**Cochrane Methods Symposium**
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# 'Summary of findings' Tables: how are they being evaluated?

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# Disclosure

- No financial conflict of interest
- Contributed to some of the studies discussed
- Member of the GRADE working group
- Cochrane reviewer

# GRADE tables

- GRADE tables summarize quality of evidence and main findings by outcomes

- GRADE tables:
  - Summary of Findings (SoF)
  - Evidence Profiles (EP)

## Probiotics as an adjunct to antibiotics for the prevention of pediatric antibiotic-associated diarrhea

**Patient or population:** children given antibiotics

**Settings:** inpatients and outpatient
**Intervention:** probiotics

**Comparison:** no probiotics

| Outcomes<br><br>No of Participants (studies) | Relative effects (95% CI) | Anticipated absolute effects* (95% CI)<br>Without probiotics | With probiotics | Difference | Quality of the evidence (GRADE) | What happens |
|---|---|---|---|---|---|---|
| **Incidence of diarrhea: Probiotic dose 5 billion CFU/day**<br>Follow-up: 10 days to 3 months | | **Children < 5 years** | | | | |
| Children <5 years<br>1474 (7 studies) | **RR 0.4**[1]<br>(0.29 to 0.55) | **22.3%**[1] | **8.9%**<br>(6.5 to 12.2) | **13.4% fewer children**[1]<br>(10.1 to 15.8 fewer) | ⊕⊕⊕⊖<br>**moderate**[2]<br>Due to risk of bias | Probably decreases the incidence of diarrhea |
| | | **Children > 5 years** | | | | |
| Children >5 years<br>624 (4 studies) | **RR 0.8**[1]<br>(0.53 to 1.21) | **11.2%**[1] | **9%**<br>(5.9 to 13.6) | **2.2% fewer children**[1]<br>(5.3 fewer to 2.4 more) | ⊕⊕⊖⊖<br>**low**[2, 3]<br>Due to risk of bias and imprecision | May decrease the incidence of diarrhea |
| **Adverse events**[4]<br>Follow-up: 10 to 44 days<br><br>1575<br>(11 studies) | - | **1.8%**[1] | **2.3%**<br>(0.8 to 3.8) | **0.5% more adverse events**[5]<br>(1 fewer to 2 more) | ⊕⊕⊖⊖<br>**low**[6, 7]<br>Due to risk of bias and inconsistency | There may be little or no difference in adverse events |

# MECIR standards

- It is ‘highly desirable’ to include a Summary of Findings (SoF) in a Cochrane systematic review to present the statistical results and the quality of evidence for the most important outcomes.

ELSEVIER

Journal of Clinical Epidemiology 63 (2010) 607–619

Journal of Clinical Epidemiology

ORIGINAL ARTICLES

# User testing and stakeholder feedback contributed to the development of understandable and useful Summary of Findings tables for Cochrane reviews

Sarah E. Rosenbaum[a,*], Claire Glenton[b], Hilde Kari Nylund[a], Andrew D. Oxman[a]

# Using alternative statistical formats for presenting risks and risk reductions (Review)

Akl EA, Oxman AD, Herrin J, Vist GE, Terrenato I, Sperati F, Costiniuk C, Blank D, Schünemann H

ELSEVIER

Journal of Clinical Epidemiology 63 (2010) 620–626

Journal of Clinical Epidemiology

# Summary-of-findings tables in Cochrane reviews improved understanding and rapid retrieval of key information

Sarah E. Rosenbaum[a,*], Claire Glenton[b], Andrew D. Oxman[a]

ELSEVIER

Journal of Clinical Epidemiology ■ (2012) ■

Journal of Clinical Epidemiology

ORIGINAL ARTICLE

# Formatting modifications in GRADE evidence profiles improved guideline panelists comprehension and accessibility to information. A randomized trial

Per Olav Vandvik[a,b,*], Nancy Santesso[c], Elie A. Akl[c,d], John You[c,e], Sohail Mulla[c], Frederick A. Spencer[c,e], Bradley C. Johnston[c], Jan Brozek[c], Julia Kreis[f,g], Linn Brandt[b], Qi Zhou[c], Holger S. Schunemann[c,e], Gordon Guyatt[c,e]

Carrasco-Labra *et al. Trials* (2015) 16:164
DOI 10.1186/s13063-015-0649-6

TRIALS

STUDY PROTOCOL Open Access

# Comparison between the standard and a new alternative format of the Summary-of-Findings tables in Cochrane review users: study protocol for a randomized controlled trial

Alonso Carrasco-Labra[1,2], Romina Brignardello-Petersen[3,4], Nancy Santesso[1], Ignacio Neumann[5], Reem A Mustafa[1,6], Lawrence Mbuagbaw[1], Itziar Etxeandia Ikobaltzeta[7], Catherine De Stio[8], Lauren J McCullagh[8], Pablo Alonso-Coello[1,9], Joerg J Meerpohl[10], Per Olav Vandvik[11], Jan L Brozek[1,12], Elie A Akl[1,13], Patrick Bossuyt[14], Rachel Churchill[15], Claire Glenton[16,17], Sarah Rosenbaum[16,17], Peter Tugwell[18], Vivian Welch[19], Gordon Guyatt[1,12] and Holger Schünemann[1,12*]

# MIF SoF trial

- Two arm, parallel, non-inferiority RCT; conducted online
- Health professionals, clinical practice guidelines developers, and researchers (N=290)
- Compared current format to alternative format
- Assessed: understanding, accessibility, satisfation, and preference

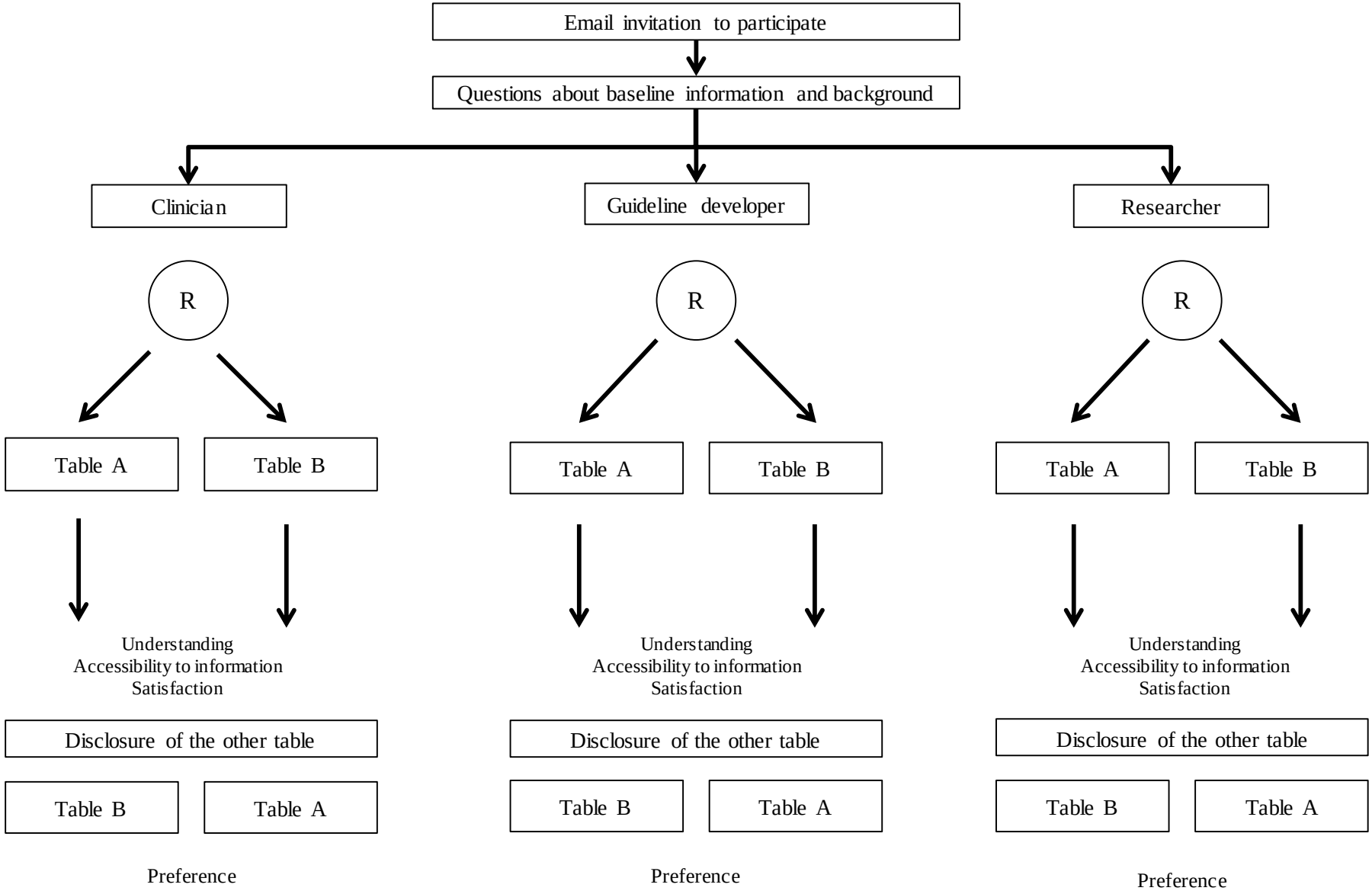
Email invitation to participate
Questions about baseline information and background
Clinician
Guideline developer
Researcher
R
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Table A
Table B
Table A
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Table B
Understanding
Accessibility to information
Satisfaction
Understanding
Accessibility to information
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Disclosure of the other table
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Preference
Preference
Preference

***Table 2.*** *Alternative SoF table formats (Table A)*

**Probiotics as an adjunct to antibiotics for the prevention of pediatric antibiotic-associated diarrhea in children**

**Patient or population:** children given antibiotics
**Settings:** inpatients and outpatient
**Intervention:** probiotics
**Comparison:** no probiotics

| Outcomes<br><br>No of Participants (studies) | Relative effects (95% CI) | Anticipated absolute effects* (95% CI)<br>Without probiotics | <br>With probiotics | <br>Difference | Quality of the evidence (GRADE) | What happens |
|---|---|---|---|---|---|---|
| **Incidence of Diarrhea: Probiotic dose 5 billion CFU/day**<br>Follow-up: 10 days to 3 months<br><br>Children <5 years<br>1474 (7 studies) | **RR 0.4**[1]<br>(0.29 to 0.55) | **Children < 5 years**<br>**22.3%**[1] | <br>**8.9%**<br>(6.5 to 12.2) | <br>**13.4% fewer children**[1]<br>(10.1 to 15.8 fewer) | ⊕⊕⊕⊖<br>**moderate**[2]<br>Due to risk of bias | Probably decreases the incidence of diarrhea |
| Children >5 years<br>624 (4 studies) | **RR 0.8**[1]<br>(0.53 to 1.21) | **Children > 5 years**<br>**11.2%**[1] | <br>**9%**<br>(5.9 to 13.6) | <br>**2.2% fewer children**[1]<br>(5.3 fewer to 2.4 more) | ⊕⊕⊖⊖<br>**low**[2, 3]<br>Due to risk of bias and imprecision | May decrease the incidence of diarrhea |
| **Adverse events**[4]<br>Follow-up: 10 to 44 days<br><br>1575<br>(11 studies) | - | **1.8%**[1] | **2.3%**<br>(0.8 to 3.8) | **0.5% more adverse events**[5]<br>(1 fewer to 2 more) | ⊕⊕⊖⊖<br>**low**[6, 7]<br>Due to risk of bias and inconsistency | There may be little or no difference in adverse events |
| **Duration of diarrhea**<br>Follow-up: 10 days to 3 months<br><br>897<br>(5 studies) | - | The mean duration of diarrhea without probiotics was **4 days** | - | **0.6 fewer days**<br>(1.18 to 0.02 fewer days) | ⊕⊕⊖⊖<br>**low**[8, 9]<br>Due to imprecision and inconsistency | May decrease the duration of diarrhea |
| **Stools per day**<br>Follow-up: 10 days to 3 months<br><br>425<br>(4 studies) | - | The mean stools per day without probiotics was **2.5 stools per day** | - | **0.3 fewer stools per day**<br>(0.6 to 0 fewer) | ⊕⊕⊖⊖<br>**low**[10, 11]<br>Due to imprecision and inconsistency | There may be little or no difference in stools per day |

*The basis for the **risk in the control group** (e.g. the median control group risk across studies) is provided in footnotes. The **risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI). **CI:** Confidence interval; **RR:** risk ratio;

**EXPLANATIONS**
[1] Control group risk estimates come from pooled estimates of control groups. Relative effect based on available case analysis
[2] High risk of bias due to high loss to follow-up.
[3] Imprecision due to few events and confidence intervals include appreciable benefit or harm.
[4] Side effects: rash, nausea, flatulence, vomiting, increased phlegm, chest pain, constipation, taste disturbance, and low appetite
[5] Risks were calculated from pooled risk differences.
[6] High risk of bias. Only 11 of 16 trials reported on adverse events, suggesting a selective reporting bias
[7] Serious inconsistency. Numerous probiotic agents and doses were evaluated amongst a relatively small number of trials, limiting our ability to draw conclusions on the safety of the many probiotics agents and doses administered
[8] Serious unexplained inconsistency (large heterogeneity $I^2$=79%, P value [P = 0.04], point estimates and confidence intervals vary considerably)
[9] Serious imprecision. The upper bound of 0.02 fewer days of diarrhea is not considered patient important
[10] Serious unexplained inconsistency (large heterogeneity $I^2$=78%, P value [P = 0.05], point estimates and confidence intervals vary considerably)
[11] Serious imprecision. The 95% confidence interval includes no effect and lower bound of 0.60 stools per day is of questionable patient importance

***Table 3.*** *Current SoF table formats (Table B)*

**Probiotics as an adjunct to antibiotics for the prevention of pediatric antibiotic-associated diarrhea in children**

**Patient or population:** children given antibiotics
**Settings:** inpatients and outpatient
**Intervention:** probiotics
**Comparison:** no probiotics

| Outcomes | Illustrative comparative risks* (95% CI)<br>Assumed risk<br>No probiotics | <br>Corresponding risk<br>Probiotics | Relative effect (95% CI) | No of participants (studies) | Quality of the evidence (GRADE) | Comments |
|---|---|---|---|---|---|---|
| **Incidence of Diarrhea: Probiotic dose (equal to/greater than) 5 billion CFU/day**<br>Follow-up: 10 days to 3 months | **Children < 5 years**<br>**223 per 1000**[1] | **89 per 1000**<br>(65 to 122) | **RR 0.4**[1]<br>(0.29 to 0.55) | 1474<br>(7 studies) | ⊕⊕⊕⊖<br>**moderate**[2] | |
| | **Children > 5 years**<br>**112 per 1000**[1] | **90 per 1000**<br>(59 to 136) | **RR 0.8**[1]<br>(0.53 to 1.21) | 624<br>(4 studies) | ⊕⊕⊖⊖<br>**low**[2, 3] | |
| **Adverse events**<br>Follow-up: 10 to 44 days | **18 per 1000**[1] | **23 per 1000**<br>(8 to 38) | Not estimable[4] | 1575<br>(11 studies) | ⊕⊕⊖⊖<br>**low**[5, 6] | Side effects: rash, nausea, gas, flatulence, vomiting, increased phlegm, chest pain, constipation, taste disturbance, and low appetite |
| **Duration of diarrhea**<br>Follow-up: 10 days to 3 months | The mean duration of diarrhea in control groups was **4 days** | **0.6 fewer days**<br>(1.18 to 0.02 fewer days) | | 897<br>(5 studies) | ⊕⊕⊖⊖<br>**low**[7, 8] | |
| **Stools per day**<br>Follow-up: 10 days to 3 months | The mean stools per day in control groups was **2.5 stools per day** | **0.3 fewer stools per day**<br>(0.6 to 0 fewer) | | 425<br>(4 studies) | ⊕⊕⊖⊖<br>**low**[9, 10] | |

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI). **CI:** Confidence interval; **RR:** risk ratio;

**GRADE Working Group grades of evidence**
**High quality:** We are very confident that the true effect lies close to that of the estimate of the effect
**Moderate quality:** We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
**Low quality:** confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
**Very low quality:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

**FOOTNOTES**
[1] Control group risk estimates come from pooled estimates of control groups. Relative effect based on available case analysis
[2] High risk of bias due to high loss to follow-up
[3] Imprecision due to few events and confidence intervals include appreciable benefit or harm.
[4] Risks were calculated from pooled risk differences.
[5] High risk of bias. Only 11 of 16 trials reported on adverse events, suggesting a selective reporting bias
[6] Serious inconsistency. Numerous probiotic agents and doses were evaluated amongst a relatively small number of trials, limiting our ability to draw conclusions on the safety of the many probiotics agents and doses administered
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[9] Serious unexplained inconsistency (large heterogeneity $I^2$=78%, P value [P = 0.05], point estimates and confidence intervals vary considerably)
[10] Serious imprecision. The 95% confidence interval includes no effect and lower bound of 0.60 stools per day is of questionable patient importance

# Outcome: Understanding

***Table 5.*** *Percentage of participants that answered correctly understanding questions*

| Concept | Question asked | Alternative formats (N=122) | Current formats (N=168) | Difference | P value |
|---|---|---|---|---|---|
| Ability to interpret footnotes | For the outcome adverse events, why is the quality of evidence rated as low? | 89% | 82% | 7% | 0.18 |
| Ability to interpret risk | Will fewer children <5 years old have diarrhea if they take the probiotics? | 96% | 96% | 0% | 0.99 |
| Ability to determine risk difference | How many fewer children <5 years will have diarrhea if they have probiotics than if they do not? | 98% | 35% | 63% | <0.001 |
| Understanding of quality of evidence and treatment effect | Which of the following statements best represents the results informing the outcome adverse events? | 88% | 26% | 62% | <0.001 |
| Understanding of quality of evidence | In children <5 years old, what result is most certain? | 97% | 90% | 7% | 0.06 |
| Ability to relate № of participant/studies and outcomes | How many participants and studies are informing the outcome adverse events? | 99% | 99% | 0% | 1.00 |
| Ability to quantify risk | In children >5 years old, how many fewer or more children will have diarrhea if they took probiotics as an adjunct to antibiotics compared to those who did not take probiotics? | 94% | 88% | 6% | 0.06 |

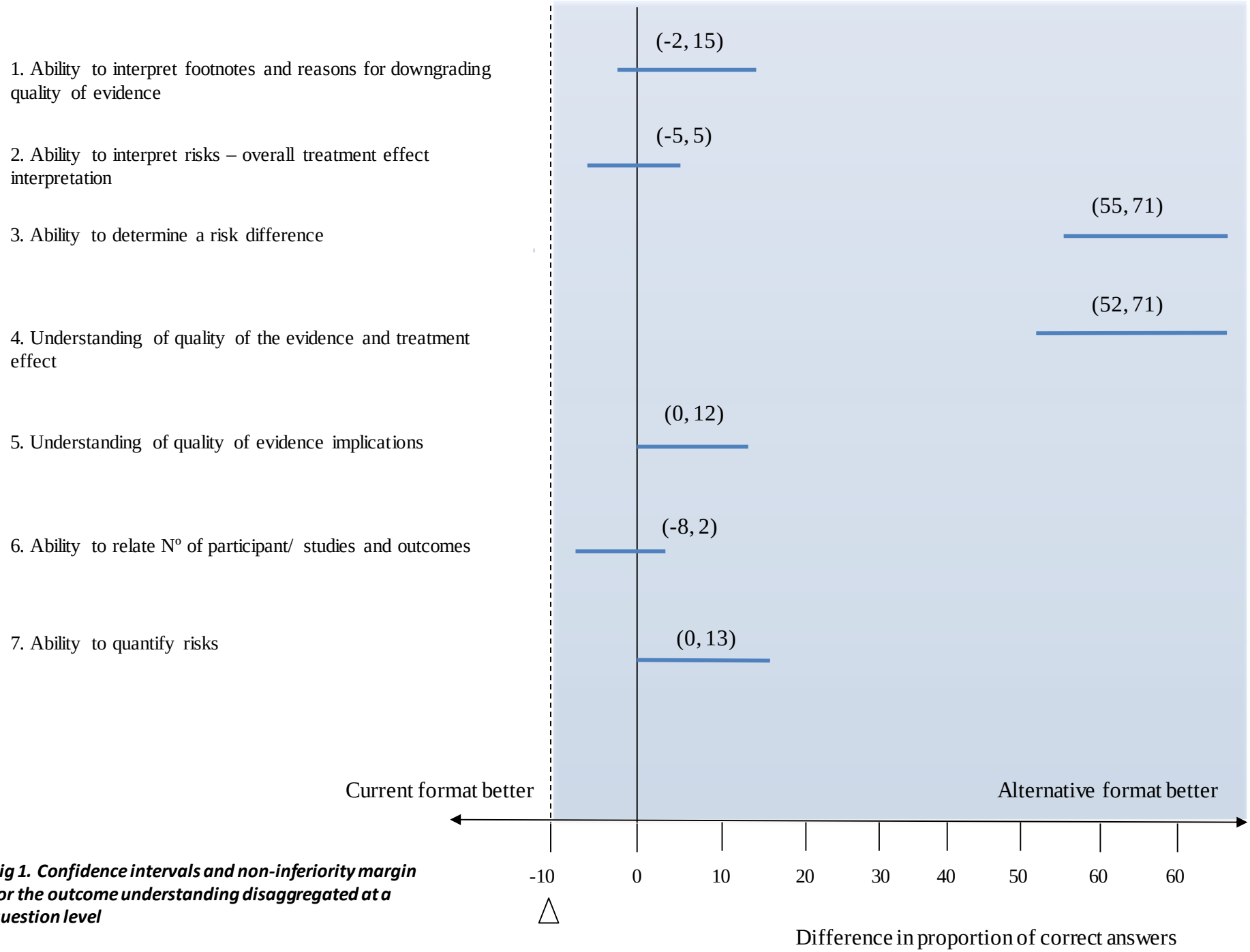


***Fig 1. Confidence intervals and non-inferiority margin for the outcome understanding disaggregated at a question level***

# Outcome: Satisfaction

***Table 7.*** *Satisfaction with Alternative vs Current SoF table formats (analysis at item level)*

| Question asked | Affirmative answers (n,%) | Negative answers (n,%) |
|---|---|---|
| Do you think it is important to have a description of the definition for each category for the quality of the evidence (GRADE Working Group grades of evidence)? | 203 (72) C | 81 (28) |
| Do you think the "number of participants/studies" column can be eliminated and the information can be accommodated in the "outcome" column? | 171 (60) A | 113 (40) |
| The "comment" column is missing in table A, and instead the comments are reported in the footnotes, Do you think this "comment" column is necessary? | 106 (37) | 178 (63) A |
| In table A, we have included the reasons for downgrading in the "quality of the evidence (GRADE)" column. While Table B does not include this feature. Do you think table A format is better? | 243 (86) A | 41 (14) |
| In table A, we have included a column called "what happens" column. The purpose of this column is to assist users on the interpretation of both review results and quality of the evidence. Do you think this column should be included as an available feature in future versions of SoF tables? | 251 (88) A | 33 (12) |
| In Table A, we have included an extra column to display the difference between the two groups (and its 95% confidence interval). Do you think that this option of displaying the difference and its 95% confidence interval between the intervention and control group should be available in future SoF tables? | 250 (88) A | 34 (12) |

C: current formats; A: Alternative formats

# Additional findings

- Alternative formats were overall more accessible to users than the current formats
- Systematic review users preferred alternative formats of SoF tables to current ones

# Challenges

- Methodological (multiple testing, online research)
- Evaluating different presentation elements at the same time
- Are the outcomes good enough?
- Presentation formats are evolving (e.g., interactive information, new platforms)

# Acknowledgments


- Cochrane Methods Innovation Fund and McMaster University funded this study

- Alonso Carrasco-Labra for sharing slides and leading the MIF SoF trial

Thank you!

Questions or comments?

*Table 1. Comparison between items included in the current and alternative SoF tables formats*

| | **Current formats (Table B)** | **Alternative formats (Table A)** |
|---|---|---|
| **1** | Inclusion of the Nº of participants and studies column | Exclusion of the Nº of participants and studies column. Information presented in the outcomes column |
| **2** | Quality of evidence presented with symbols and labeled as High, moderate, low, or very low. Reasons for downgrading presented in the footnotes | Quality of evidence presented with main reasons for downgrading in the same column (e.g. MODERATE due to imprecision) |
| **3** | "Footnotes" label | "Explanations" label |
| **4** | Baseline risk and corresponding risk expressed as natural frequencies | Baseline risk and corresponding risk expressed as percentages |
| **5** | No column specific column presenting absolute risk reduction (risk difference) or mean difference | Inclusion of a column presenting absolute risk reduction (risk difference) expressed as percentage for benefit and harm or mean difference |
| **6** | Comments column included | Comments column deleted |
| **7** | No "what happens" column* | "What happens" column included* |
| **8** | Description of the GRADE Working Group grades of evidence definitions below the table | No description of the GRADE Working Group grades of evidence definitions |