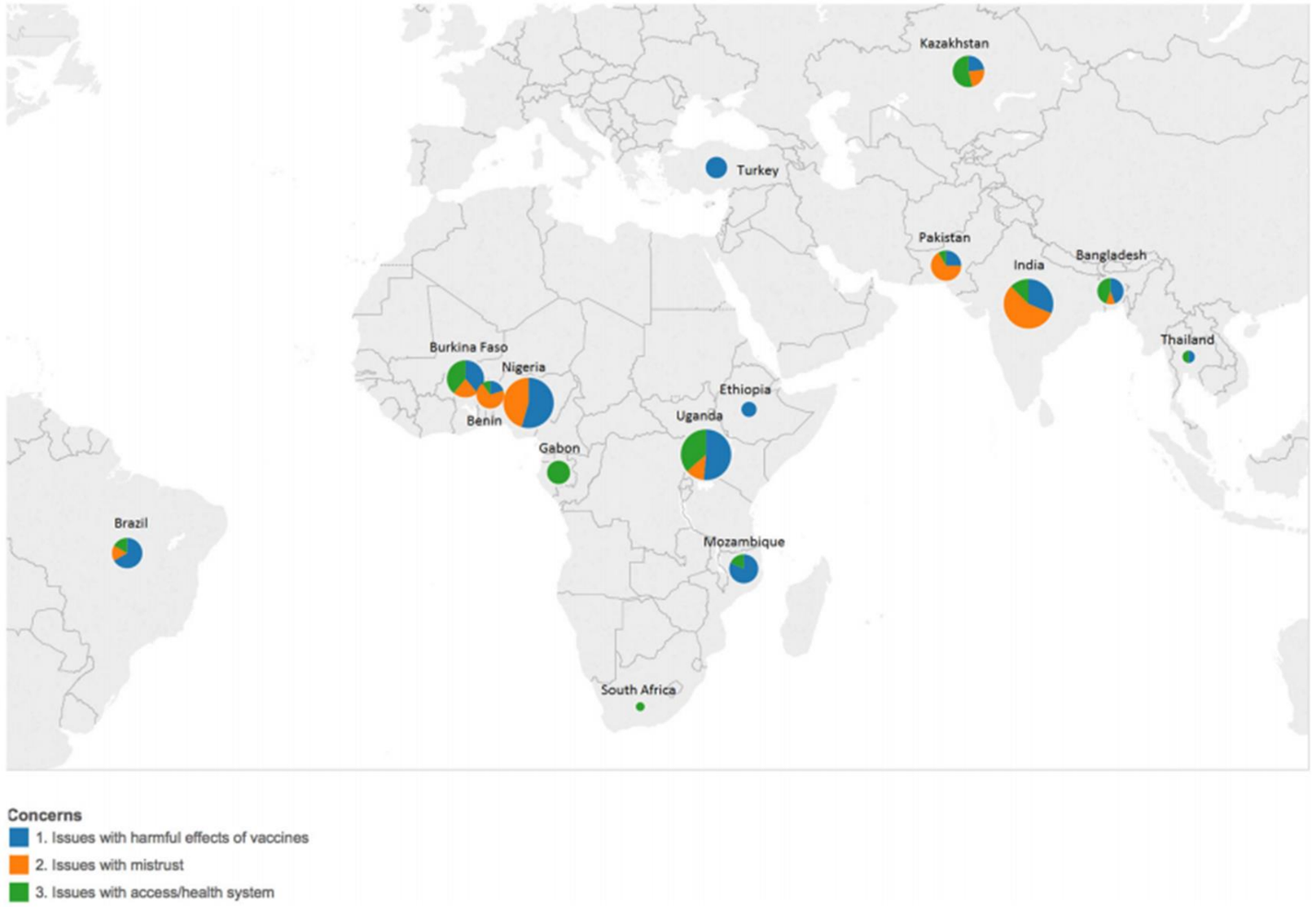


The public does not trust research

"Our surveys showed that only about one-third (37%) of the public said they trusted evidence derived from medical research, but around two-thirds (65%) trusted the experiences of friends and family."

Mistrust is widespread

Mistrust of vaccination programmes



Exposing concerns about vaccination in low- and middle-income countries: a systematic review. Int J Public Health 2015.

Informed Health Choices

- Key Concepts
- User-centred design
- Evaluation

People need to understand and be able to apply Key Concepts

F1000Research

F1000Research 2019, 7:1784 Last updated: 23 JAN 2019

RESEARCH ARTICLE

REVISED Key Concepts for assessing claims about treatment effects and making well-informed treatment choices [version 2; referees: 3 approved]

Andrew David Oxman [1,2], Iain Chalmers[1,3], Astrid Austvoll-Dahlgren[1,4], Informed Health Choices group

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Key Concepts for Informed Health Choices

Claims	**Comparisons**	**Choices**
Claims about effects that are not supported by evidence from fair comparisons are not necessarily wrong, but there is an insufficient basis for believing them.	Studies should make fair comparisons, designed to minimize the risk of systematic errors (biases) and random errors (the play of chance).	What to do depends on judgements about a problem, the relevance of the evidence available, and the balance of expected benefits, harms, and costs.
• **It should not be assumed that treatments are safe or effective - or that they are not.** • **Seemingly logical assumptions are not a sufficient basis for claims.** • **Trust in a source alone is not a sufficient basis for believing a claim.**	• **Comparisons of treatments should be fair.** • **Syntheses of studies should be reliable.** • **Descriptions should clearly reflect the size of effects and the risk of being misled by the play of chance.**	• **Problems and options should be clear.** • **Evidence should be relevant.** • **Expected pros should outweigh cons.**

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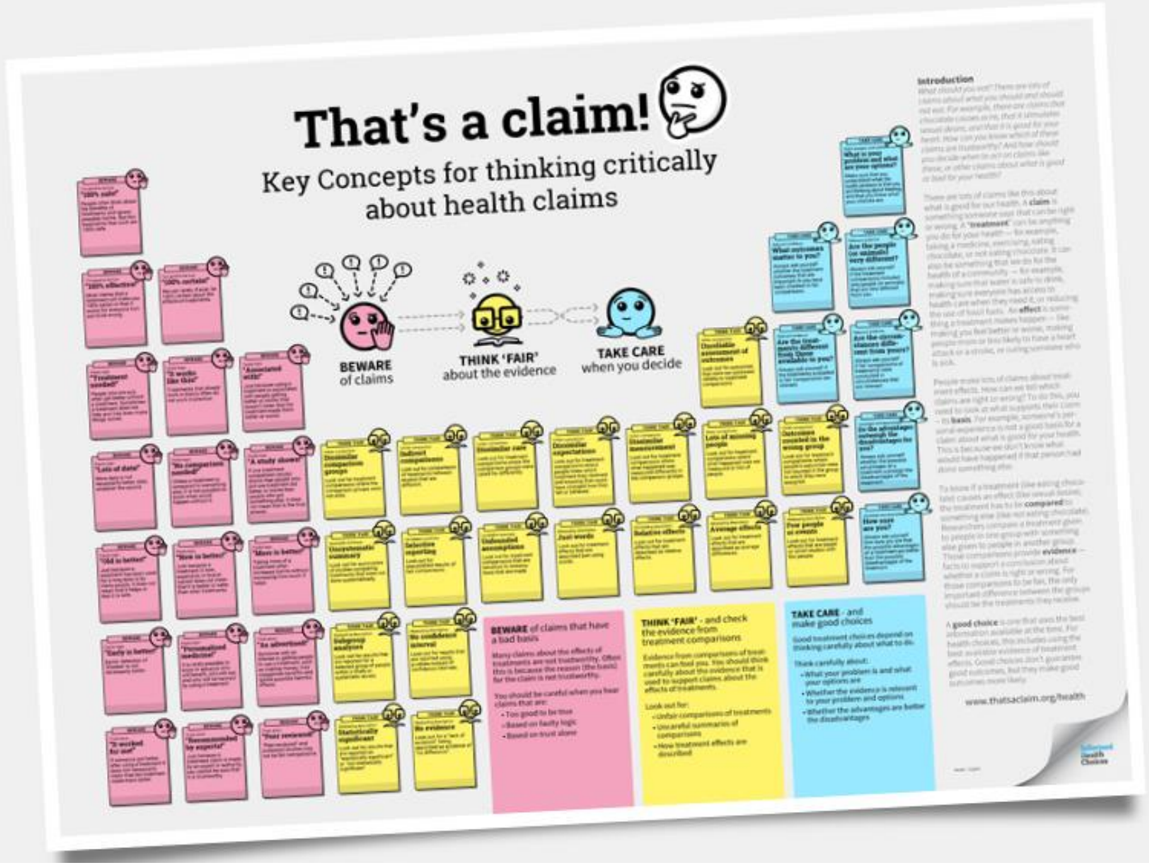
Health

See other disciplines here!

THAT'S A CLAIM!

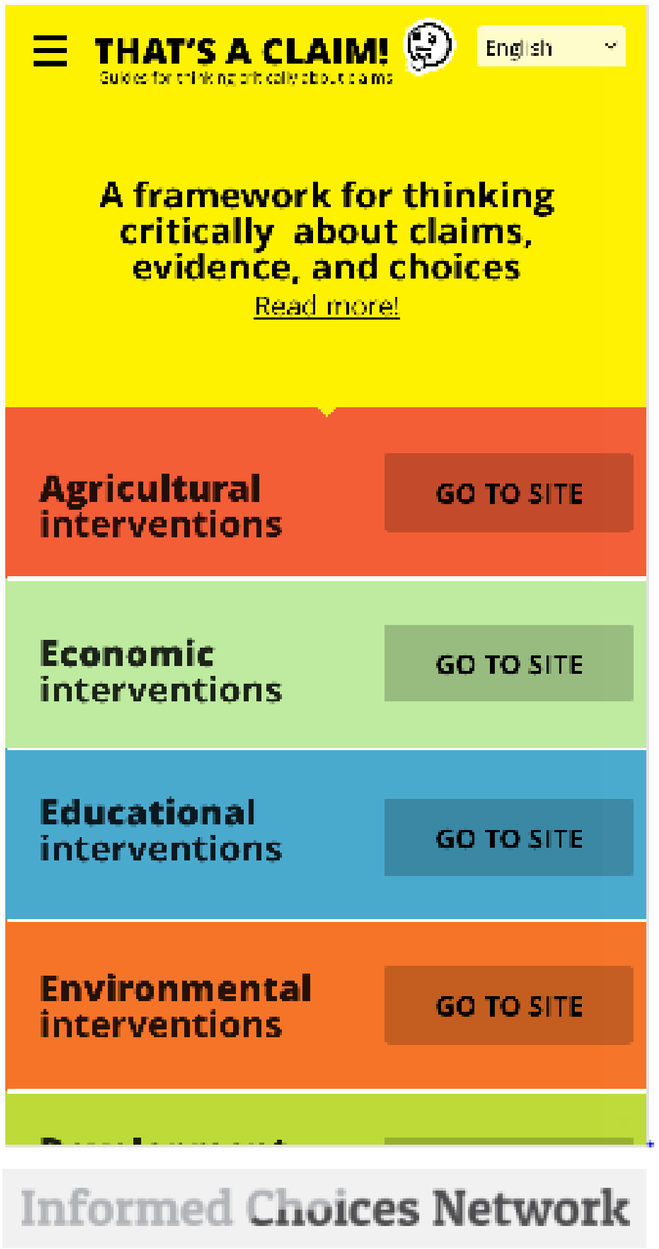
Key Concepts for thinking critically about health claims

English (UK)



https://thatsaclaim.org/

Beyond health care



COMMENT

POLICY Why bioethics is continually outpaced by technology **p.308**

HISTORY The mosquito's outsized role in conflicts since antiquity **p.310**

SUSTAINABILITY Sand plunder risks health and squanders buffer to sea-level rise **p.312**

SOCIAL JUSTICE Astronomer says stop and listen to Native Hawaiians at Mauna Kea **p.312**

VASILEVSKA/SHUTTERSTOCK

A child holds a sign protesting against genetically modified crops during a demonstration in Bulgaria.

Key concepts for making informed choices

Teach people to think critically about claims and comparisons using these concepts, urge **Andrew D. Oxman** and an alliance of 22 researchers — they will make better decisions.

Everyone makes claims about what works. Politicians claim that stop-and-search policing will reduce violent crime; friends might assert that vaccines cause autism; advertisers declare that natural food is healthy. A group of scientists describes giving all school-children deworming pills in some areas as one of the most potent anti-poverty interventions of our time. Another group counters that it does not improve children's health or performance at school.

Unfortunately, people often fail to think critically about the trustworthiness of claims, including policymakers who weigh up those made by scientists. Schools do not do enough to prepare young people to think critically[1]. So many people struggle to assess evidence. As a consequence, they might make poor choices.

To address this deficit, we present here a set of principles for assessing the trustworthiness of claims about what works, and for making informed choices (see 'Key Concepts for Informed Choices'). We hope that scientists and professionals in all fields will evaluate, use and comment on it. The resources were adapted, drawing on the expertise of two dozen researchers, from a framework developed for health care[2] (see 'Randomized trial').

Ideally, these concepts should be embedded in education for citizens of all ages. This should be done using learning resources and teaching strategies that have been evaluated and shown to be effective.

TRUSTWORTHY EVIDENCE

People are flooded with information. Simply giving them more is unlikely to be helpful, unless its value is understood. A 2016 survey in the United Kingdom showed that only about one-third of the public trusts evidence from medical research; about two-thirds trust the experiences of friends and family[3].

Not all evidence is created equal. Yet people often don't appreciate which claims are more trustworthy than others; what sort of comparisons are needed to evaluate different proposals fairly; or what other information needs to be considered to inform good choices.

For example, many people don't grasp that two things can be associated without one

KEY CONCEPTS FOR INFORMED CHOICES

This framework assists people helping others to think critically and make informed decisions.

CLAIMS: Claims about effects should be supported by evidence from fair comparisons. Other claims are not necessarily wrong, but there is an insufficient basis for believing them.

Claims should not assume that interventions are safe, effective or certain.
- Interventions can cause harm as well as benefits.
- Large, dramatic effects are rare.
- We can rarely, if ever, be certain about the effects of interventions.

Seemingly logical assumptions are not a sufficient basis for claims.
- Beliefs alone about how interventions work are not reliable predictors of the presence or size of effects.
- An outcome may be associated with an intervention but not caused by it.
- More data are not necessarily better data.
- The results of one study considered in isolation can be misleading.
- Widely used interventions or those that have been used for decades are not necessarily beneficial or safe.
- Interventions that are new or technologically impressive might not be better than available alternatives.
- Increasing the amount of an intervention does not necessarily increase its benefits and might cause harm.

Trust in a source alone is not a sufficient basis for believing a claim.
- Competing interests can result in misleading claims.
- Personal experiences or anecdotes alone are an unreliable basis for most claims.
- Opinions of experts, authorities, celebrities or other respected individuals are not solely a reliable basis for claims.
- Peer review and publication by a journal do not guarantee that comparisons have been fair.

COMPARISONS: Studies should make fair comparisons, designed to minimize the risk of systematic errors (biases) and random errors (the play of chance).

Comparisons of interventions should be fair.
- Comparison groups and conditions should be as similar as possible.
- Indirect comparisons of interventions across different studies can be misleading.
- The people, groups or conditions being compared should be treated similarly, apart from the interventions being studied.
- Outcomes should be assessed in the same way in the groups or conditions being compared.
- Outcomes should be assessed using methods that have been shown to be reliable.
- It is important to assess outcomes in all (or nearly all) the people or subjects in a study.
- When random allocation is used, people's or subjects' outcomes should be counted in the group to which they were allocated.

Syntheses of studies should be reliable.
- Reviews of studies comparing interventions should use systematic methods.
- Failure to consider unpublished results of fair comparisons can bias estimates of effects.
- Comparisons of interventions might be sensitive to underlying assumptions.

Descriptions should reflect the size of effects and the risk of being misled by chance.
- Verbal descriptions of the size of effects alone can be misleading.
- Small studies might be misleading.
- Confidence intervals should be reported for estimates of effects.
- Deeming results to be 'statistically significant' or 'non-significant' can be misleading.
- Lack of evidence for a difference is not the same as evidence of no difference.

CHOICES: What to do depends on judgements about the problem, the relevance (applicability or transferability) of evidence available and the balance of expected benefits, harm and costs.

Problems, goals and options should be defined.
- The problem should be diagnosed or described correctly.
- The goals and options should be acceptable and feasible.

Available evidence should be relevant.
- Attention should focus on important, not surrogate, outcomes of interventions.
- There should not be important differences between the people in studies and those to whom the study results will be applied.
- The interventions compared should be similar to those of interest.
- The circumstances in which the interventions were compared should be similar to those of interest.

Expected pros should outweigh cons.
- Weigh the benefits and savings against the harm and costs of acting or not.
- Consider how these are valued, their certainty and how they are distributed.
- Important uncertainties about the effects of interventions should be reduced by further fair comparisons.

https://www.nature.com/articles/d41586-019-02407-9

Related frameworks

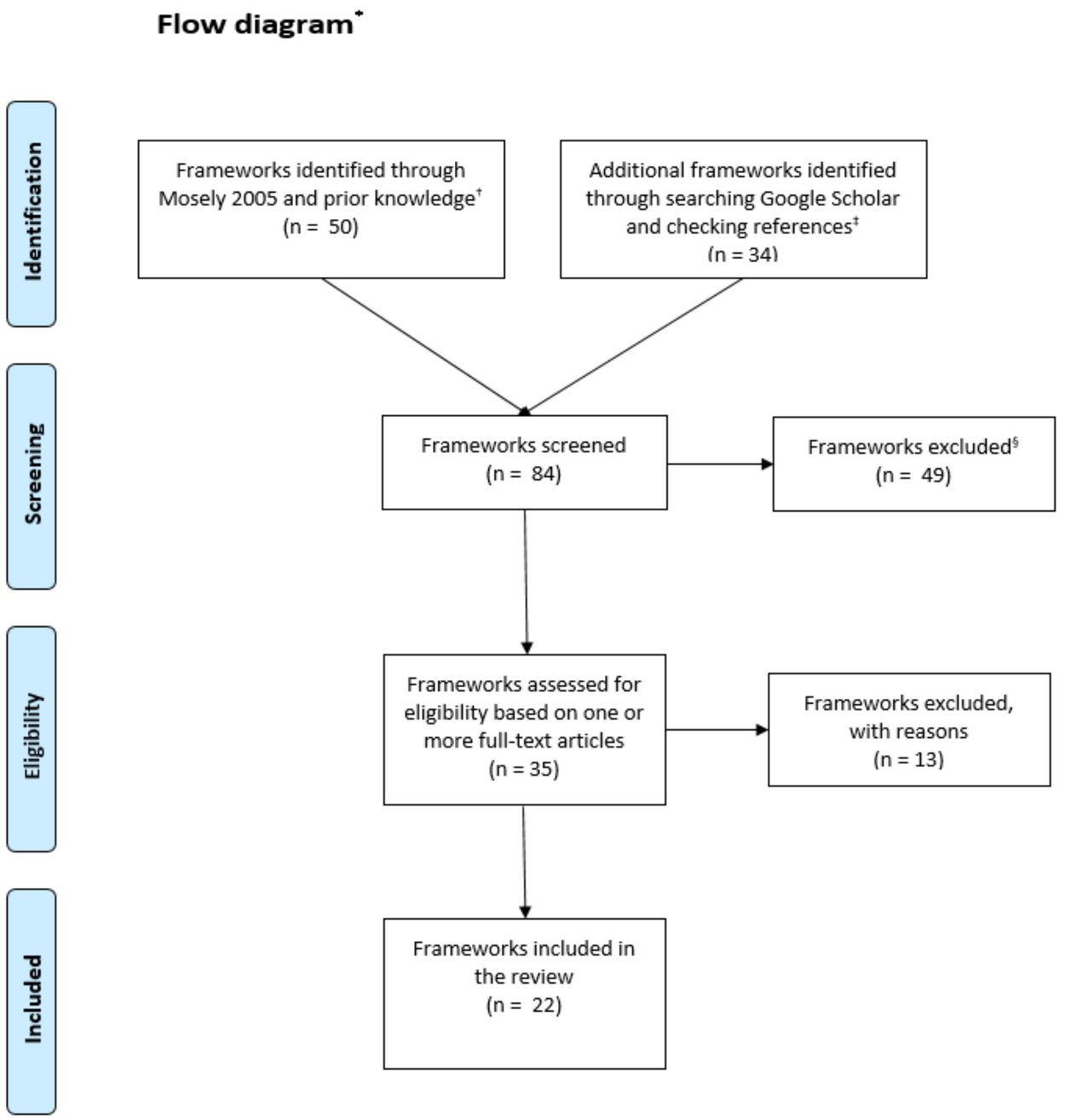
Informed Health Choices

IHC Key Concepts

Comparison of the Informed Health Choices Key Concepts to other frameworks that are relevant to learning how to think critically about treatment claims, comparisons, and choices: protocol for a mapping review

Oxman AD and Martínez García L.
Working paper, 29. August 2018

www.informedhealthchoices.org



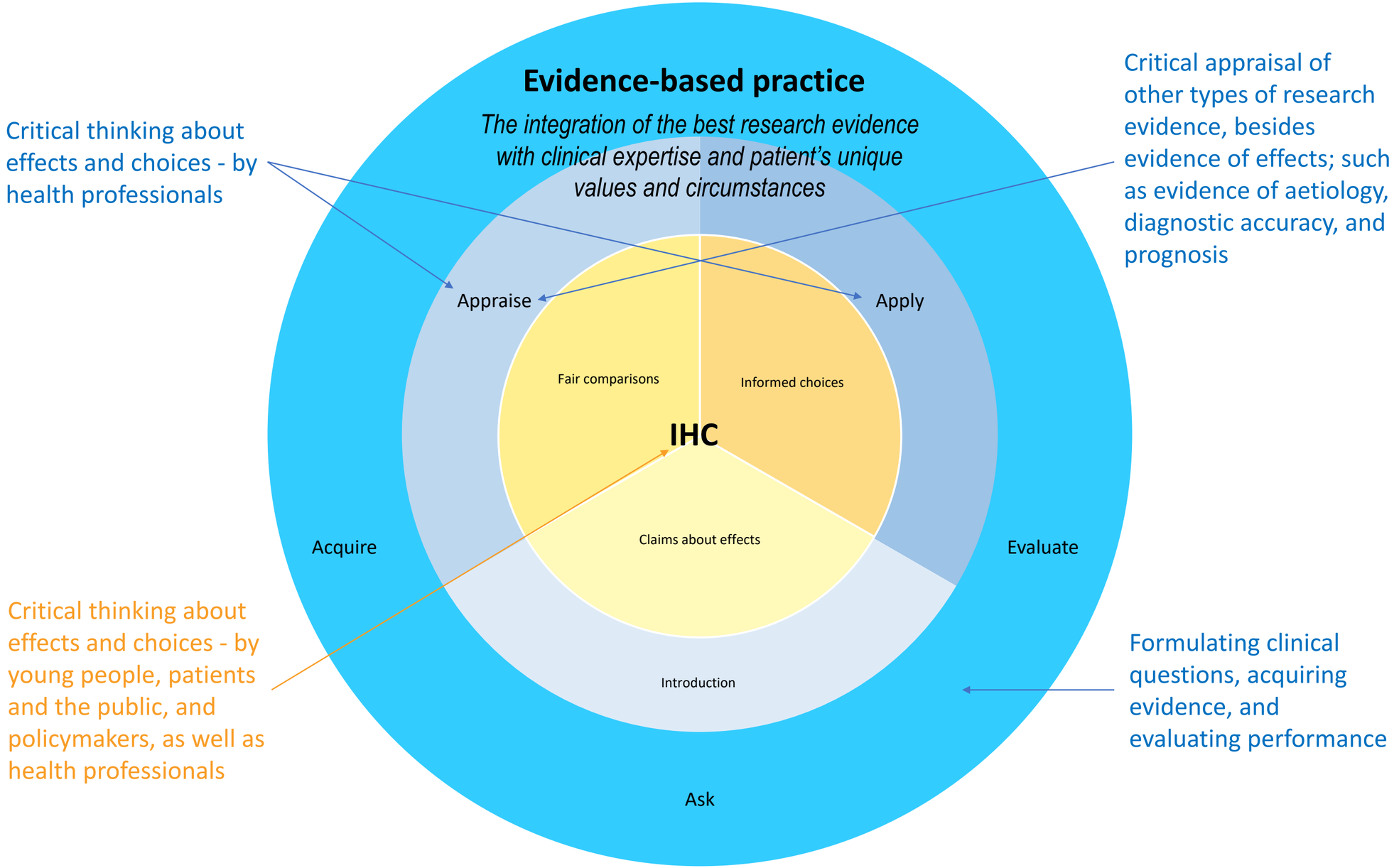
Comparison of included frameworks to the IHC framework

Framework	Purpose*	Scope	Concepts†	Competences†	Dispositions†
Critical thinking					
Taxonomy of critical thinking dispositions and abilities		Broader	Yes	Yes	Yes
Model of critical thinking		Broader	Yes	Yes	Yes
List of critical thinking skills		Broader	Yes	Yes	Yes
Model of the good thinker		Broader	No	Yes	Yes
Logic and argumentation					
Logical fallacies		Overlapping	Yes	No	No
Taxonomy of concepts and critical abilities related to the evaluation of verbal arguments		Overlapping	Yes	Yes	No
Evidence based reasoning framework		Overlapping	Yes	No	No
Cognition					
Cognitive biases		Overlapping	Yes	No	No
Framework for understanding people's theories about their own cognition		Overlapping	No	Yes	No
Epistemological models		Overlapping	No	No	Yes
AIR model of epistemic cognition		Overlapping	Yes	Yes	Yes
Scientific thinking					
PISA framework for scientific literacy		Overlapping	Yes	Yes	Yes
Framework for K-12 science education		Overlapping	Yes	Yes	No
Systems thinking		Narrower	Yes	Yes	No
Model for scientific thinking		Non-overlapping	No	No	Yes
Evidence-based health care					
Health literacy frameworks		Broader	No	Yes	No
Evidence-based practice (EBP) core competencies		Broader	No	Yes	No
GRADE and related frameworks		Overlapping	Yes	No	No
Bradford-Hill criteria		Overlapping	Yes	No	No
Critical appraisal		Overlapping	Yes	Yes	No
Risk of bias		Narrower	Yes	No	No
Catalogue of biases		Overlapping	Yes	No	No

* Similarity to the IHC framework: **Similar** | **Some similarity** | **Little similarity** | **Not similar**

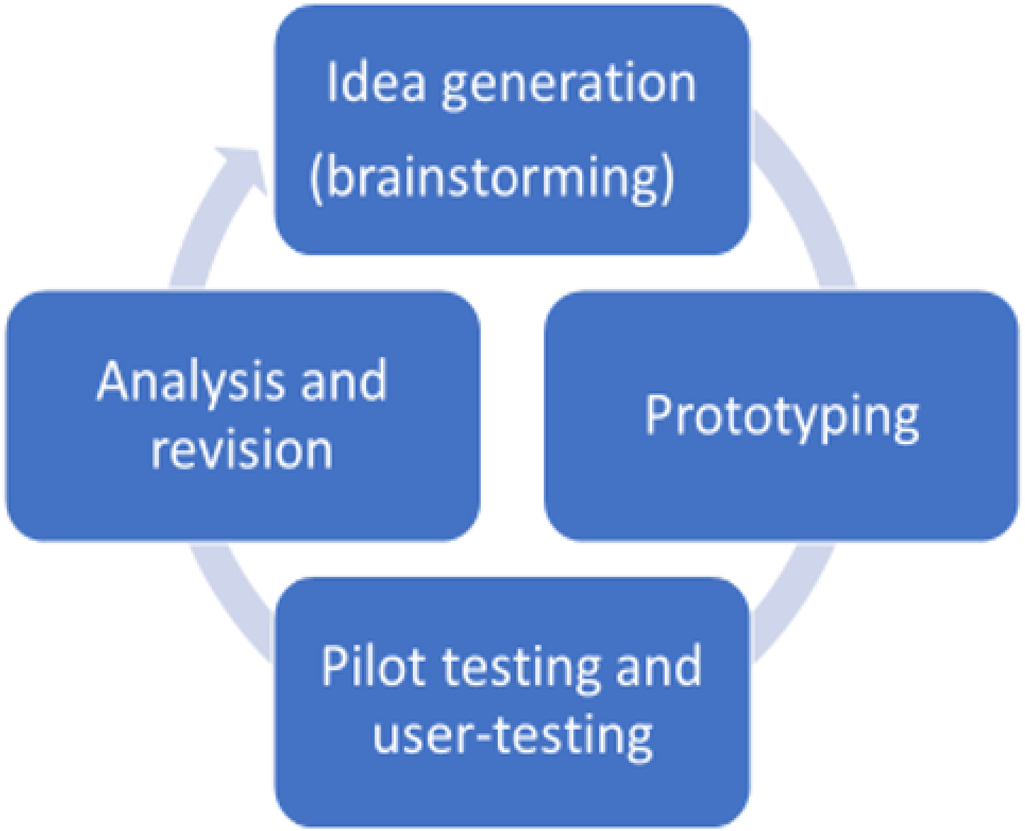
† Yes = included in the framework; No = not included in the framework

Overlap with the IHC framework: **Some overlap** | **Little overlap** | **No overlap**


Evidence-based practice
The integration of the best research evidence with clinical expertise and patient's unique values and circumstances
Critical thinking about effects and choices - by health professionals
Critical appraisal of other types of research evidence, besides evidence of effects; such as evidence of aetiology, diagnostic accuracy, and prognosis
Appraise
Apply
Fair comparisons
Informed choices
IHC
Claims about effects
Acquire
Evaluate
Introduction
Ask
Critical thinking about effects and choices - by young people, patients and the public, and policymakers, as well as health professionals
Formulating clinical questions, acquiring evidence, and evaluating performance

IHC Learning Resources

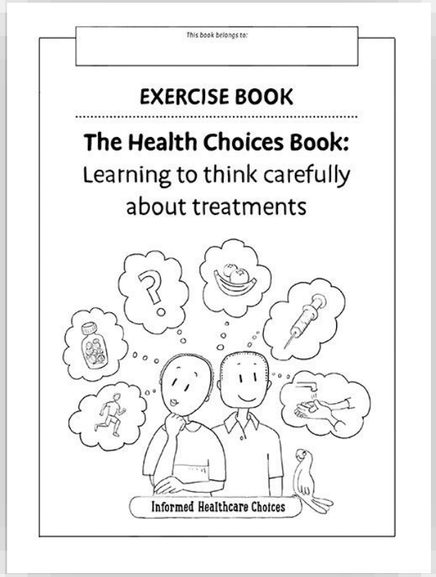
User-centred design

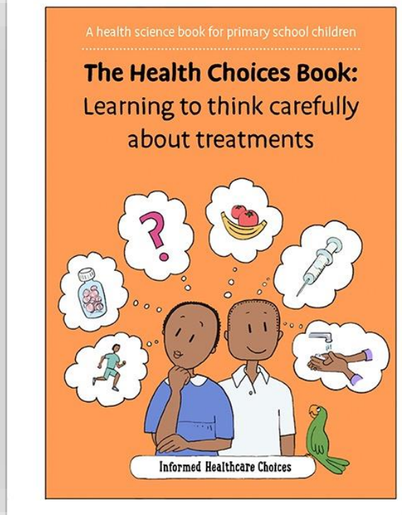


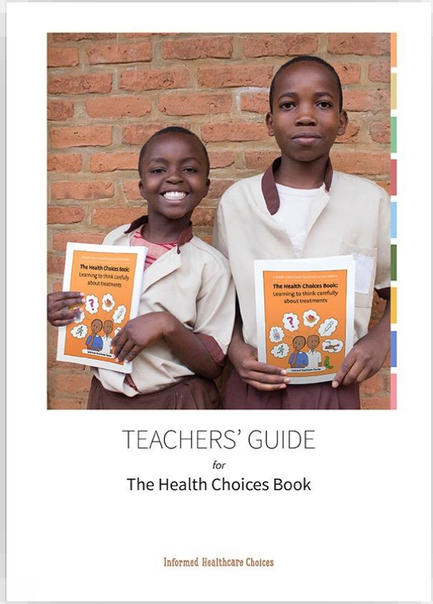
Nsangi et al. Development of the Informed Health Choices resources to teach primary school children to assess claims about treatment effects in four countries. IHC Working Paper, 2017.

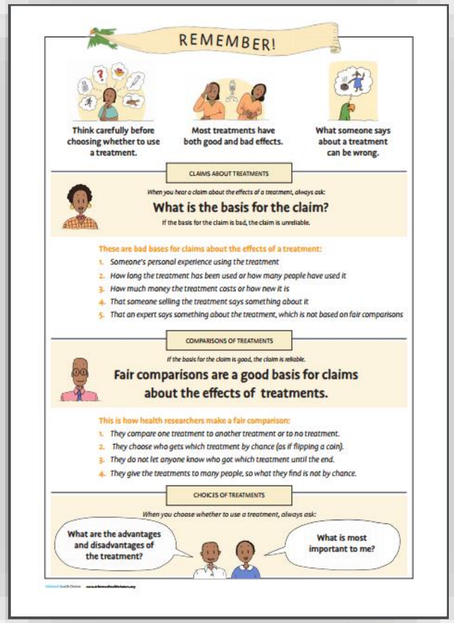

BRIGHT PARENTS
SCHOOL
GIVE A BRIGHT FUTURE
BRIGHT PARENTS
SCHOOL

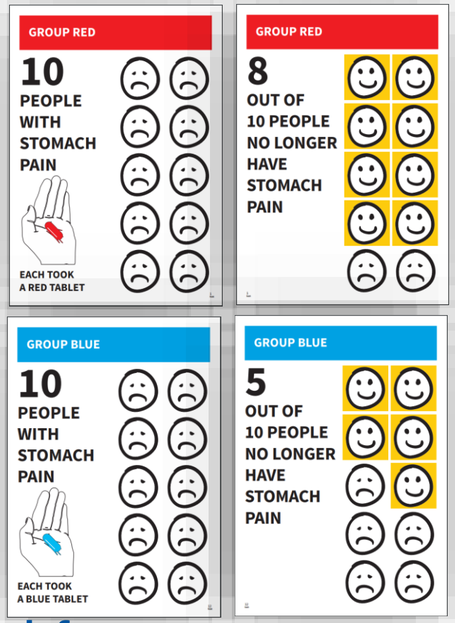

JOHN AND JULIE'S HOME
HELLO!
KASUKU!!!
You stop making trouble, Kasuku!
Julie, my finger!
It is only a burn, John...
But it is painful!!!











These resources are free to download for non-commercial use at www.informedhealthchoices.org


ENGLISH
SOCIAL STUDIES

Effects of the Informed Health Choices primary school intervention on the ability of children in Uganda to assess the reliability of claims about treatment effects: a cluster-randomised trial

Allen Nsangi, Daniel Semakula, Andrew D Oxman, Astrid Austvoll-Dahlgren, Matt Oxman, Sarah Rosenbaum, Angela Morelli, Claire Glenton, Simon Lewin, Margaret Kaseje, Iain Chalmers, Atle Fretheim, Yunpeng Ding, Nelson K Sewankambo

Effects of the Informed Health Choices primary school intervention on the ability of children in Uganda to assess the reliability of claims about treatment effects: a cluster-randomised controlled trial

Allen Nsangi, Daniel Semakula, Andrew D Oxman, Astrid Austvoll-Dahlgren, Matt Oxman, Sarah Rosenbaum, Angela Morelli, Claire Glenton, Simon Lewin, Margaret Kaseje, Iain Chalmers, Atle Fretheim, Yunpeng Ding, Nelson K Sewankambo

Lancet 2017; 390: 374–88

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See Comment page 336

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Correspondence to: Dr Andy D Oxman, Centre for Informed Health Choices, Norwegian Institute of Public Health, Oslo N-0403, Norway ox man@online.no

Summary

Background Claims about what improves or harms our health are ubiquitous. People need to be able to assess the reliability of these claims. We aimed to evaluate an intervention designed to teach primary school children to assess claims about the effects of treatments (ie, any action intended to maintain or improve health).

Methods In this cluster-randomised controlled trial, we included primary schools in the central region of Uganda that taught year 5 children (aged 10–12 years). We excluded international schools, special needs schools for children with auditory and visual impairments, schools that had participated in user-testing and piloting of the resources, infant and nursery schools, adult education schools, and schools that were difficult for us to access in terms of travel time. We randomly allocated a representative sample of eligible schools to either an intervention or control group. Intervention schools received the Informed Health Choices primary school resources (textbooks, exercise books, and a teachers' guide). Teachers attended a 2 day introductory workshop and gave nine 80 min lessons during one school term. The lessons addressed 12 concepts essential to assessing claims about treatment effects and making informed health choices. We did not intervene in the control schools. The primary outcome, measured at the end of the school term, was the mean score on a test with two multiple-choice questions for each of the 12 concepts and the proportion of children with passing scores on the same test. This trial is registered with the Pan African Clinical Trial Registry, number PACTR201606001679337.

Findings Between April 11, 2016, and June 8, 2016, 2960 schools were assessed for eligibility; 2029 were eligible, and a random sample of 170 were invited to recruitment meetings. After recruitment meetings, 120 eligible schools consented and were randomly assigned to either the intervention group (n=60, 76 teachers and 6383 children) or control group (n=60, 67 teachers and 4430 children). The mean score in the multiple-choice test for the intervention schools was 62·4% (SD 18·8) compared with 43·1% (15·2) for the control schools (adjusted mean difference 20·0%, 95% CI 17·3–22·7; p<0·00001). In the intervention schools, 3967 (69%) of 5753 children achieved a predetermined passing score (≥13 of 24 correct answers) compared with 1186 (27%) of 4430 children in the control schools (adjusted difference 50%, 95% CI 44–55). The intervention was effective for children with different levels of reading skills, but was more effective for children with better reading skills.

Interpretation The use of the Informed Health Choices primary school learning resources, after an introductory workshop for the teachers, led to a large improvement in the ability of children to assess claims about the effects of treatments. The results show that it is possible to teach primary school children to think critically in schools with large student to teacher ratios and few resources. Future studies should address how to scale up use of the resources, long-term effects, including effects on actual health choices, transferability to other countries, and how to build on this programme with additional primary and secondary school learning resources.

Funding Research Council of Norway.

Introduction

Good health depends partly on people making good choices. Good choices depend on health literacy—ie, people's ability to obtain, process, understand, and judge the reliability of relevant health information. However, people often lack the ability to judge the reliability of information about the effects of treatments, and they tend to overestimate treatment benefits and underestimate treatment harms.[1] Low health literacy is associated with poor health outcomes and poor use of health-care services.[2] Improving health literacy, and particularly people's ability to assess claims about treatment effects, has the potential to reduce unnecessary suffering and to save billions of dollars every year.[3–5]

Most health information offers instructions or claims without adequate information for people to make informed choices. Meanwhile, much health and science education, which could teach people to assess

Effects of the Informed Health Choices podcast on the ability of parents of primary school children in Uganda to assess claims about treatment effects: a randomised controlled trial

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Summary

Background As part of the Informed Health Choices project, we developed a podcast called The Health Choices Programme to help improve the ability of people to assess claims about the benefits and harms of treatments. We aimed to evaluate the effects of the podcast on the ability of parents of primary school children in Uganda to assess claims about the effects of treatments.

Methods We did this randomised controlled trial in central Uganda. We recruited parents of children aged 10–12 years who were in their fifth year of school at 35 schools that were participating in a linked trial of the Informed Health Choices primary school resources. The parents were randomly allocated (1:1), via a web-based random number generator with block sizes of four and six, to listen to either the Informed Health Choices podcast (intervention group) or typical public service announcements about health issues (control group). Randomisation was stratified by parents' highest level of formal education attained (primary school, secondary school, or tertiary education) and the allocation of their children's school in the trial of the primary school resources (intervention *vs* control). The primary outcome, measured after listening to the entire podcast, was the mean score and the proportion of parents with passing scores on a test with two multiple choice questions for each of nine key concepts essential to assessing claims about treatments (18 questions in total). We did intention-to-treat analyses. This trial is registered with the Pan African Clinical Trial Registry, number PACTR201606001676150.

Findings We recruited parents between July 21, 2016, and Oct 7, 2016. We randomly assigned 675 parents to the podcast group (n=334) or the public service announcement group (n=341); 561 (83%) participants completed follow-up. The mean score for parents in the podcast group was 67·8% (SD 19·6) compared with 52·4% (17·6) in the control group (adjusted mean difference 15·5%, 95% CI 12·5–18·6; p<0·0001). In the podcast group, 203 (71%) of 288 parents had a predetermined passing score (≥11 of 18 correct answers) compared with 103 (38%) of 273 parents in the control group (adjusted difference 34%, 95% CI 26–41; p<0·0001). No adverse events were reported.

Interpretation Listening to the Informed Health Choices podcast led to a large improvement in the ability of parents to assess claims about the effects of treatments. Future studies should assess the long-term effects of use of the podcast, the effects on actual health choices and outcomes, and how transferable our findings are to other countries.

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Introduction

The ability to obtain, process, and understand basic health information is crucial for making sound health choices. Many people lack this ability, and commonly overestimate the benefits and underestimate the harms of treatments (any action intended to maintain or improve the health of individuals or communities),[1–3] which can result in inappropriate use of health services and poor health outcomes.[2]

Provision of reliable health information in mass media, including the internet, radio, television, and print media, has the potential to affect health behaviours and health-care use.[4,5] However, substantial barriers prevent journalists from improving the scientific quality of their reports,[6] and studies have found major shortcomings of health stories in the media.[7,8] Therefore, audiences must be able to appraise the reliability of claims about treatment effects in the mass media, as elsewhere. These claims include those about the effects of drugs, surgery, and other types of modern medicine; those about lifestyle changes, such as changes to what you eat or how you exercise; those about herbal remedies and other types of traditional or alternative medicine; those about public health and environmental interventions; and those about changes in how health care is delivered, financed, and governed.

Sound health choices are especially important in low-income countries, because the less people have, the less they can afford to waste. However, few studies[9] have investigated the effects of interventions to teach critical appraisal skills to patients or the public in any country. As part of the Informed Health Choices project, we developed a podcast called The Health Choices Programme to help fill this gap. We aimed to assess the

For more on the **Informed Health Choices project** see http://www.informedhealthchoices.org/

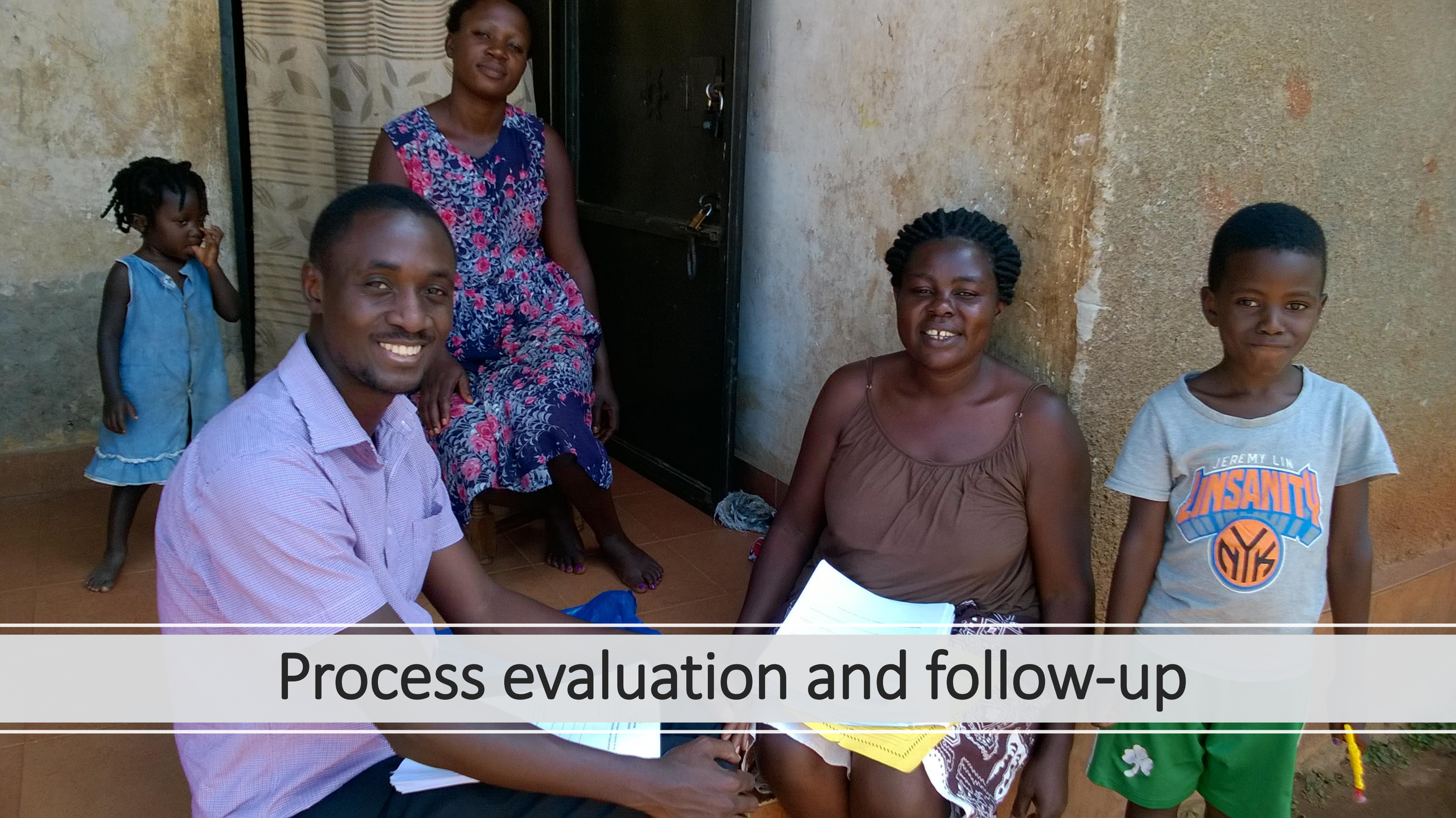
Results for children, parents, and teachers

Concept	Control	Intervention	Adjusted difference* (95% CI)	Difference per 100	Odds ratio (95% CI)
				← Favours control : Favours intervention →	
PASSING†					
Children *Primary school resources*	26.8%	69.0%	**49.8%** (43.8% to 54.6%)	49 more children per 100	9.3 (6.6 to 13.2)
Parents *Podcast*	37.7%	70.5%	**34.0%** (26.2% to 40.7%)	34 more parents per 100	3.9 (2.8 to 5.6)
Teachers *Primary school resources*	86.6%	97.6%	**11.3%** (4.0% to 13.0%)	11 more teachers per 100	7.2 (1.5 to 35.3)
MASTERY‡					
Children *Primary school resources*	0.9%	18.6%	**18.0%** (17.5% to 18.2%)	18 more children per 100	35.3 (20.6 to 60.7)
Parents *Podcast*	6.2%	31.6%	**26.0%** (15.2% to 39.1%)	26 more parents per 100	7.0 (4.0 to 12.1)
Teachers *Primary school resources*	14.9%	71.8%	**56.7%** (37.3% to 70.4%)	57 more teachers per 100	14.4 (6.2 to 33.1)

This is about
“things we might actually use
instead of things we might use
when we are all grown up and
by then we’ll forget.”

Child participant in pilot testing - Norway

“You can study about treatments, but this book was all about how to treat yourself.”



Process evaluation and follow-up

One-year follow-up

Outcomes*	Follow-up	Children† Control	Children† Intervention‡	Children† Retention§	Parents† Control	Parents† Intervention‡	Parents† Retention§
Mean score	Short-term	**43%**	**63%**	127%	**52%**	**68%**	71%
		Difference: 20% higher (95% CI 17% to 23% higher)			Difference: **16%** higher (95% CI 13% to 19% higher)		
	One year	**53%**	**69%**		**53%**	**59%**	
		Difference: **17%** higher (95% CI 14% to 20% higher)			Difference: **7%** higher (95% CI 3% to 10% higher)		
Passing score	Short-term	**27** per 100	**69** per 100	116%	**38** per 100	**71** per 100	67%
		Difference: **50** more per 100 (95% CI 44 to 55 more)			Difference: **34** more per 100 (95% CI 26 to 41 more)		
	One year	**52** per 100	**80** per 100		**40** per 100	**47** per 100	
		Difference: **40** more per 100 (95% CI 30 to 48 more)			Difference: **10** more per 100 (95% CI 1 to 19 more)		
Mastery score	Short-term	**1** per 100	**19** per 100	155%	**6** per 100	**32** per 100	62%
		Difference: **18** more per 100 (95% CI 18 to 18 more)			Difference: **26** more per 100 (95% CI 15 to 39 more)		
	One year	**5** per 100	**30** per 100		**11** per 100	**20** per 100	
		Difference: **25** more per 100 (95% CI 23 to 27 more)			Difference: **10** more per 100 (95% CI 3 to 20 more)		

Effect of IHC primary school resources on parents after one year

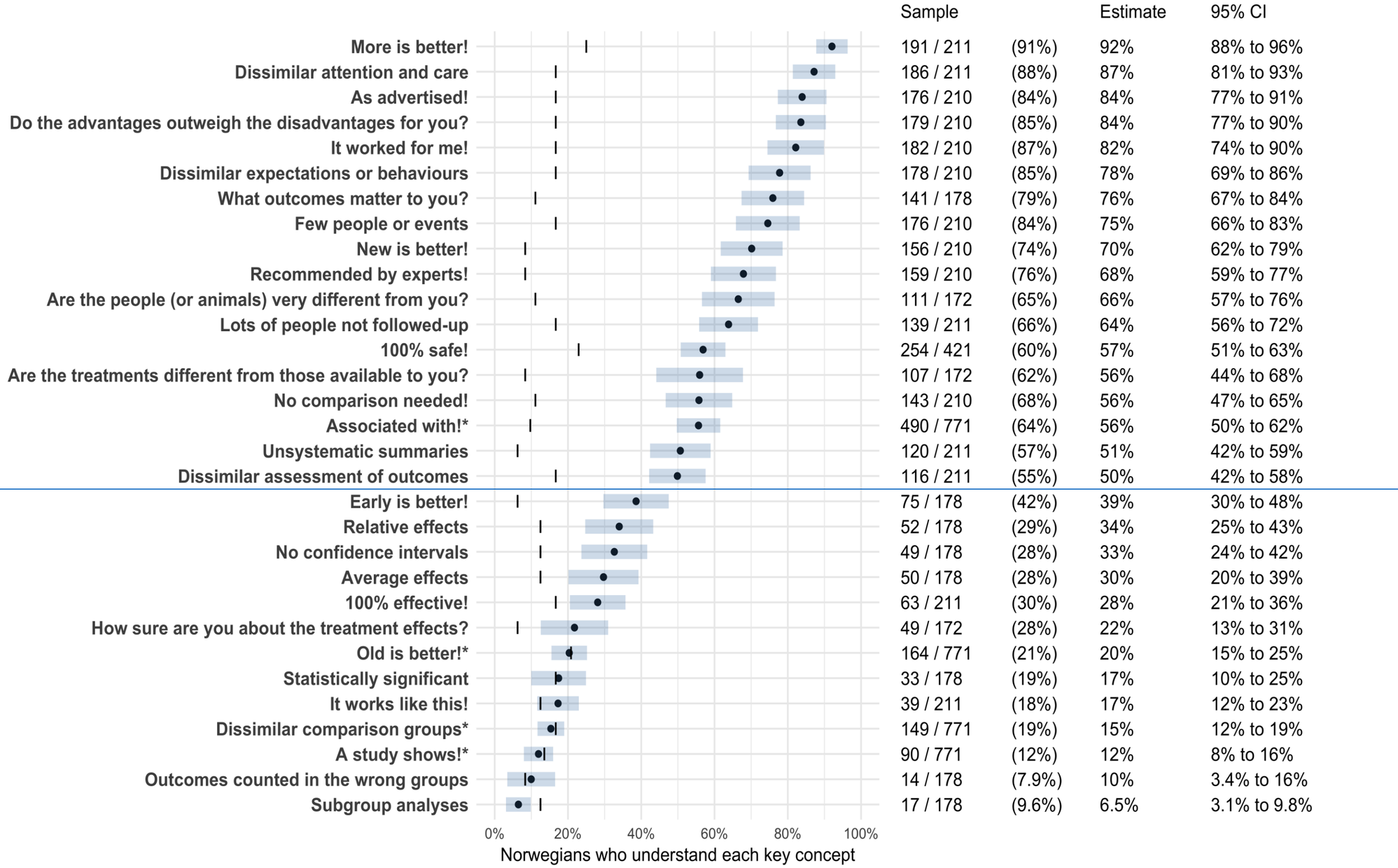
Parents' scores	Child in control school	Child in intervention school	Odds ratio	Adjusted difference
Mean score (%)	Mean score 53%	Mean score 58%		**Mean difference: 4%** (95% CI 1% to 8%) p=0.02
Passing score	37%	48%	1.6 (95% CI 1.1 to 2.4) p=0.01	**12% more parents** (95% CI 3% to 21%)
Mastery score	12%	18%	1.6 (95% CI 0.9 to 2.7) p=0.09	**5% more parents** (95% CI -1% to 14%)

Survey of a random sample of Norwegian adults – 2018

Preliminary results

13 out of 31 concepts were understood by less than half of the participants

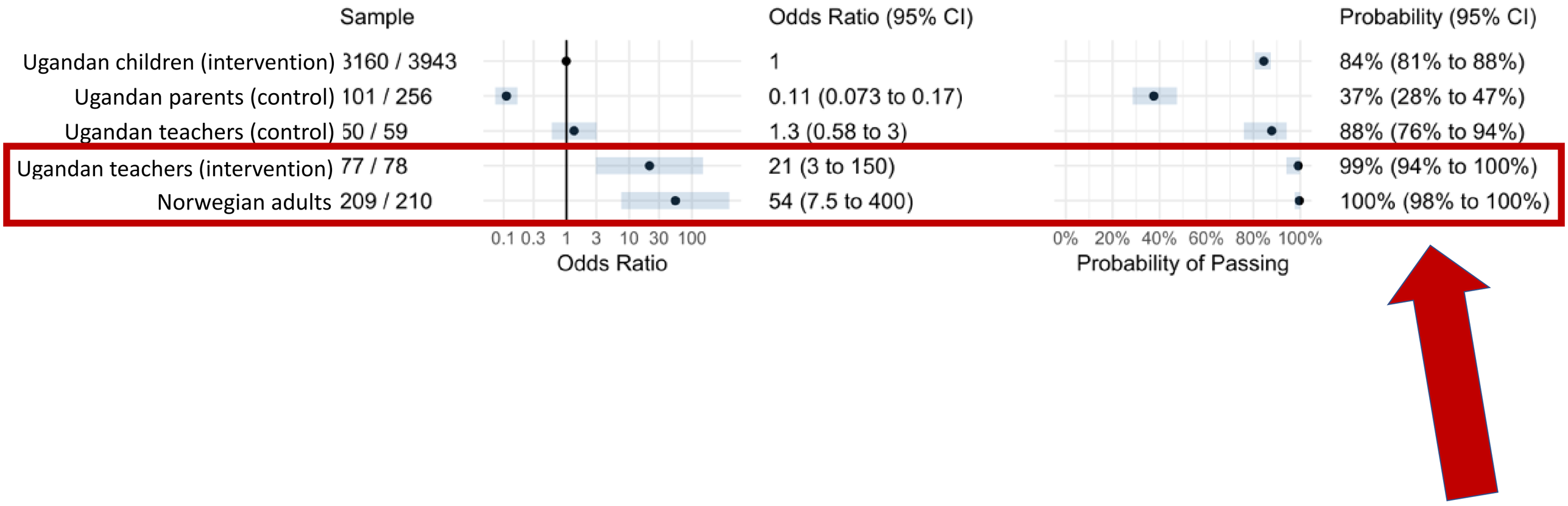
Astrid Dahlgren & Kjetil Olsen



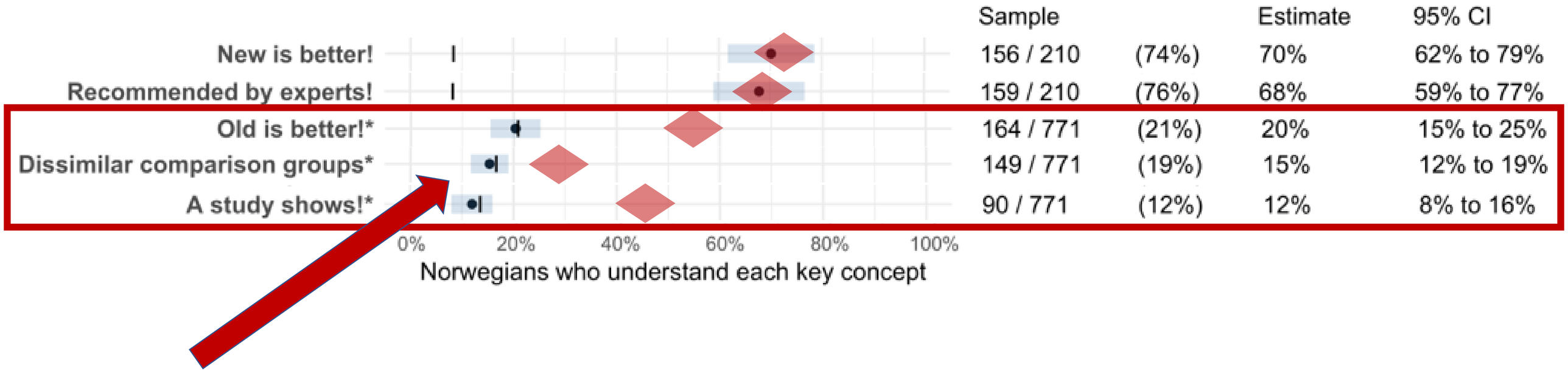
Vertical lines indicate expected results if participants guessed at random

*Confidence intervals have been Bonferroni-corrected.

Passing scores compared to Ugandan children one year after the intervention



Worse or no better than Ugandan children



Key messages

- It is possible to teach primary school children and adults to think critically about claims about the effects of treatments.
- Children are more likely to retain what they learn than adults. It is also more difficult to reach and engage adults in learning new concepts.
- After one year, compared to students in the control schools, students in the intervention schools were also more aware of treatment claims and more sceptical about them, and more likely to assess the trustworthiness of the last claim that they had heard correctly.
- Use of a user-centred design approach resulted in learning resources that children, teachers, and parents experienced as useful, easy to use, understandable, credible, desirable, and well-suited to them.
- How they experienced the resources played a critical role in determining their effectiveness.
- Children, teachers and parents found what they learned to be empowering.

Next steps

The IHC network

- Translation and contextualisation
- Design and evaluation of new learning resources
  - Lower secondary schools in East Africa
  - Primary schools in Norway
  - Interdisciplinary resources
- Integrating the Key Concepts into the curriculum rather than an add-on
  - Context analysis
  - Teaching the Key Concepts in intervals rather than a one-off intervention
- Digital learning resources instead of printed resources

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