체계적문헌고찰 핵심방법론과 인공지능의 이용

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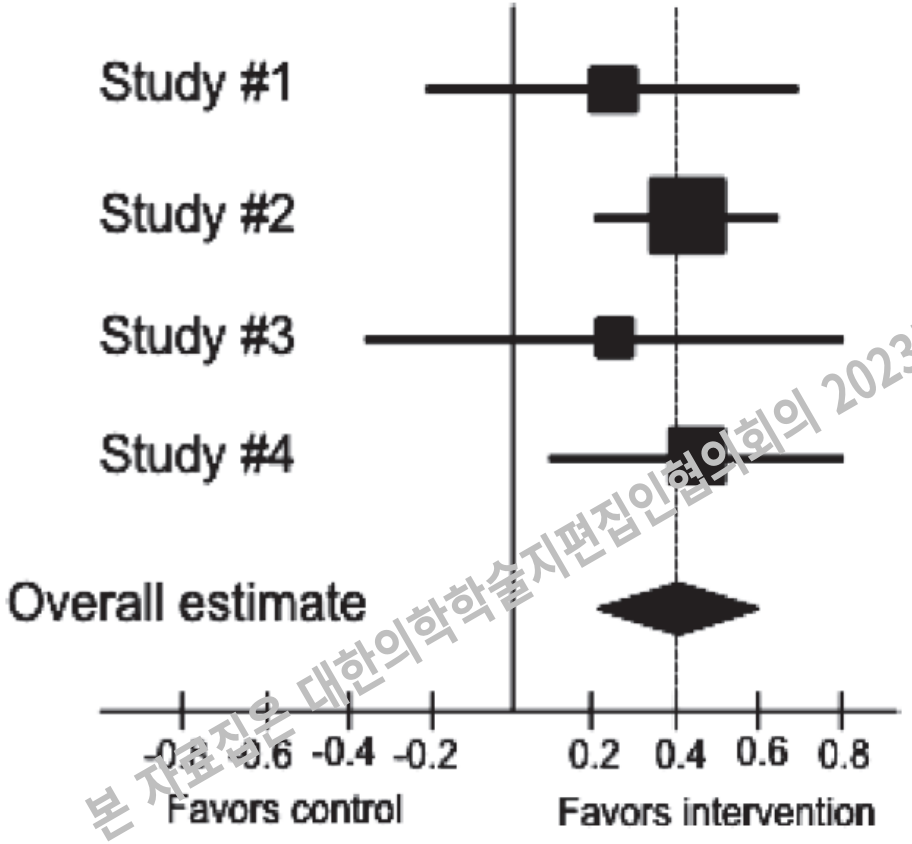
Introduction

Murad MH, et al. Evid Based Med 2016

- Systematic review: summarized results of available carefully designed healthcare studies (controlled trials) and provides a high level of evidence on the effectiveness of healthcare interventions.

- 체계적 문헌고찰

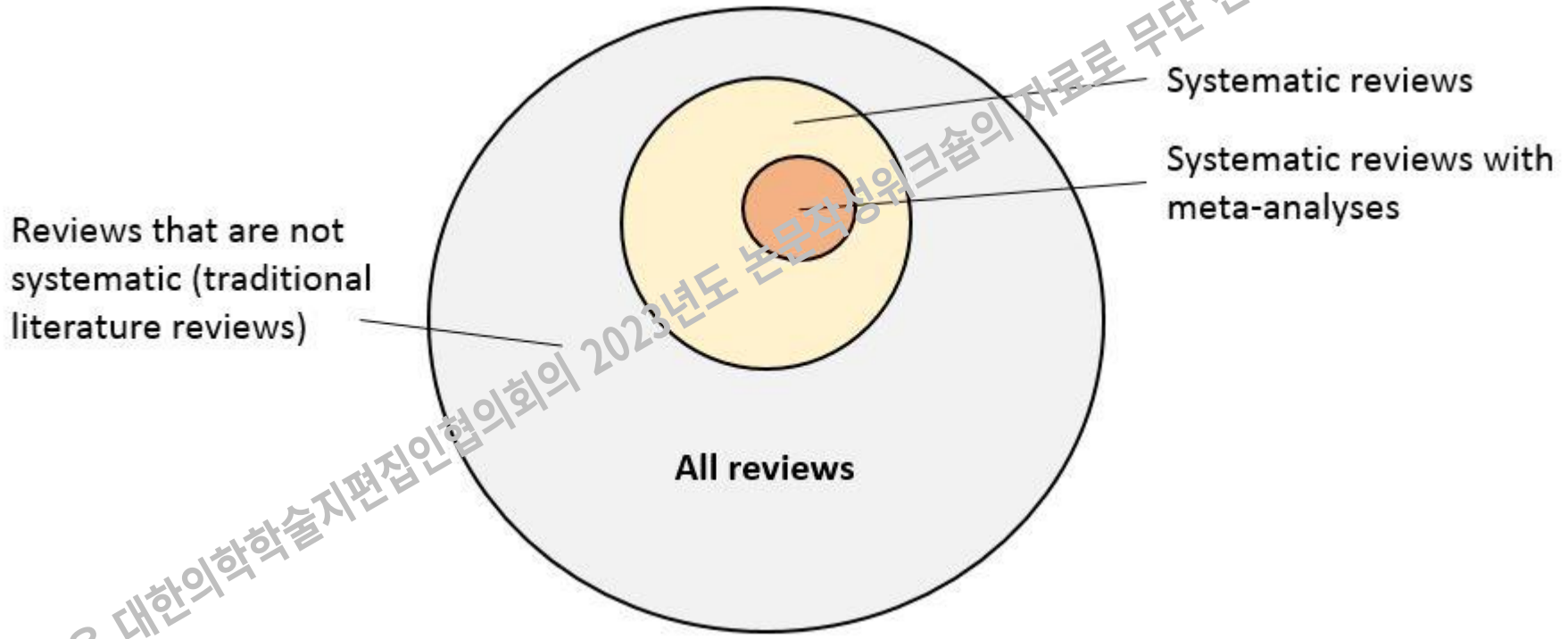
Systematic Review



- Gravy train
- Prolific business

- Career reasons to carry out research

Systematic Review



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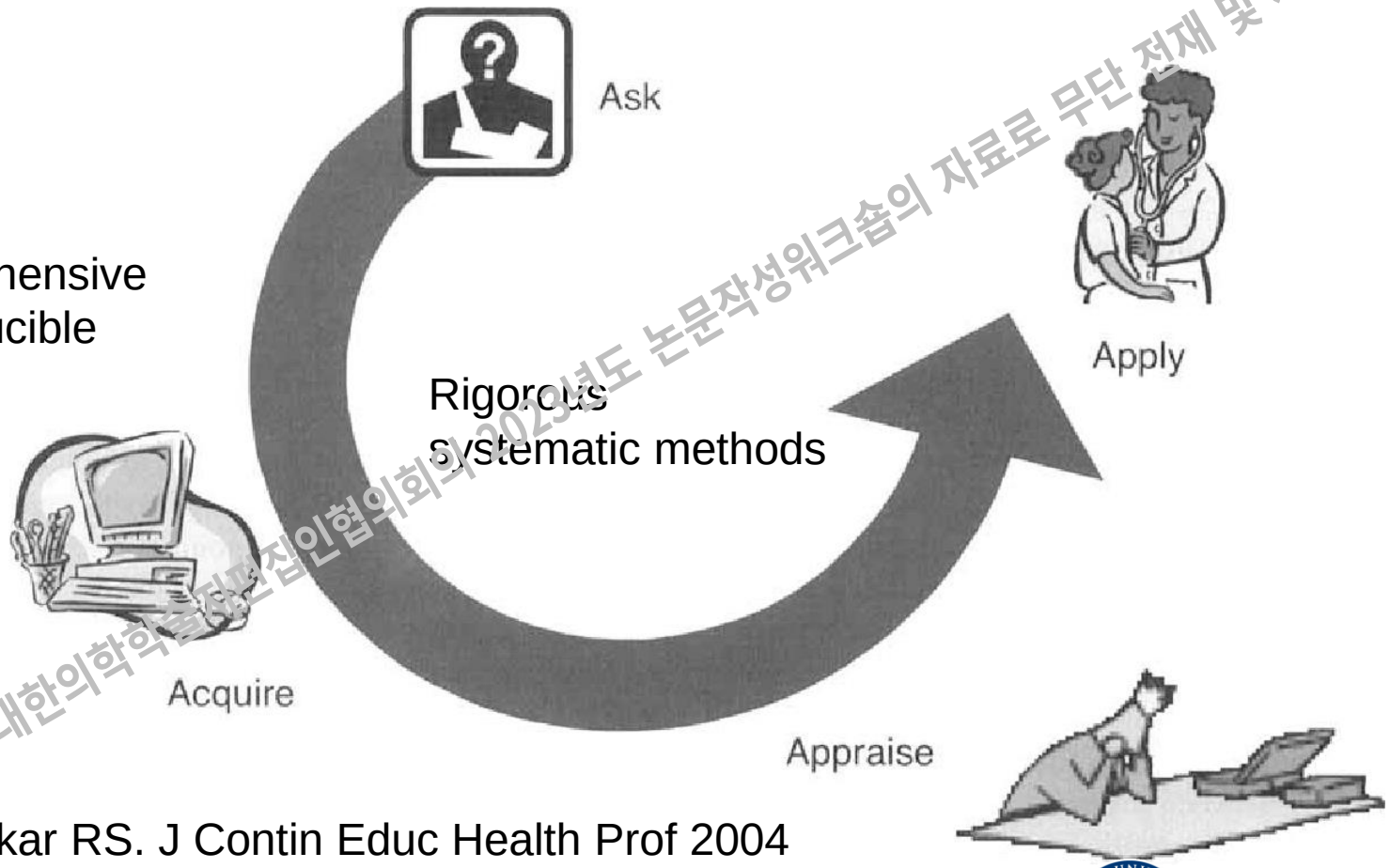
Systematic Review



Comprehensive
Reproducible

Rigorous
systematic methods

Mangrulkar RS. J Contin Educ Health Prof 2004

Systematic Review

INVESTIGATIVE AND CLINICAL UROLOGY
ICUROLOGY
icurology.org
Platinum open access journal
Indexed in MEDLINE, SCIE, Scopus, DOAJ and more
pISSN 2466-0493 eISSN 2466-054X

1. Research Ethics

All manuscripts should be prepared in strict observation of the research and publication ethics guidelines recommended by the Council of Science Editors (http://www.councilscienceeditors.org/), International Committee of Medical Journal Editors (ICMJE, http://www.icmje.org/), World Association of Medical Editors (WAME, http://www.wame.org/), and the Korean Association of Medical Journal Editors (KAMJE, https://www.kamje.or.kr/en/main_en). Any study including human subjects or human data must be reviewed and approved by a responsible institutional review board (IRB).

Please refer to the principles embodied in the Declaration of Helsinki (2013; https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/) for all investigations involving human materials. Animal experiments also should be reviewed by an appropriate committee for the care and use of animals. Also studies with pathogens requiring a high degree of biosafety should pass review of a relevant committee. The editor of ICUrology may request submission of copies of informed consent from human subjects in clinical studies or IRB approval documents.

A clinical trial defined as "any research project that prospectively assigns human subjects to intervention and comparison groups to study the cause-and-effect relationship between a medical intervention and a health outcome" should be registered to the primary registry prior to publication. ICUrology accepts registration in any of the primary registries that participate in the WHO International Clinical Trials Portal (http://www.who.int/ictrp/en/), NIH ClinicalTrials.gov (http://www.clinicaltrials.gov/), ISRCTN Register (http://www.isrctn.com/), University Hospital Medical Information Network (http://www.umin.ac.jp/ctr/index/htm/), or Clinical Research Information Service (http://cris.nih.go.kr). The clinical trial registration number shall be published at the end of the abstract. Authors should consult and follow the relevant guidelines for reporting health research data, such as the CONSORT guidelines (http://www.consort-statement.org/) for randomized, controlled trials and the PRISMA statement (http://www.prisma-statement.org/) for Systematic Reviews and Meta-Analyses.

https://icurology.org/

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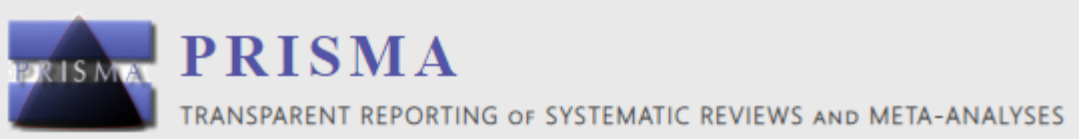

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

Who should use PRISMA?

- Authors: PRISMA aims to help authors improve the reporting of systematic reviews and meta-analyses.
- Journal peer reviewers and editors: PRISMA may also be useful for critical appraisal of published systematic reviews, although it is not a quality assessment instrument to gauge the quality of a systematic review.

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PRISMA checklist 27 Items

Item 24: Registration and protocol

- a: provide registration information for the review, including register name and registration number, or state that the review was not registered
- b: indicate where the review protocol can be accessed, or state that a protocol was not prepared
- c: describe and explain any amendments to information provided at registration or in the protocol

Protocol

https://www.crd.york.ac.uk/prospero/

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Item 5: Eligibility criteria (specify the inclusion and exclusion criteria)

Pre-specified eligibility criteria

PICOs - intervention

- Population (P)
- Intervention (I)
- Comparator (C)
- Outcome (O)

1. Meaningful, and not include trivial outcomes
2. Adverse as well as beneficial outcomes

- Study design (s)

PICOs – diagnosis

- Population (P)
- Index test (I)
- Comparator test (C)
- Reference test (R)
- Outcome (O)

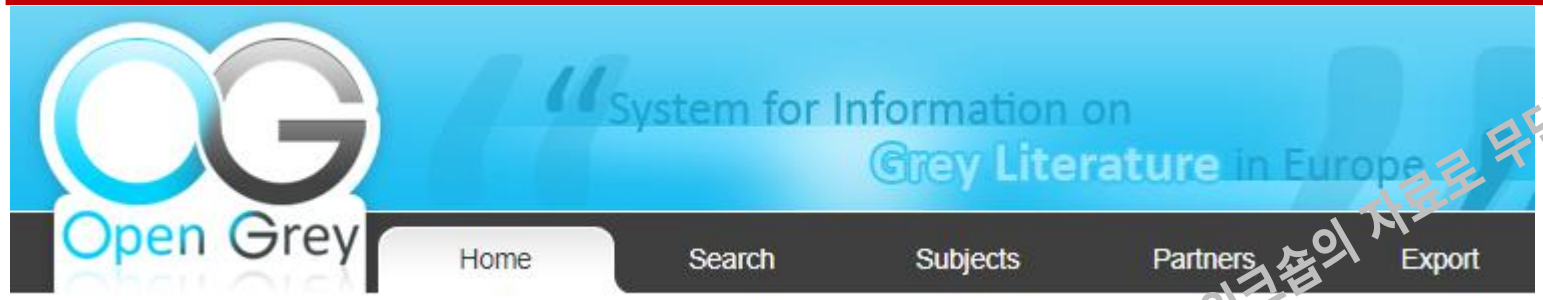
1. Sensitivity, specificity
2. Positive predictive value, negative predictive value
3. Likelihood ratio

Databases

Item 6: Information sources (Specify all databases and the date when each source was last searched)

- MEDLINE: U.S. National Library of Medicine® (NLM) premier bibliographic database
- EMBASE: biomedical and pharmacological database produced by Elsevier
- Cochrane Library: collection of databases in medicine and other healthcare specialties provided by Cochrane
- Scopus, Web of science, Google
- Regional databases: KoreaMed, LILACS(Latin American & Caribbean Health Sciences Literature)
- Clinical trial registries: ClinicalTrials.gov, WHO International Clinical Trials Registry Platform
- Grey literatures: information produced outside of traditional publishing and distribution channels

Grey Literature

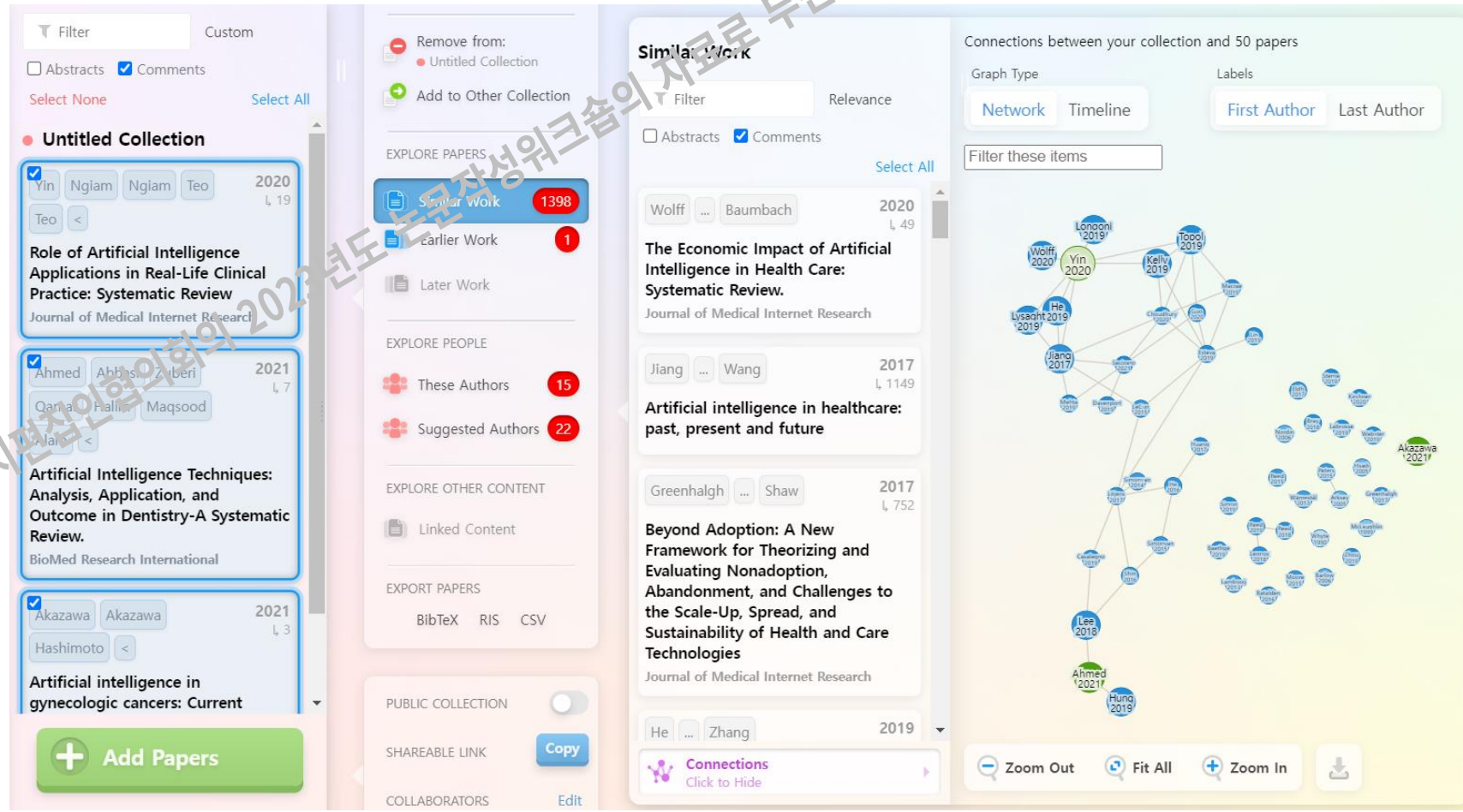


http://www.opengrey.eu/

https://www.greylit.org/

Literature Search

- https://researchrabbitapp.com/home



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Item 7: Search strategy (present the full search strategies for all databases)

Search strategy

MEDLINE (from 1966 to November 2011), EMBASE (from 1974 to November 2011), the Cochrane Controlled Trail Register of Controlled Trials, and the reference lists of retrieved studies were searched to identify RCTs that referred to the effects of silodosin treatment. The following search terms were used: silodosin, BPH, and randomized controlled trials.

Cui Y, et al. Int Urol Nephrol 2012

Systematic Review

Item 7: Search strategy (present the full search strategies for all databases)

APPENDICES

Appendix 1. Search strategies

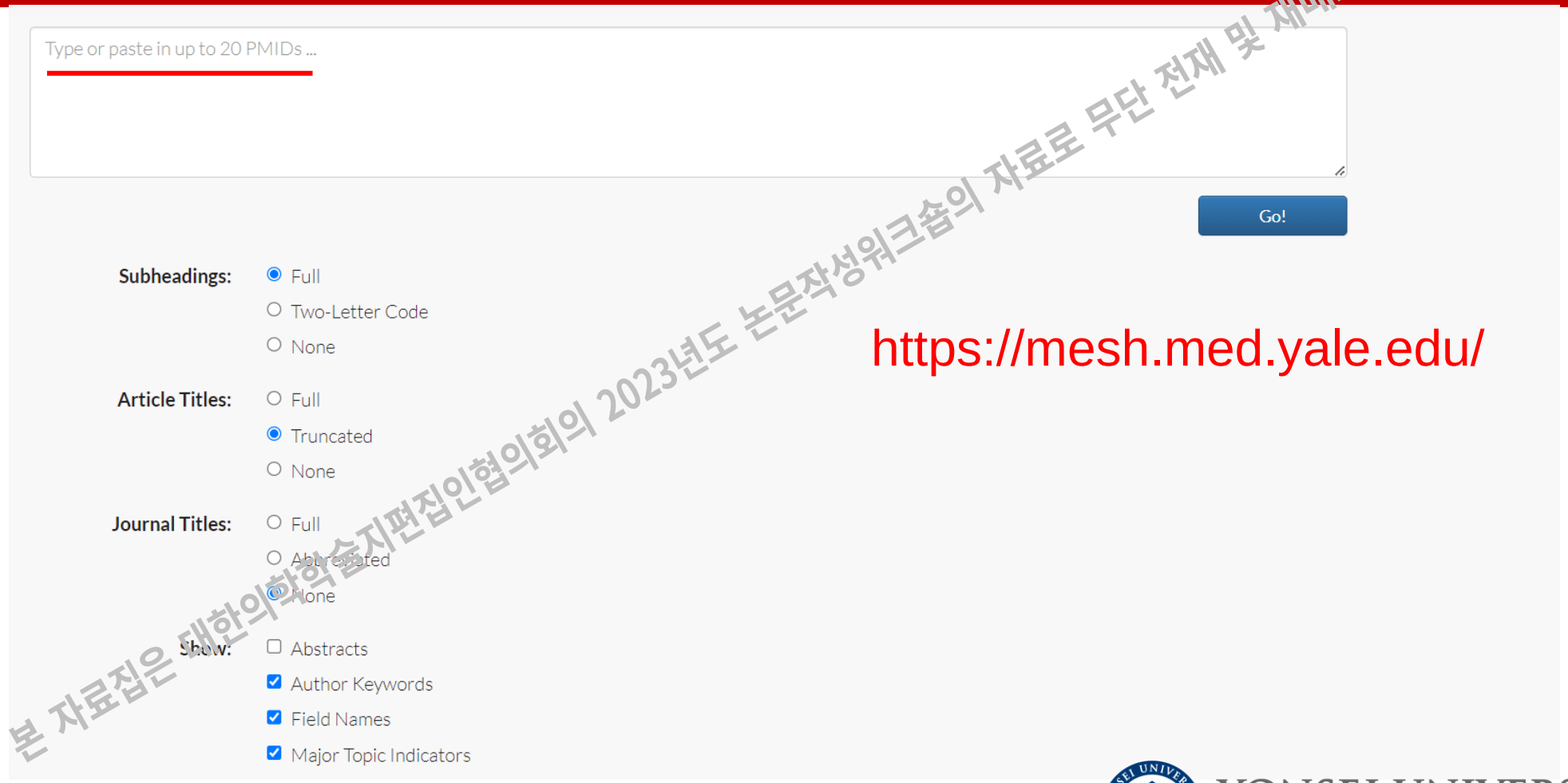
Cochrane Library (via Wiley) search strategy
1. "Prostatic Hyperplasia" [Mesh]
2. (hyperplasia NEAR/3 prostat*):ti,ab,kw
3. "hyperplasia of the prostate":ti,ab,kw
4. "prostatic hyperplasia":ab,ti
5. (hypertrophy NEAR/3 prostat*):ti,ab,kw
6. (adenoma* NEAR/3 prostat*):ti,ab,kw
7. "lower urinary tract symptom" [Mesh]
8. "lower urinary tract": ti,ab,kw
9. LUTS: ti,ab,kw
10. "prostatism": ti,ab,kw
11. "prostatism"[Mesh]
12. "Urinary Bladder Neck Obstruction" [Mesh]
13. "bladder outlet obstruction": ti,ab,kw
14. (prostat* NEAR/3 enlarg*): ti,ab,kw
15. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
16. silodosin: ti,ab,kw
17. "KMD-3213": ti,ab,kw
18. 16 or 17
MEDLINE (via Pubmed) search strategy

Structure of a search strategy

1. Terms to search for the health condition of interest, i.e. the population
2. Terms to search for the intervention(s) evaluated
3. Terms to search for the types of study design

Jung JH, et al. Cochrane Database Syst Rev 2017

Search Strategy: MeSH



https://mesh.med.yale.edu/

Search Strategy

PMID	28935701	33782057
Title	AMSTAR 2: a critical appraisal tool for systematic reviews that...	The PRISMA 2020 statement: an updated guideline for reporting s...
Author (Year)	Shea BJ (2017)	Page MJ (2021)
MeSH Headings	Clinical Studies as Topic	
	Evidence-Based Medicine*	
		Humans
	Meta-Analysis as Topic	Medical Writing / standards Meta-Analysis as Topic
	Observational Studies as Topic Observer Variation	
		Practice Guidelines as Topic
		Quality Control
	Randomized Controlled Trials as Topic Review Literature as Topic*	Research Design / standards*
		Statistics as Topic Systematic Reviews as Topic* / methods Systematic Reviews as Topic* / standards
		Terminology as Topic
Author Keywords		

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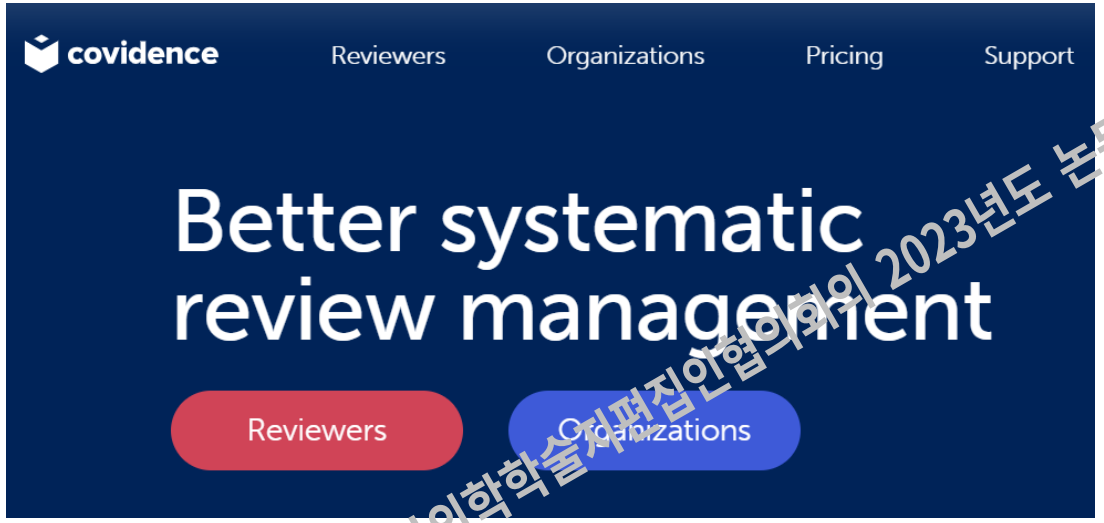
Item 8: Selection process (specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently)

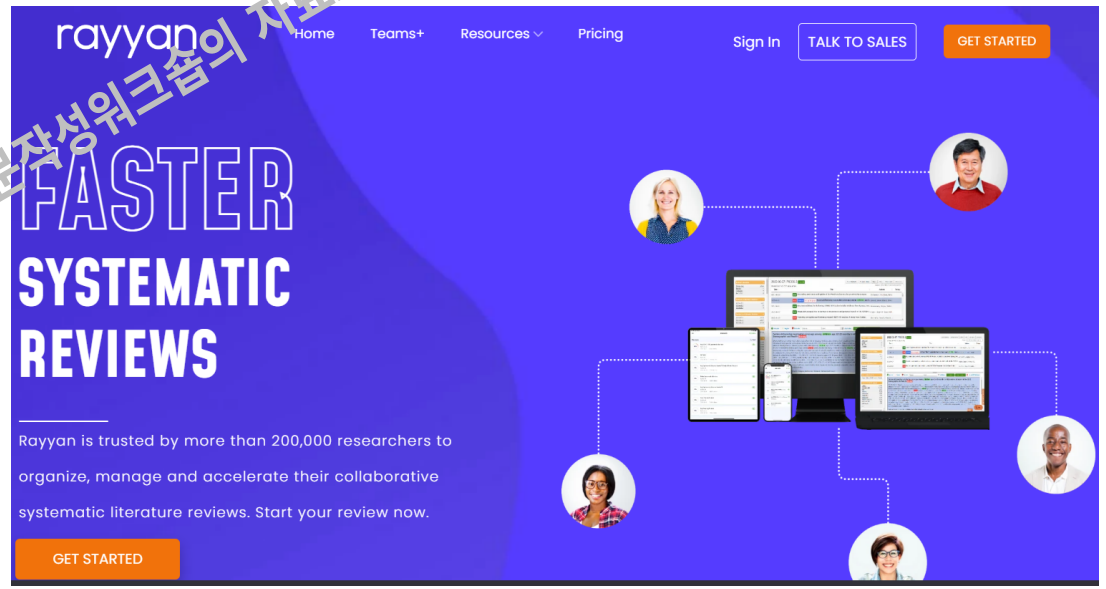
Item 9: Data collection process (specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators)

Selection Process

- https://www.covidence.org/



- https://www.rayyan.ai/



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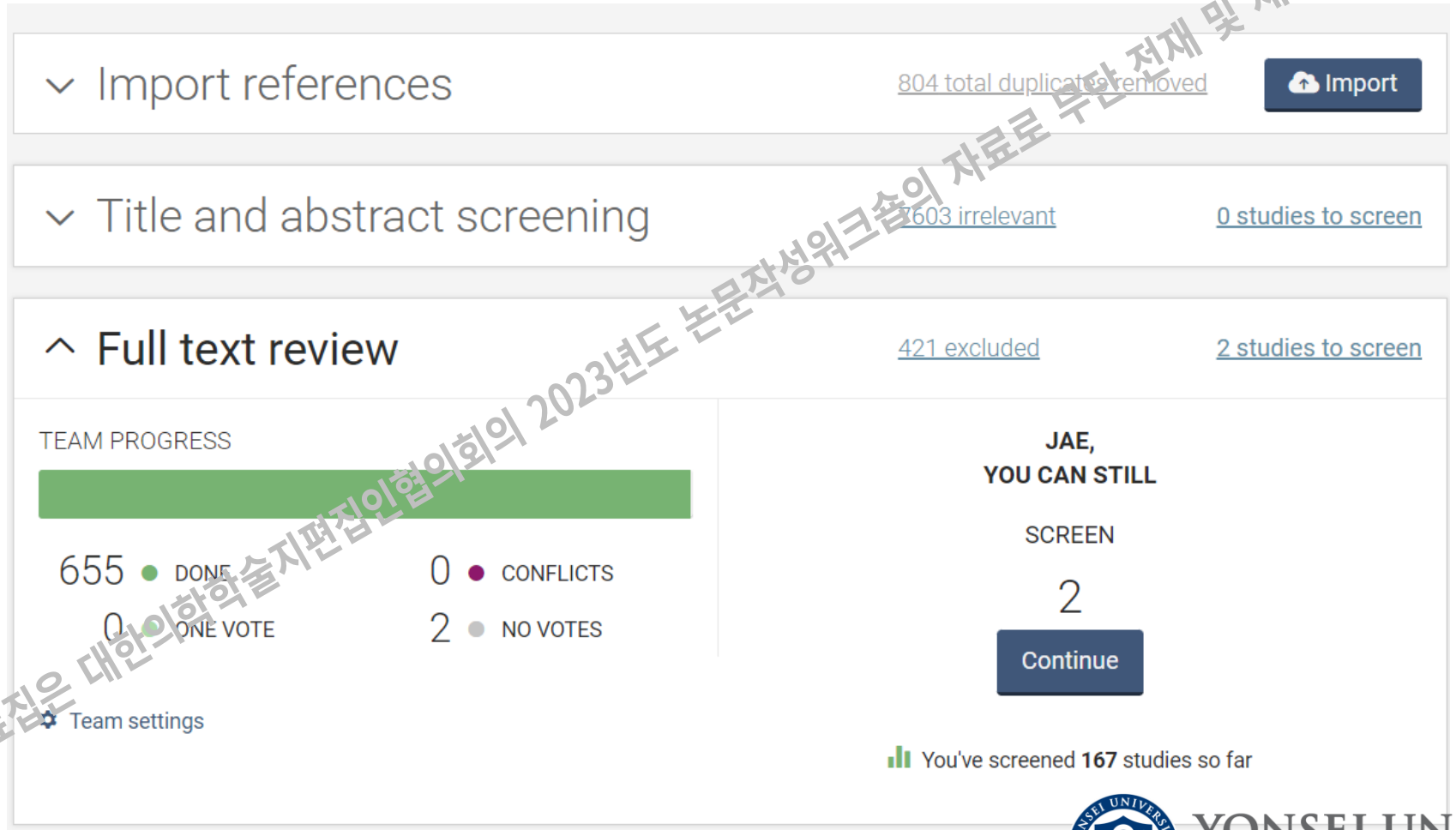

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Item 11: Study risk of bias assessment (specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently)

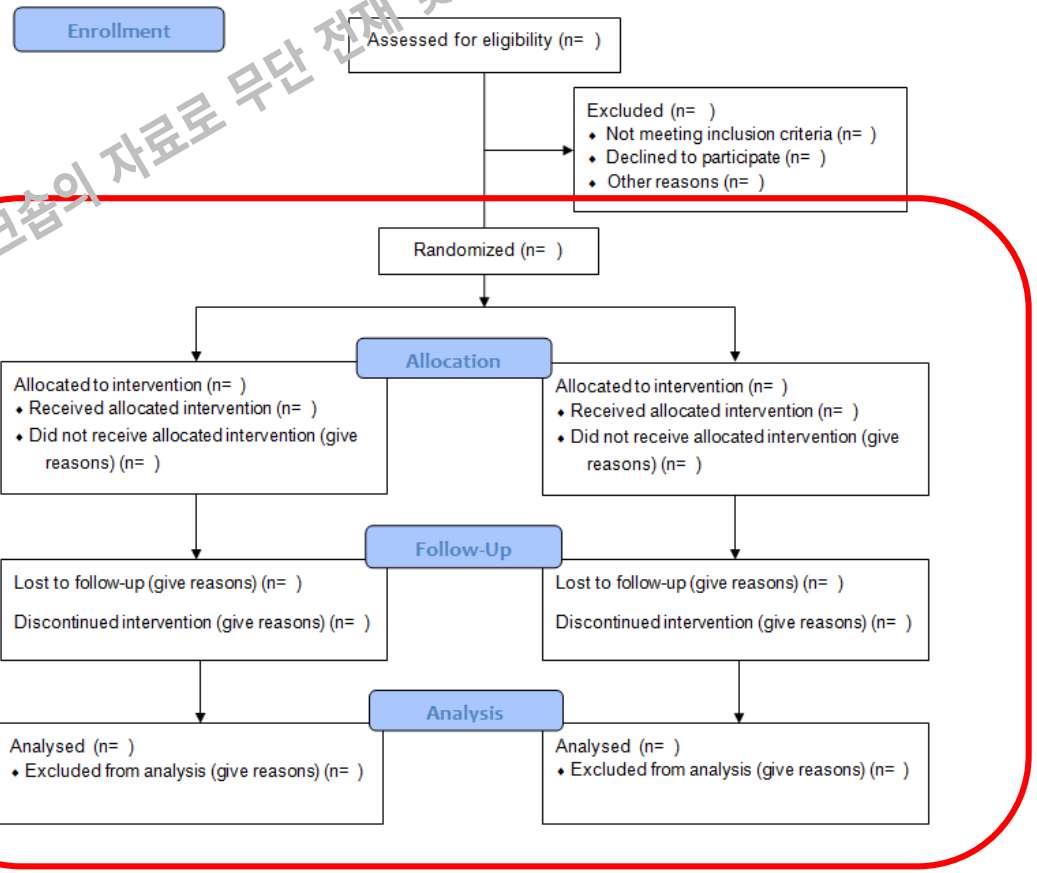
Item 18: Risk of bias in studies (present assessments of risk of bias for each included study)

Risk of Bias

- Sequence generation
- Allocation concealment
- Blinding of participants and personnel
- Blinding of outcome assessment
- Incomplete outcome data
- Selective outcome reporting
- Other bias

CONSORT
TRANSPARENT REPORTING of TRIALS

CONSORT 2010 Flow Diagram



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

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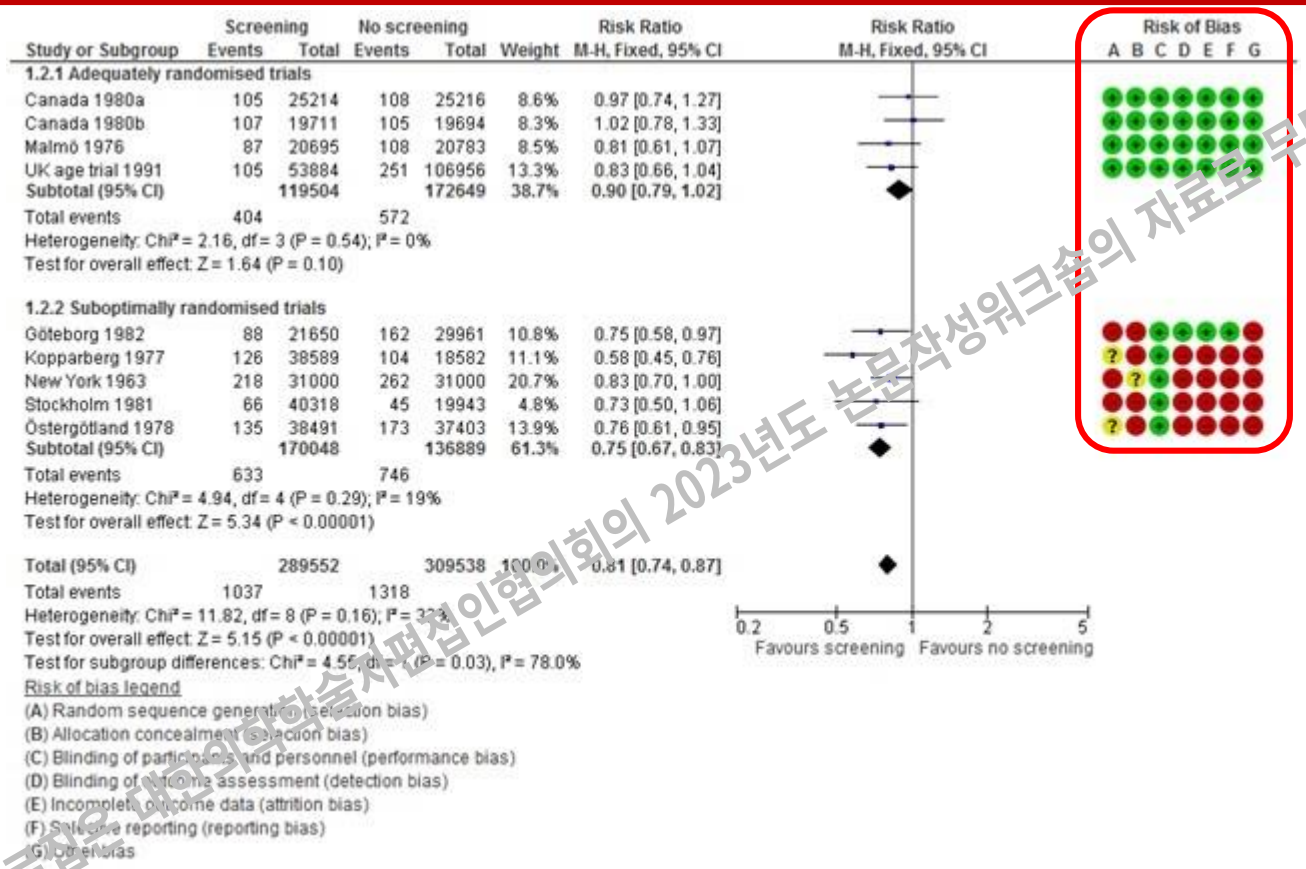
Risk of Bias



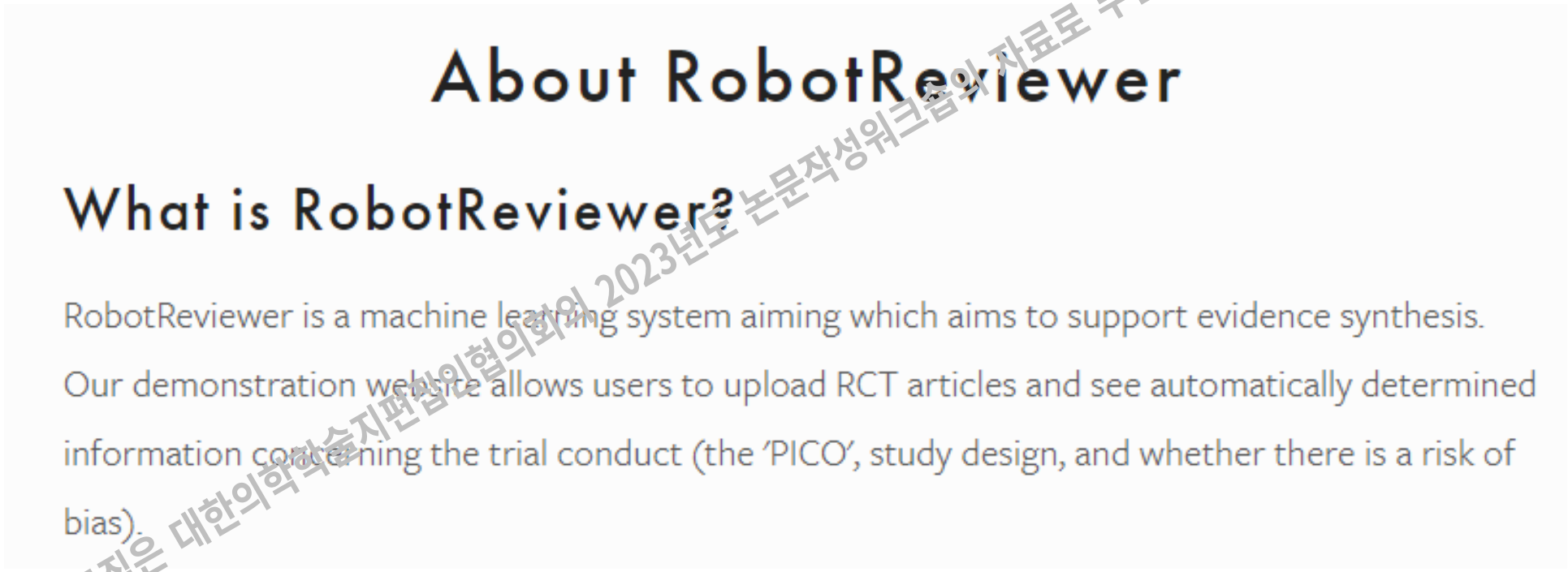
Adequately randomized

Suboptimally randomized

Cochrane Handbook for Systematic Reviews of Interventions

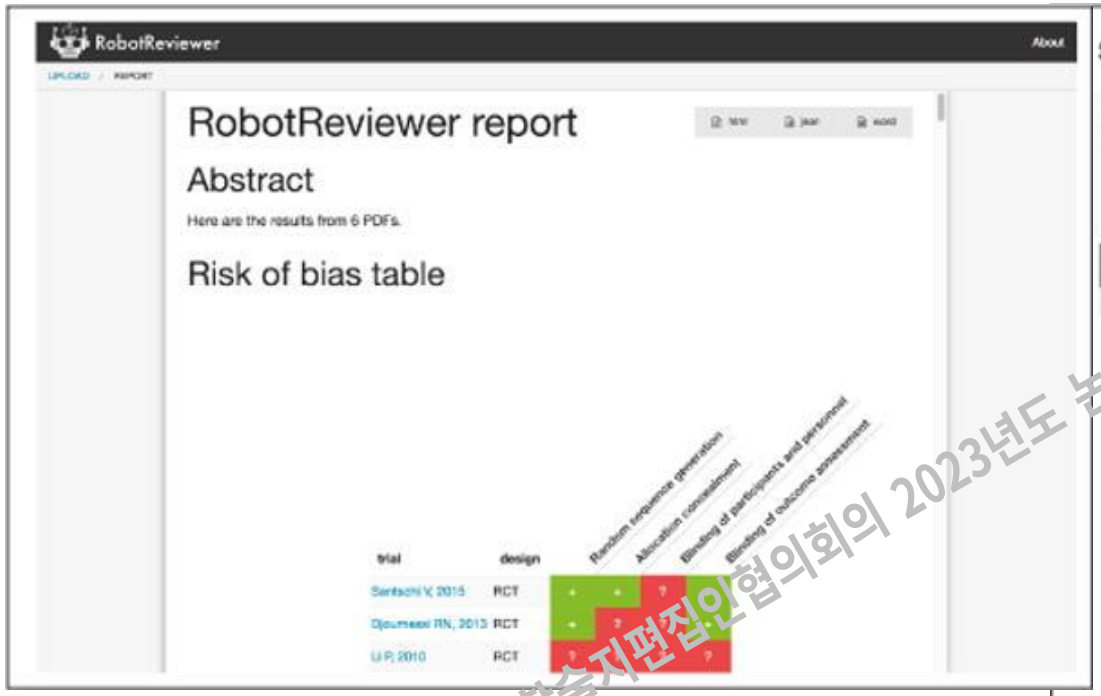
Risk of Bias

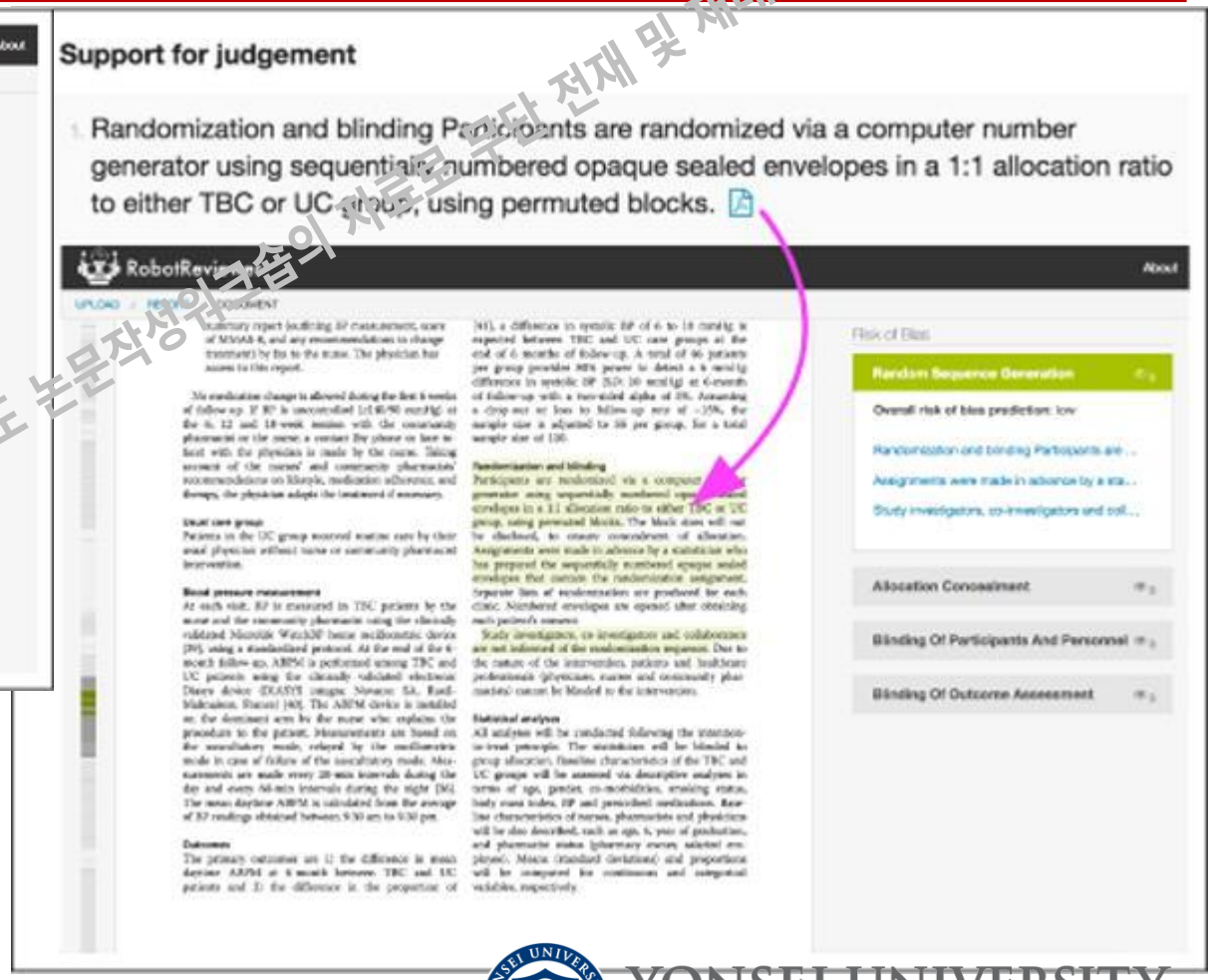
- https://www.robotreviewer.net/



Marshall IJ, et al. Proc Conf Assoc Comput Linguist Meet 2017.

Risk of Bias





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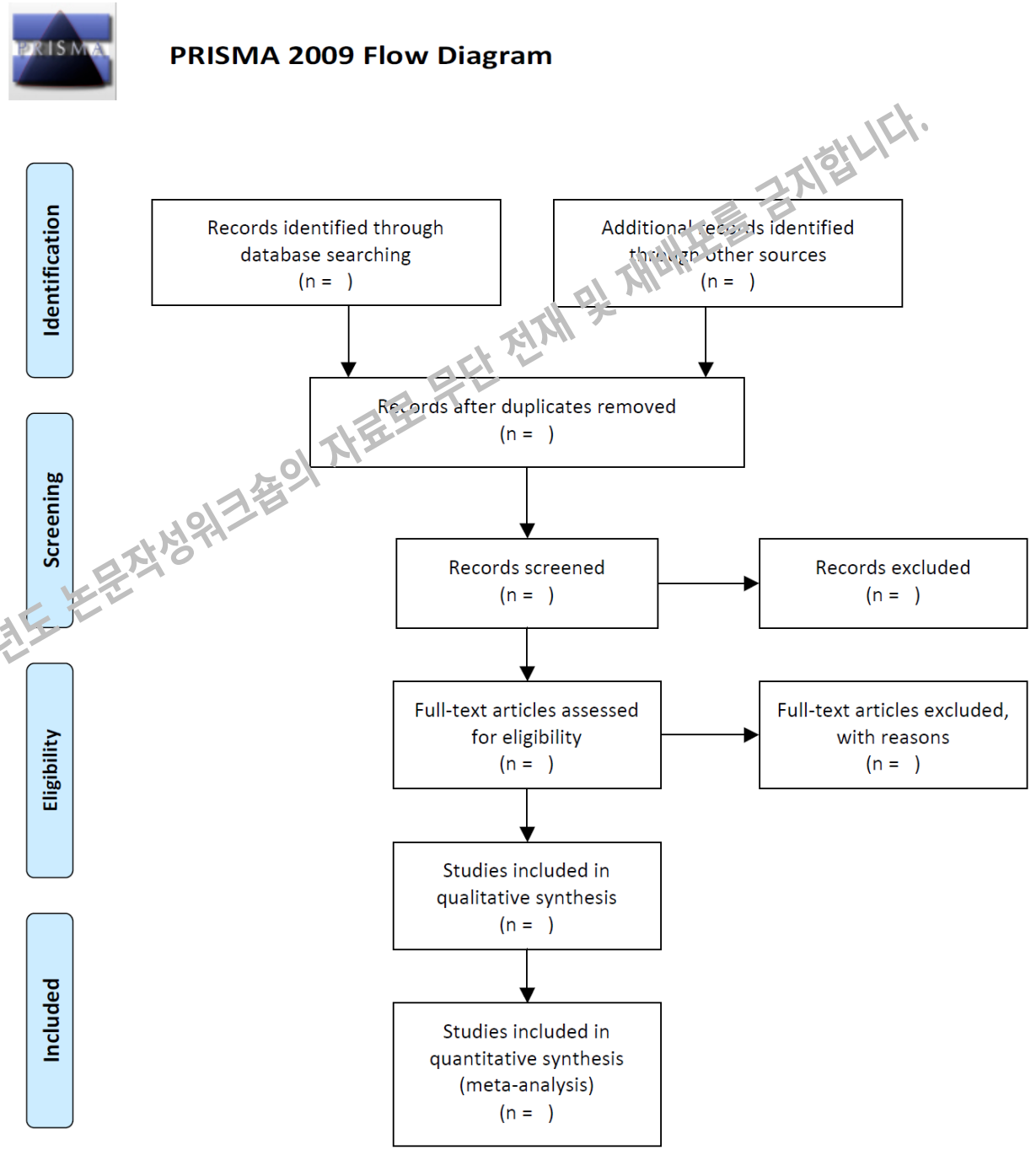
Item 16: Study selection

- a: describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram
- b: cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded

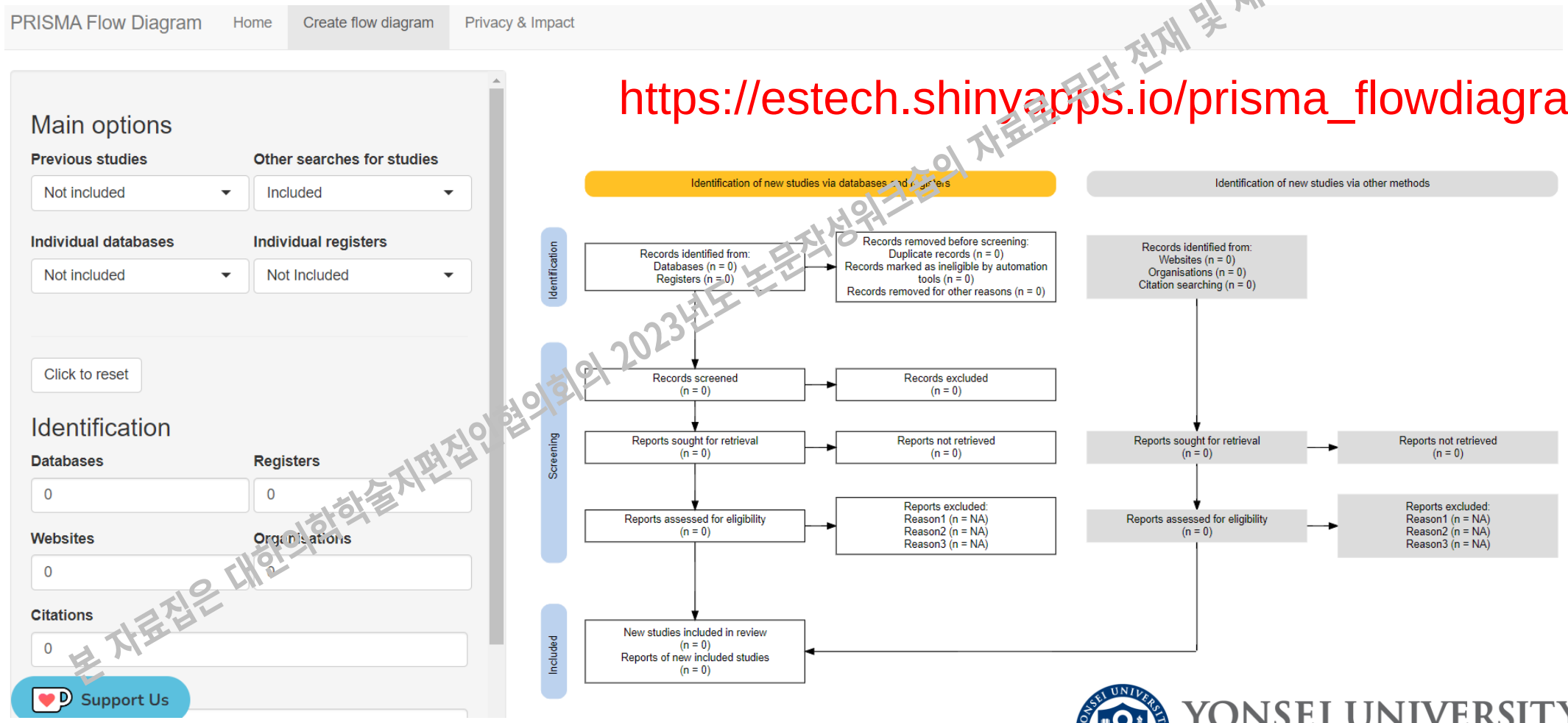
Supplementary Table 1 Excluded studies with reasons

Reference	Reason for exclusion
Paton , et al. (2013)[53]	Wrong publication type – letter
Williams (2011)[54]	Wrong publication type – not a journal article
Dietrich, et al. (2017)[55]	Wrong study design – no experience-gathering, only design.
Truman and Raine (2002)[56]	Wrong study design – no design, only experience gathering.
Vechakul, et al. (2015)[57]	Wrong study design – experiences of the design team only
Outlaw, et al. (2018)[58]	Wrong population – no design , only experiences gathered
Palmer, et al. (2018)[59]	Wrong publication type – description of a model, not a study
Palmer, et al. (2015)[60]	Wrong publication type – protocol only
Harrington, et al. (2018)[61]	Wrong population – only service-users involved (no co-design), conference paper
Davies, et al. (2016)[62]	Wrong publication type – no health service design
Richard, et al. (2017)[29]	Wrong publication type – protocol only

Flow Diagram



Flow Diagram



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Item 20: Results of Syntheses

- b: If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence interval) and measures of statistical heterogeneity
- c: present results of all investigations of possible causes of heterogeneity among study results (subgroup analysis)
- d: present results of all sensitivity analyses conducted to assess the robustness of the synthesized results

*c,d: should be prespecified

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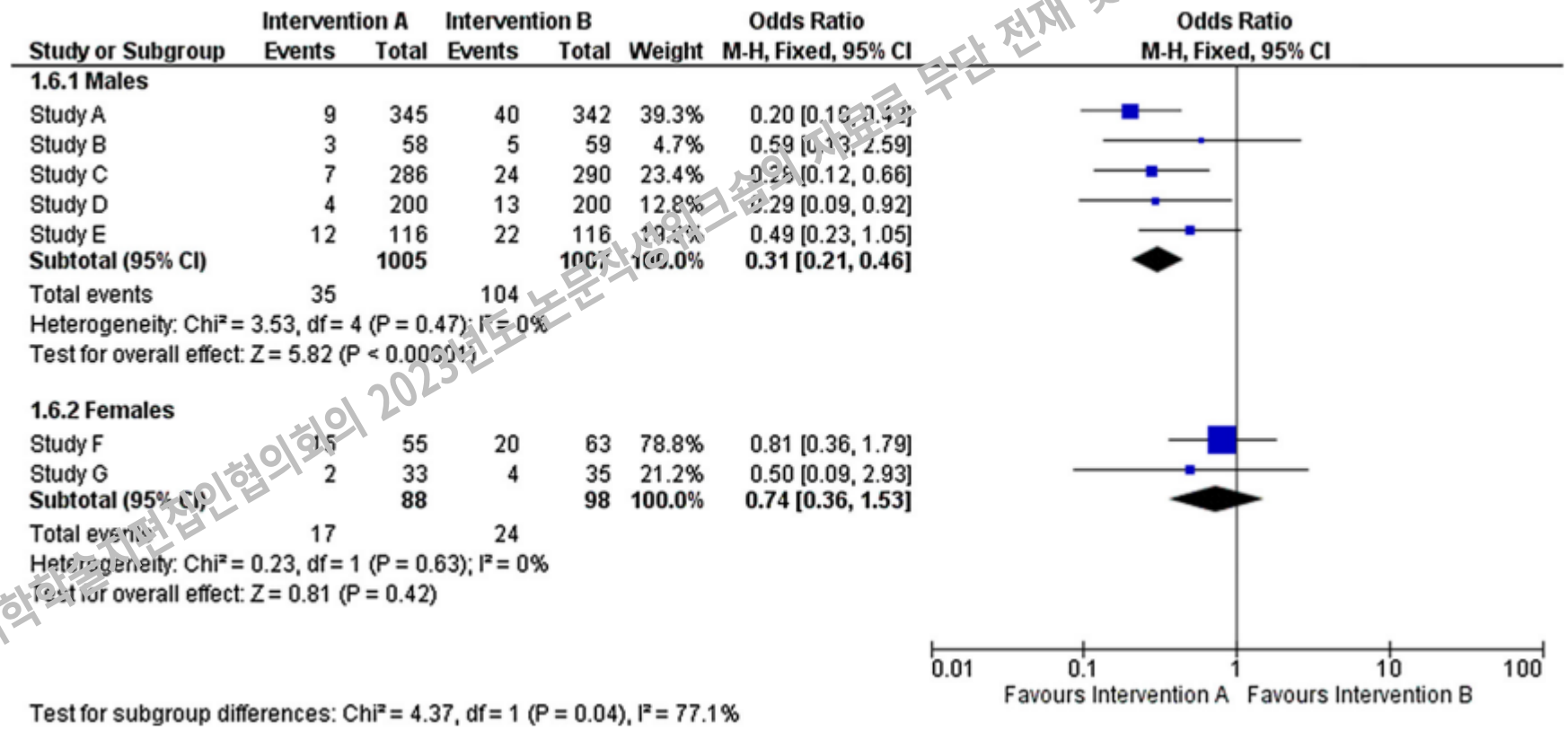
Subgroup analysis

Male

Investigations of possible causes of heterogeneity

Female



Richardson M, et al. Clin Epidemiol Glob Health 2018

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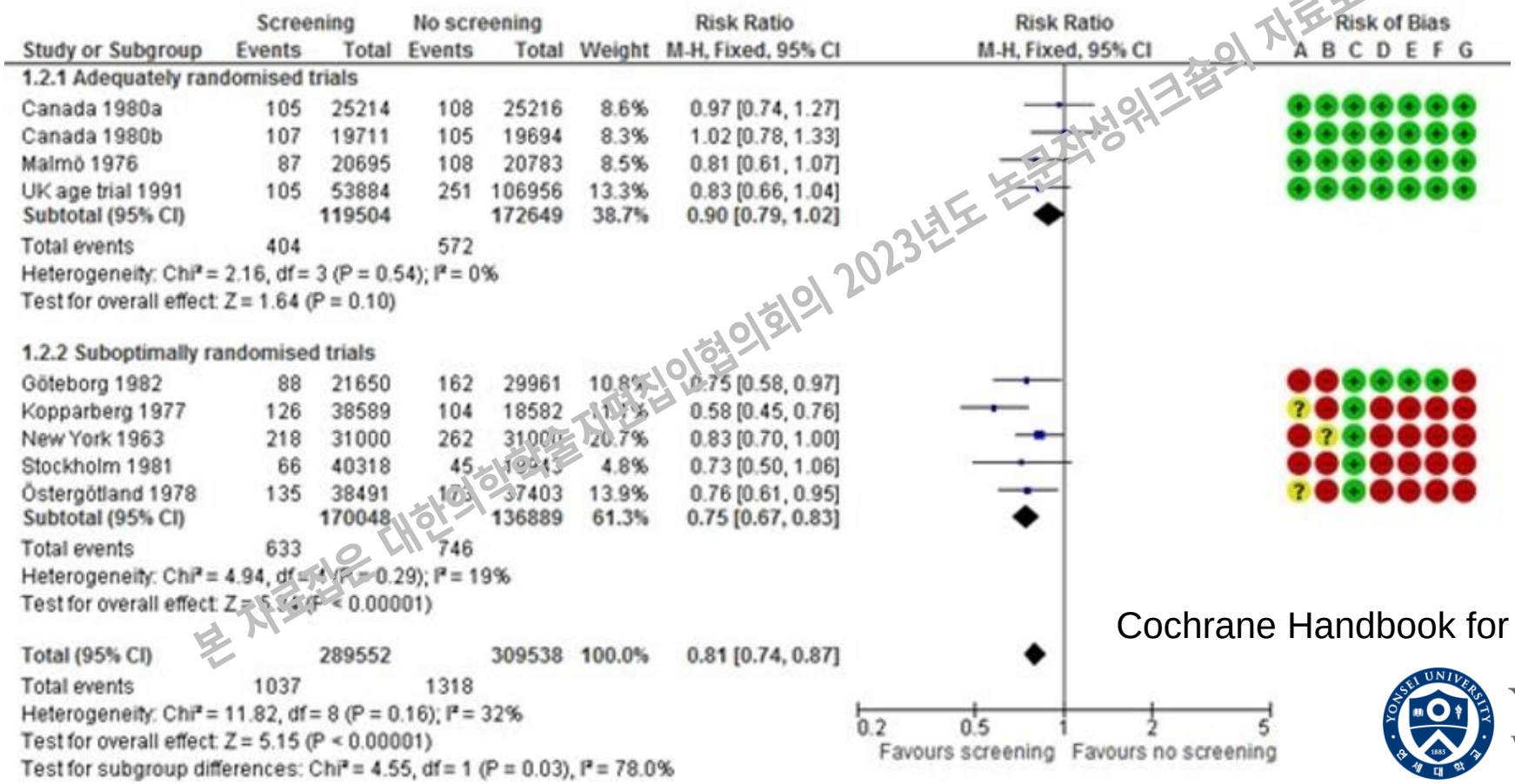
Sensitivity analysis: method to determine the robustness of an assessment by examining the extent to which results are affected by changes in methods, models, values of unmeasured variables, or assumptions



Study or Subgroup	Screening Events	Screening Total	No screening Events	No screening Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.2.1 Adequately randomised trials						
Canada 1980a	105	25214	108	25216	8.6%	0.97 [0.74, 1.27]
Canada 1980b	107	19711	105	19694	8.3%	1.02 [0.78, 1.33]
Malmö 1976	87	20695	108	20783	8.5%	0.81 [0.61, 1.07]
UK age trial 1991	105	53884	251	106956	13.3%	0.83 [0.66, 1.04]
Subtotal (95% CI)		**119504**		**172649**	**38.7%**	**0.90 [0.79, 1.02]**
Total events	404		572			
Heterogeneity: Chi² = 2.16, df = 3 (P = 0.54); I² = 0%						
Test for overall effect: Z = 1.64 (P = 0.10)						
1.2.2 Suboptimally randomised trials						
Göteborg 1982	88	21650	162	29961	10.8%	0.75 [0.58, 0.97]
Kopparberg 1977	126	38589	104	18582	13.7%	0.58 [0.45, 0.76]
New York 1963	218	31000	262	31000	20.7%	0.83 [0.70, 1.00]
Stockholm 1981	66	40318	45	19943	4.8%	0.73 [0.50, 1.06]
Östergötland 1978	135	38491	173	37403	13.9%	0.76 [0.61, 0.95]
Subtotal (95% CI)		**170048**		**136889**	**61.3%**	**0.75 [0.67, 0.83]**
Total events	633		746			
Heterogeneity: Chi² = 4.94, df = 4 (P = 0.29); I² = 19%						
Test for overall effect: Z = 5.15 (P < 0.00001)						
Total (95% CI)		**289552**		**309538**	**100.0%**	**0.81 [0.74, 0.87]**
Total events	1037		1318			
Heterogeneity: Chi² = 11.82, df = 8 (P = 0.16); I² = 32%						
Test for overall effect: Z = 5.15 (P < 0.00001)						
Test for subgroup differences: Chi² = 4.55, df = 1 (P = 0.03), I² = 78.0%						

Cochrane Handbook for Systematic Reviews of Interventions

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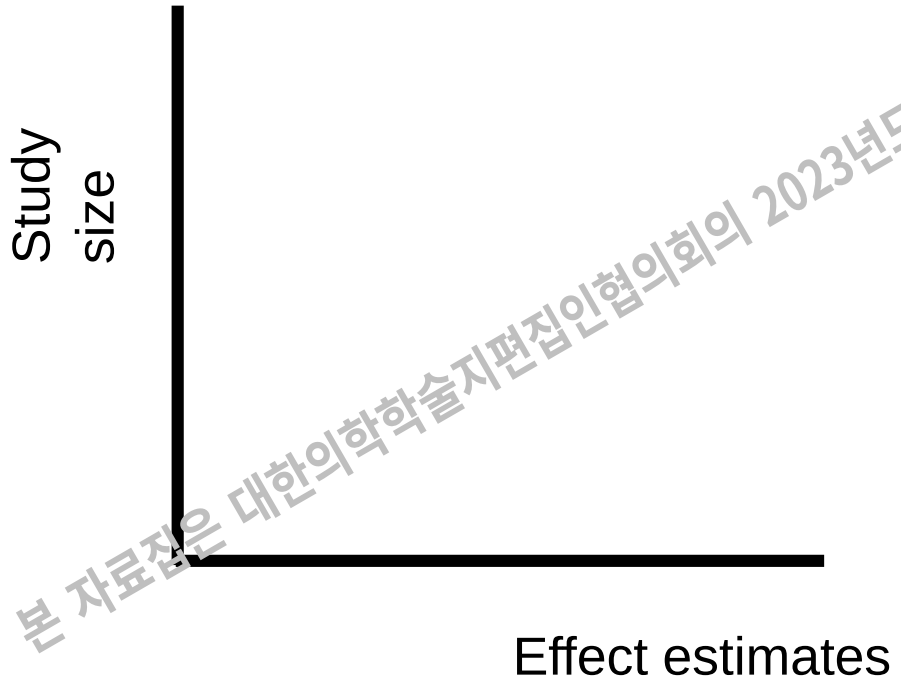
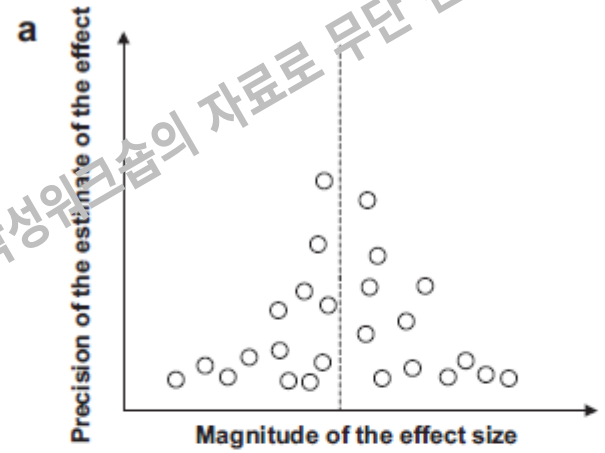
Item 14: Reporting bias assessment (describe any methods used to assess risk of bias due to missing results in a synthesis)

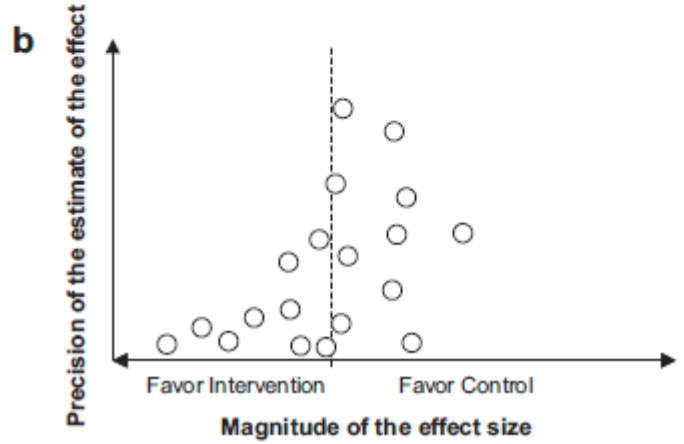
Item 21: Reporting biases (present assessments of risk of bias due to missing results [arising from reporting biases] for each synthesis assessed)

Funnel Plot

- Funnel plot: precision of the estimated intervention effect increases as the size of the study increases.
- Visual interpretation







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Item 15: Certainty assessment (describe any methods used to assess certainty in the body of evidence for an outcome)

Item 22: Certainty of evidence (present assessments of certainty in the body of evidence for each outcome assessed)

GRADE Certainty of Evidence

Table: GRADE's approach to rating quality of evidence (aka certainty in effect estimates)

For each outcome based on a systematic review and across outcomes (lowest quality across the outcomes critical for decision making)

1. Establish initial level of certainty		2. Consider lowering or raising level of certainty		3. Final level of certainty rating
Study design	*Initial certainty in an estimate of effect*	*Reasons for considering lowering or raising certainty*		*Certainty in an estimate of effect across those considerations*
		↓ Lower if	↑ Higher if*	
Randomized trials →	High certainty	Risk of Bias Inconsistency Indirectness Imprecision Publication bias	Large effect Dose response All plausible confounding & bias □ would reduce a demonstrated effect or □ would suggest a spurious effect if no effect was observed	High ⊕⊕⊕⊕
				Moderate ⊕⊕⊕□
Observational studies →	Low certainty			Low ⊕⊕□ □
				Very low ⊕□ □ □

*upgrading criteria are usually applicable to observational studies only.

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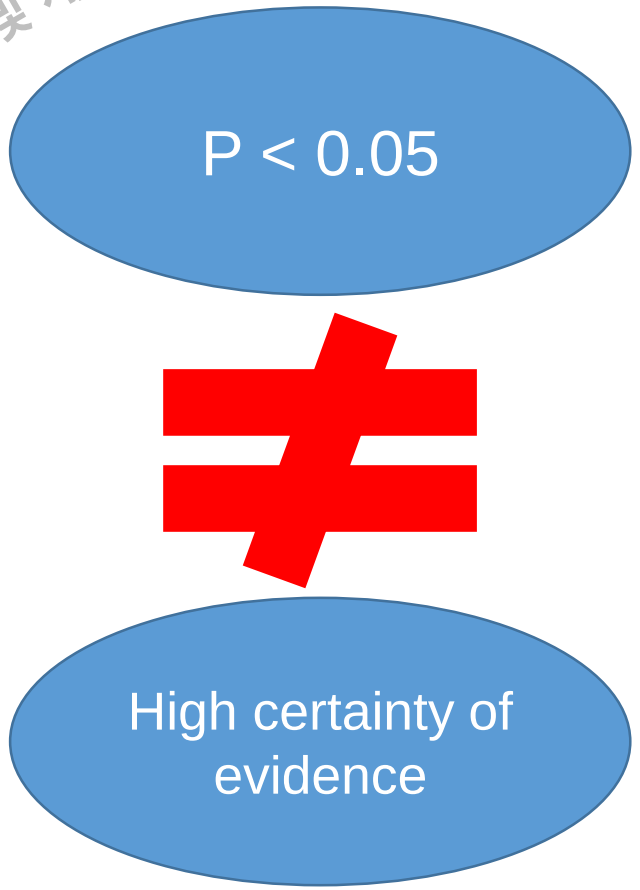
GRADE: Certainty of Evidence

Certainty level	Definition
High	We are very confident that the true effect lies close to that of the estimate of the effect
Moderate	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	Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect
Very low	We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect



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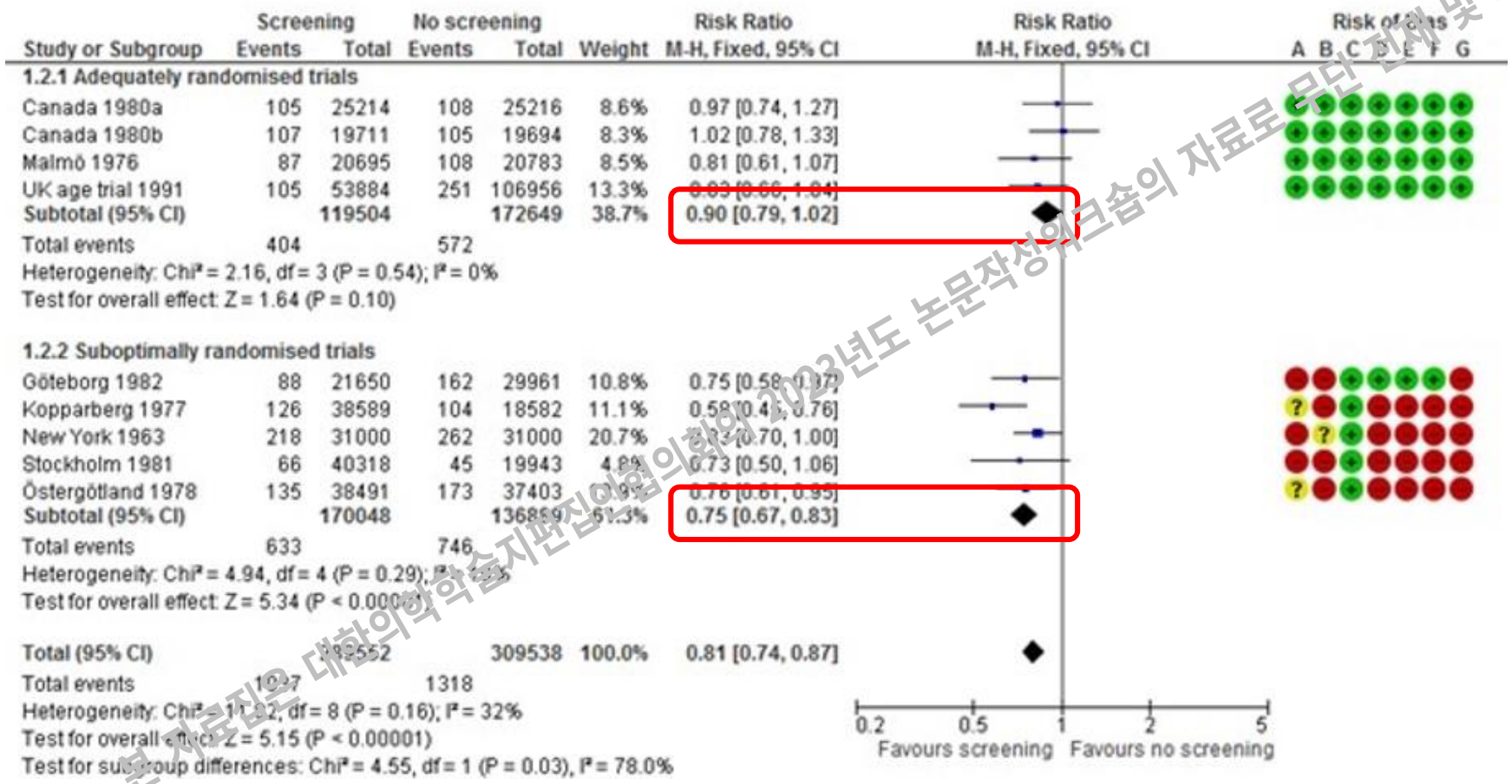
GRADE Certainty of Evidence



P>0.05

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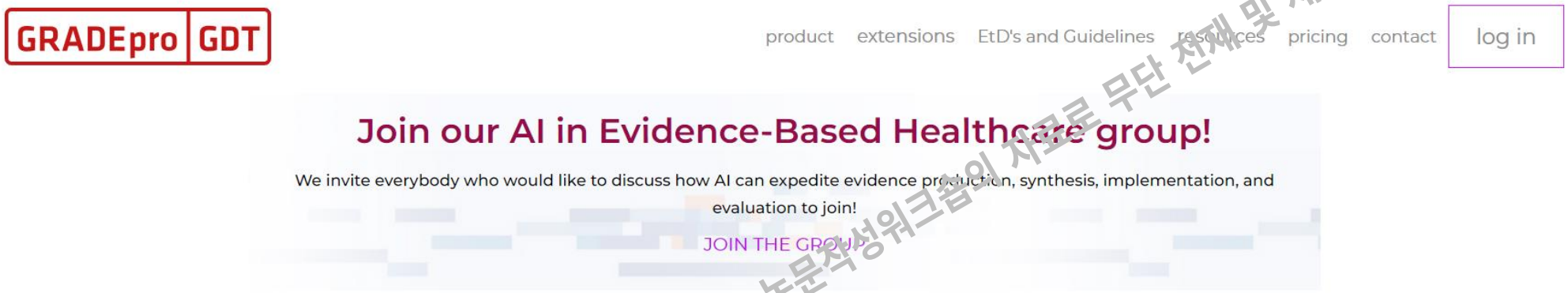
GRADE Certainty of Evidence



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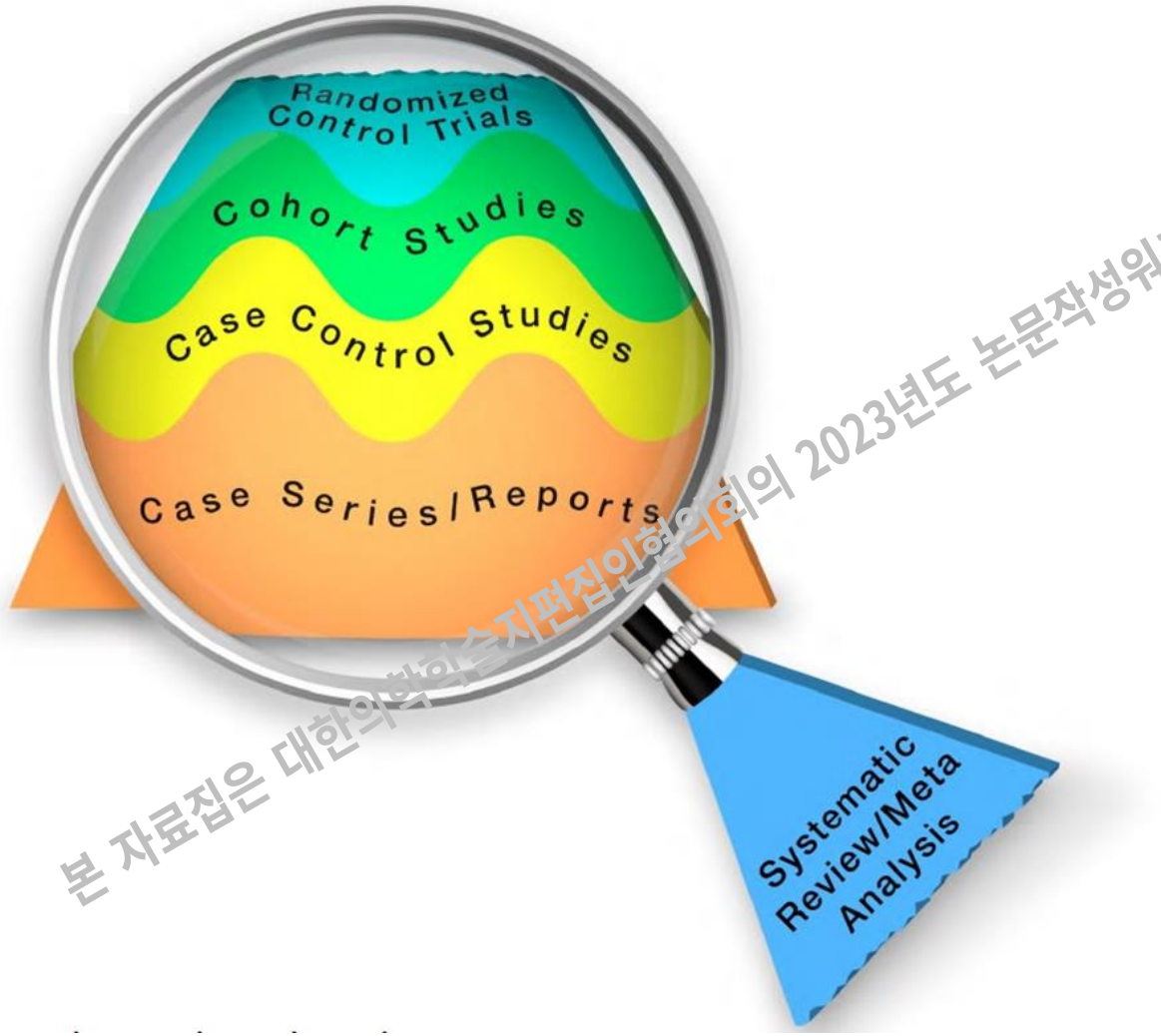
Systematic Review



Murad MH, et al. Evid Based Med 2016

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Systematic Review

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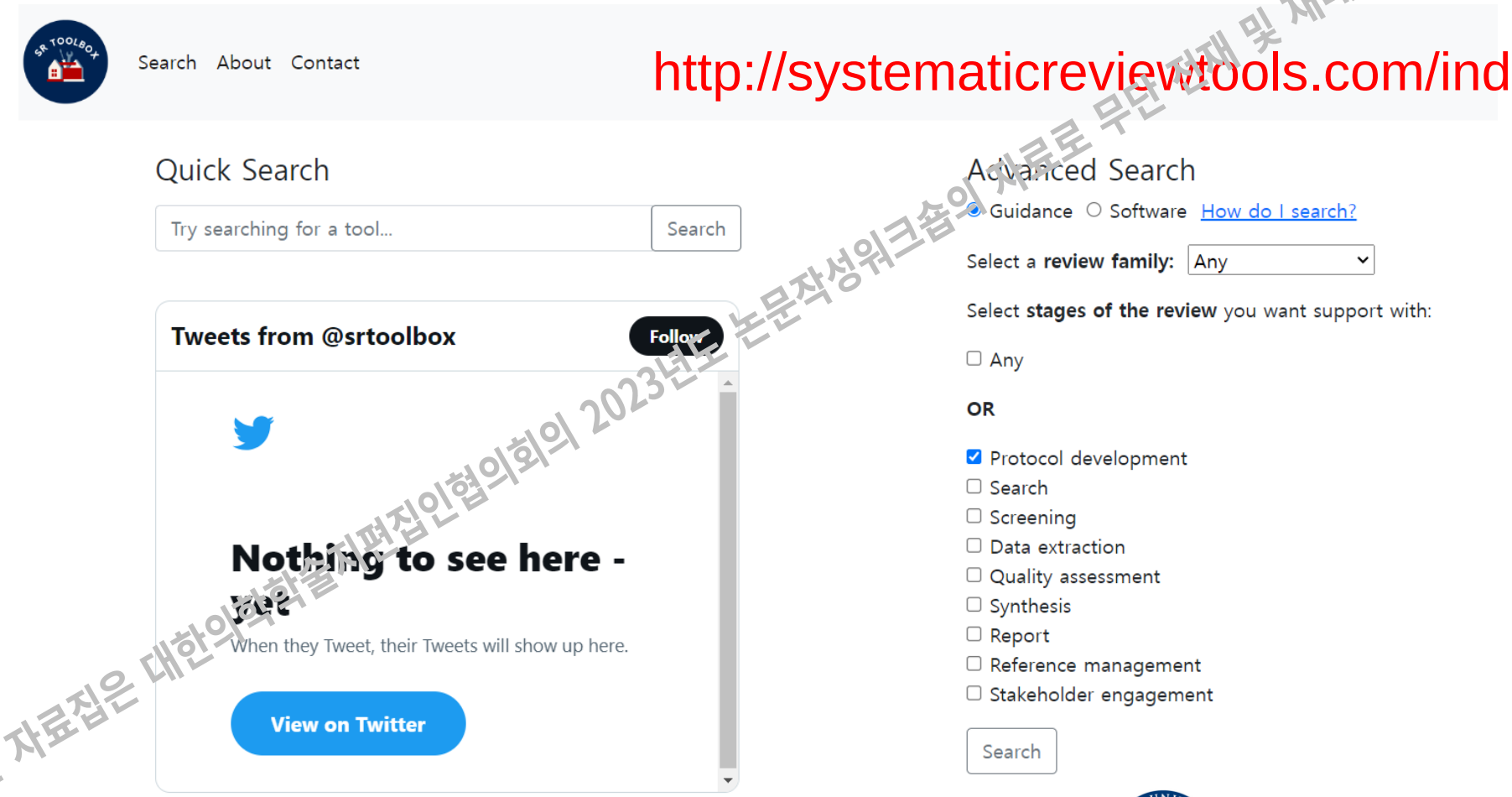
Systematic Review Toolbox



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Systematic Review Toolbox

Search About Contact

http://systematicreviewtools.com/index.php

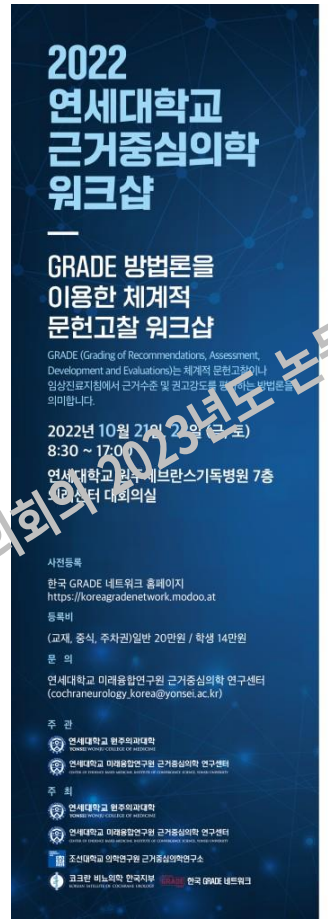
Review family: "**any**" | Review stages: "**Protocol**" | 12 tools have been found.

Name	Summary
A multicomponent decision tool for prioritising the updating of systematic reviews	In the absence of a consensus on appropriate methods for deciding when to update systematic reviews, a decision tool was developed to replace an approach based on an arbitrary and rigid time period with a priority based approach. The tool broadly consists of three criteria: clinical question answered or no longer relevant, new relevant factors to consider, and availability of new studies. The decision tool can help identify reviews most sensitive to change and thus minimise unnecessary updating and waste of resources
Campbell evidence gap map guidance	This guidance, produced by the Campbell Collaboration, is intended to help commissioners and producers of evidence gap maps (EGMs) through the process. It explains the process of undertaking an EGM for both Campbell and for other research, including 10 tips and a guide to the different steps of producing an EGM.
COSMOS-E	Conducting Systematic Reviews and Meta-Analyses of Observational Studies of Etiology (COSMOS-E) provides guidance on all steps in systematic reviews of observational studies of etiology, from shaping the research question, defining exposure and outcomes, to assessing the risk of bias and statistical analysis.
Guidelines for Performing Systematic Literature Reviews in Software Engineering	A comprehensive document which presents general guidelines for undertaking systematic reviews in software engineering.
How to Read Articles That Use Machine Learning	Part of the Users? Guides to the Medical Literature, this article offers guidance of how to evaluate articles on machine learning-based tools, such as clinical diagnostic tools.
PerSPEcTiF	PerSPEcTiF (Perspective, Setting, Phenomenon of interest/problem, Environment, optional Comparison, Time/timing and Findings) is a question framework similar to PICO and SPICE, but designed specifically for exploring complex interventions within qualitative evidence synthesis.

Reference

1. Shea BJ, Reeves BC, Wells G, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ 2017;358:j4008.
2. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71.

한국 GRADE 네트워크 워크숍



Scientific Program : 1일차

08:30 ~ 08:50	Registration
08:50 ~ 09:00	Welcome address 백순구(원주연세의료원장) 정순희(연세대학교 원주의과대학장)
09:00 ~ 09:50	Introduction to systematic review and GRADE 한미아(조선대학교 의과대학)
10:00 ~ 10:50	PICO and patient important outcome 황의창(전남대학교 의과대학)
11:00 ~ 11:50	Literature search 김명하([illegible])
12:00 ~ 13:00	[illegible]
13:00 ~ 13:[illegible]	[illegible] bias assessment : randomized controlled trials 정재홍(연세대학교 원주의과대학)
14:00 ~ 14:50	Risk of bias assessment : non randomized studies 정재홍(연세대학교 원주의과대학)
15:00 ~ 15:50	Risk of bias assessment : practice 정재홍(연세대학교 원주의과대학)
16:00 ~ 16:50	Rating down : risk of bias 정재홍(연세대학교 원주의과대학)
16:50 ~ 17:00	Q and A

Scientific Program : 2일차

08:30 ~ 09:00	Registration
09:00 ~ 09:50	Meta-analysis 이현주(연세대학교 보건대학원)
10:00 ~ 10:50	Heterogeneity, subgroup and sensitivity analyses 이현주(연세대학교 보건대학원)
11:00 ~ 11:50	Introduction to RevMan 황의창(전남대학교 의과대학)
12:00 ~ 13:00	Lunch
13:00 ~ 13:50	Rating down : inconsistency, indirectness, imprecision, publication bias 황의창(전남대학교 의과대학)
14:00 ~ 14:50	Rating up 황의창(전남대학교 의과대학)
15:00 ~ 15:50	Certainty of evidence 한미아(조선대학교 의과대학)
16:00 ~ 16:50	Summary of finding tables 한미아(조선대학교 의과대학)
16:50 ~ 17:00	Q and A

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