Title registration for a systematic review: Systematic review of methods of reducing risk of bias in the evaluation of knowledge translation strategies for evidence-informed health policymaking

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☐	Crime and Justice
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☐	Methods
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☐	Business and Management
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☒	No
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Title of the review

Systematic review of methods of reducing risk of bias in the evaluation of knowledge translation strategies on evidence-informed health policymaking

Background

Public policy affects a large percentage of the population and mistakes in policymaking often lead to increased waste of public resources. To make better decisions, policymakers must be well-informed about the latest evidence that relates to their policies (Oxman 2009). Large number of Knowledge Translation (KT) strategies have been applied to apprise health policymakers about recent evidence (Sarkies 2017). However, review studies have reported on the low quality of study methodologies and poor reporting of KT primary studies (Mitton 2007; Scott 2012; LaRocca 2012; Sarkies2017).

The present review aims to determine which methodological techniques have been applied during KT interventional studies to reduce the risk of bias. Accordingly, the portion of the estimated effectiveness of KT strategies that can be attributable to the quality of the primary studies will be explored through assessment of the relation between the risk of bias and the observed heterogeneity in the effectiveness of the studies.

Policy relevance

Policy makers are responsible for making the choice among alternatives. Their choices are more likely to improve outcomes in a cost-efficient manner when they are based on the best available evidence. In doing so, effective strategies for KT should be applied to inform policy makers about the evidence surrounding a specific policy or decision (Oxman 2009; Sarkies2017; Gavine 2018). However, the effectiveness of KT strategies depends on the context, such as the environment in which the policy is made, the experience of the policymaker, the components of the intervention and the structure of the organizations implementing the interventions (LaRocca 2012; de Goor 2017; WHO 2018).

The methodological quality of KT interventional studies can contribute to their effectiveness as well (Scott 2012; Yost 2015). While the implication of these two sources of variation are completely different, their effects on the effectiveness of a KT strategy cannot be easily distinguished. Whereas context factors can act as modifiers of the effectiveness of KT strategies and should be considered in the implementation phase, poor methodological quality can be misleading. This assortment makes it difficult to determine whether or not a specific strategy would work under specific conditions (Mitton 2007; Boaz 2011).

The present review is designed to estimate the effect of methodological quality on KT strategies at the policy level to allow better estimation of the effectiveness of such strategies.

The Rob 2 (Higgins 2016) and ROBINS-I (Sterne 2016) will be used to explore the level of risk of bias in randomized and non-randomized studies, respectively. The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach will be used to assess on the quality of evidence for each estimate (Schünemann 2013).
We will provide an array of methodological recommendations about how to evaluate KT strategies at the policy level in health related-issues.

Objectives

The main objective of this review is assessment of the contribution (outcome) of methodological techniques (intervention) to estimated effectiveness of KT strategies in primary studies (population) in compare to doing nothing (comparison). It will also estimate the effect of risk of bias (exposure) on the observed heterogeneity (outcome) in such studies (population). Finally, we are going to describe and map KT interventional studies on type of intervention, effect size and different methodological techniques to reduce the risk of bias in interventional KT studies. The main audiences of this review are researchers who want to conduct primary interventional studies that aim to evaluate effectiveness of KT strategies for promoting evidence informed policy in health related issues. In addition, the output of this review brings advantages for policy makers when they want prioritize KT strategies. The key questions in this review are:

- What are the main methodological techniques that have been applied to reduce the risk of bias in KT studies in health policy? How were these techniques were applied?
- How much the observed effectiveness of KT strategies in health policy can be attributable to methodological techniques?
- How much the level of the risk of bias contributes to the observed heterogeneity in the effectiveness of KT strategies over primary studies?

Existing reviews

Table 1

Name of the review	Type of included studies	What they found out	What we will add to
LavisJ N (Milbank Q 2003); *How Can Research Organizations More Effectively Transfer Research Knowledge to Decision Makers?*	A mailed survey of 265 directors of applied research organizations in Canada about their practices in transferring research knowledge to decision makers.	The components of a KTE strategy were described.	Methodological techniques/considerations for any type of each component when they are subjects of intervention in an interventional study.
Mitton C (Milbank Q 2007); *Knowledge transfer and exchange:*	Databases for English-language abstracts from 1997 to 2005, 18 studies that evaluated KTE	Need for the greater application of formal and rigorous research designs to assess and	The characteristics of a formal and rigorous research designs.

review and synthesis of the literature.	approaches were retrieved.	evaluate the success of KTE strategies in specific contexts.	
Annette Boaz (BMC2011); *Effective implementation of research into practice: an overview of systematic reviews of the health literature*	13 systematic reviews containing 313 primary studies were found in Medline and the Cochrane Database of Reviews 1998-2009.	Very few systematic reviews looked exclusively and explicitly at implementing research findings into practice.	The effect of the risk of bias on the results of primary studies would help upcoming reviews in this field.
Gavine A (PALGRAVE COMMUNICATIONS 2018): *Maximising the availability and use of high-quality evidence for policymaking: collaborative, targeted and efficient evidence reviews*	a pragmatic approach to fast evidence reviews for policymaking that utilised components of rapid reviews, evidence briefs, reviews of reviews and realist rapid reviews.	A framework for the efficient evidence review for policy makers was developed in this review.	The introduced framework is a kind of KT strategy that should be evaluated in primary studies. Our review is going to provide recommendations for primary studies in this setting.
Sarkies MN (Implementation Science2017**):** *The effectiveness of research implementation strategies for promoting evidence-informed policy and management decisions in healthcare: a systematic review*	Studies aimed at facilitating evidence-informed decision-making by healthcare policy-makers and managers.	The design of future implementation strategies should be based on the inter-relating factors perceived to be associated with effective strategies.	The review recommended exploring factors which associated with strategies effectiveness. It is what our review is going to find out.

Intervention

Any methodological technique including activities undertaken by researchers to reduce the risk of bias will be considered as the intervention. Examples of methodological techniques includes random sequence, blinding, using standard reporting tools, concealment, analysis of missing data, outcome measurement, measuring compliance, etc. These techniques are based on the revised Cochrane risk-of-bias tool for randomized trials (RoB 2) (Higgins 2016) and the tool for assessing risk of bias in non-randomised studies of interventions (ROBINS-I)(Sterne 2016). Applying these tools will be based on the GRADE guidelines (Schünemann 2013, 2018). According to mentioned tools, a specific bias will be classified as “low risk” if its risk is as low as it could not change the magnitude or distort the direction of study ‘results. If it is not clear whether that bias effected the magnitude or the direction of results, it will be considered as “unclear” and finally, a “high risk” bias is a bias that may significantly change

the magnitude/direction of study results. Supporting information, supplemented with reviewer comments, with a quote extracted from the study report and a justification for decisions (high, low or unclear) for each bias will be provided (see Table 2). Two researchers independently will apply the tools to each study. Differences in decisions will be resolved by discussion to reach consensus. Other study characteristics such as sample size and reliability of data gathering tools will be retrieved and recorded for more discussion.

Table 2: Template for the results of the risk of bias assessment in RCTs&nRCTs

	Type of bias	Study #1	Study #2	Study #3
RCTs	Bias arising from the randomization process	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision
RCTs &nRCTs	Bias due to deviations from intended interventions	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision
	Bias due to missing outcome data	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision
	Bias in measurement of the outcome	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision
	Bias in seLection of the reported result	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision
nRCTs	Bias due to confounding	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision
	Bias in selection of participants	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision

	Bias in classification of intervention	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision	H□ L□ U□ • Supporting information • Justification for decision

H:High; L:Low; U: Unclear

Population

Studies aiming to evaluate KT strategies, with at least one outcome of enhancing research uptake in the context of health policy, are considered as the eligible studies. A KT strategy can be an episode of giving interventional material(s) to individuals, audit & feedback, reminder, a modification in structure and services, etc in order to make a desired change in at least one KT outcome in health policy. We considered policy makers as individuals, groups or organizations who make health decisions in central or local government, ministry of health, multinational companies, local businesses, hospitals, health insurance organizations, medical universities, and medical council, to improve population health outcomes. Studies investigating clinicians making decisions about individual clients will not be included, unless these studies also included healthcare policymakers or managers.

For studies with multiple objectives we will identify the key questions for inclusion.

Outcomes

- Description of methodological techniques applied to reduce ROB in KT intervention studies;
- Whether and how the ROB might limit the validity of KT intervention study results;
- The contribution of ROB when estimating the effects of KT interventions;
    - The variance among different study results that could be explained by ROB (based on the Cochrane Effective Practice and Organization of Care Group list of categorized intervention; EPC A (EPOC 2002);
    - Comparison of reported effects over ROB categories (unclear, low, high);
- Determination of whether and how the heterogeneity of the effectiveness of KT interventions can be attributable quantitatively and qualitatively to ROB.

Study designs

- Randomized trials: experimental studies in which participants are allocated to different study group using random methods. It includes randomized controlled trials, cluster randomized trials, cross over trials and pragmatic trials. In cross over studies, the first phase will be considered (EPOC 2017).
- Non-randomised trial: an experimental design in which participants are allocated to study groups using methods that are not random. It includes: non- randomized control

trials (NRT), controlled before-after (CBA) studies and interrupted time series (ITS) and Repeated measures studies (EPOC 2017).

- The targeted study design is interventional studies and study design inclusion criteria are common across all review' objectives.

References

Boaz A, Baeza J, Fraser A. Effective implementation of research into practice: an overview of systematic reviews of the health literature. BMC Research Notes. 2011;4(1):212.doi: 10.1186/1756-0500-4-212

Cochrane Effective Practice and Organisation of Care (EPOC). What study designs can be considered for inclusion in an EPOC review and what should they be called? EPOC Resources for review authors, 2017. Available at: http://epoc.cochrane.org/resources/epoc-resources-review-authors

Gavine A, Mac Gillivray S, Ross-Davie M, Campbell K, White L & Renfrew M; Maximising the availability and use of high-quality evidence for policymaking: collaborative, targeted and efficient evidence reviews; Palgrave Communications volume 4, Article number: 5 (2018). Available at: https://www.nature.com/articles/s41599-017-0054-8

Higgins J T, Sterne JAC, Savović J, Page MJ, Hróbjartsson A, Boutron I, Reeves B, Eldridge S. A revised tool for assessing risk of bias in randomized trials In: Chandler J, McKenzie J, Boutron I, Welch V (editors). Cochrane Methods. Cochrane Database of Systematic Reviews 2016, Issue 10 (Suppl 1). dx.doi.org/10.1002/14651858.CD201601.

Goor de I, Hämäläinen RM, Syed A, et al. Determinants of evidence use in public health policy making: Results from a study across six EU countries. Health Policy. 2017 Mar; 121(3): 273–281. doi: 10.1016/j.healthpol.2017.01.003

LaRocca R, Yost J, Dobbins M, Ciliska D and Butt M; the effectiveness of knowledge translation strategies used in public health: a systematic review; BMC Public Health201212:751; https://doi.org/10.1186/1471-2458-12-751

Lavis JN, Robertson D, Woodside JM, McLeod CB, Abelson J. How can research organizations more effectively transfer research knowledge to decision makers? The Milbank Quarterly. 2003;81(2):221-48.doi: [10.1111/1468-0009.t01-1-00052]

Mitton C, Adair CE, McKenzie E, Patten SB, Perry BW. Knowledge transfer and exchange: review and synthesis of the literature. Milbank Quarterly. 2007;85(4):729-68.doi: [10.1111/j.1468-0009.2007.00506.x]

Oxman D, John N L, Lewin S and Fretheim; SUPPORT Tools for evidence-informed health Policymaking (STP)I: What is evidence-informed policymaking? Health Research Policy and Systems 2009, 7(Suppl 1):S1 doi:10.1186/1478-4505-7-S1-S1

Scott SD, Lauren Albrecht, Kathy O'Leary; Systematic review of knowledge translation strategies in the allied health professions; Implementation Science20127:70. https://doi.org/10.1186/1748-5908-7-70

Schünemann H, Brożek J, Guyatt G, Oxman A, editors. GRADE handbook for grading quality of evidence and strength of recommendations.Updated October 2013. The GRADE Working Group, 2013. Available fromguidelinedevelopment.org/handbook.

Schünemann H, Cuello C, AKI A.E, et al. GRADE guidelines: 18. How ROBINS-I and other tools to assess risk of bias in nonrandomized studies should be used to rate the certainty of a body of evidence. Journal of Clinical Epidemiology; Available online 9 February 2018. doi: 10.1016/j.jclinepi.2018.01.012.

Sarkies MN, Bowles KA, Skinner EH, Haas R, Lane H and Haines TP; The effectiveness of research implementation strategies for promoting evidence-informed policy and management decisions in healthcare: a systematic review; Implementation Science201712:132. https://doi.org/10.1186/s13012-017-0662-0

Sterne J AC, Hernán MA, Reeves BC, . ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions; BMJ 2016;355:i4919. http://dx.doi.org/10.1136/bmj.i4919

Tufanaru C, Munn Z, Aromataris E, Campbell J, Hopp L. Chapter 3: Systematic reviews of effectiveness. In: Aromataris E, Munn Z (Editors). Joanna Briggs Institute Reviewer's Manual. The JoannaBriggs Institute, 2017. Available from https://reviewersmanual.joannabriggs.org/

World Health Organization, Langlois, Étienne V., Daniels, Karen &Akl, Elie A. (2018). Evidence synthesis for health policy and systems: a methods guide. World Health Organization.http://www.who.int/iris/handle/10665/275367. License: CC BY-NC-SA 3.0 IGO

Yost J, Ganann R, Thompson D. The effectiveness of knowledge translation interventions for promoting evidence-informed decision-making among nurses in tertiary care: a systematic review and meta-analysis. Implement Sci. 2015; 10: 98. Published online 2015 Jul 14. doi: 10.1186/s13012-015-0286-1

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Roles and responsibilities

AA has expertise in information retrieval and statistical analysis for review studies. LD is expert in health policy. RM and BY have expertise in the KT field, both content and method. SA is the expert of methods of conducting reviews.

- Content: AA, LD, RM, BY
- Systematic review methods: AA, SA
- Statistical analysis: AA, SA
- Information retrieval: AA, BY

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Potential conflicts of interest

None

Preliminary timeframe

Task Name	Start	Finish	Duration(working days)
Finalize the title registration	Sat 23/Feb/19	Fri 08/Mar/19	13
Completion of the study protocol	Sat 09/Mar/19	Tue 30/Apr/19	52
Searching and study selection	Wed 01/May/19	Fri 07/Jun/19	37
Quality assessment	Sat 08/Jun/19	Thu 15/Aug/19	68
Data extraction	Fri 16/Aug/19	Mon 07/Oct/19	52
Data analysis and synthesis	Tue 08/Oct/19	Thu 31/Oct/19	23

- Date you plan to submit a draft protocol: 8 March 2019
- Date you plan to submit a draft review: 31 October 2019