Peer review & Critical Appraisal

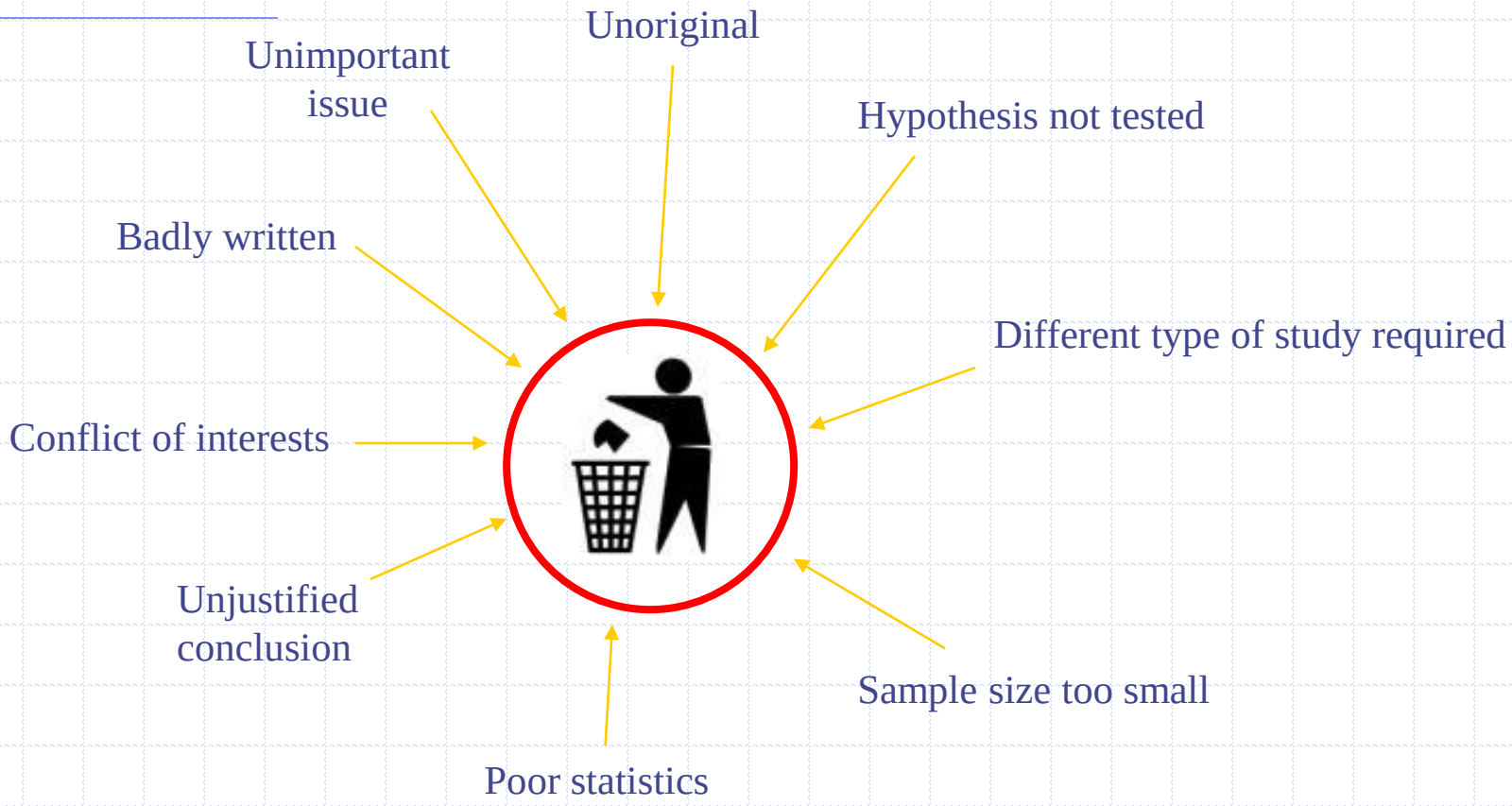
Dr. Mohammad Saatchi

Assistant Professor of Epidemiology

Special thanks to: Dr. Kamran Yazdani

Associate Professor of Epidemiology

The science of 'trashing' a paper



Peer review

- Articles submitted to peer-reviewed journals (manuscripts) are reviewed by experts who advise the editor on whether they should be published and what changes are necessary.

Peer Review - Functions

- To Protect

  i) The author from publishing &

  ii) The subscriber from reading

  Materials of insufficient quality

Editorial decision

An editorial committee may decide that a paper:

- Is acceptable for publication
- Is acceptable for publication following minor revisions
- Is acceptable for publication following major revision
- May be reconsidered for publication following major revisions
- May be considered for publication as a letter or a short report
- Is unacceptable for publication

acceptance rate

- We looked at over 2,300 journals (more than 80% of them published by Elsevier), and calculated that the average acceptance rate was 32%.
- The range of acceptance was from just over 1% to 93.2%.
- Larger publisher
- Older journals
- High-impact journals
- Gold open access journals

Questions that journals ask

- Is the research question important?
- Is it interesting to our readers?
- Is it valid? A scientifically sound study.

What editors and reviewers look for

- Short, clear, precise title
- Good abstract
- Good design and methods
- Appropriate statistics
- Simple tables and figures
- Comprehensive discussion
- Clear and fair conclusions
- Brevity, Balance, Logical organisation
- Follow instructions

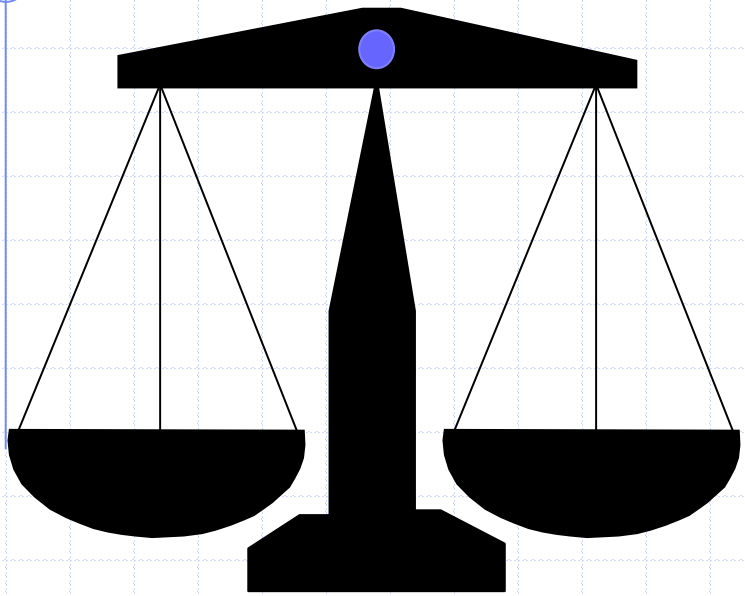
Problems with peer review

- Slow
- Lack of constructive feedback
  - No Clear Justification
- Biased
  - Confirmation Bias
- Overburdened reviewers
  - Lack of Incentives
- Inconsistent quality of reviews
  - overly superficial
  - overly harsh or unhelpful
  - Inadequate expertise
- Failure to detect fraud or errors
- Limited access to data and supplementary materials

Solutions & Alternatives:

- Efforts are being made to address, such as:
  - Open peer review
  - Incentivizing reviewers
  - Artificial intelligence tools
  - Post-publication peer review
    - PubPeer
    - arXiv
    - Welcome Open Research

Critical appraisal



Critical appraisal is the use of explicit, transparent methods to assess the data in published research, applying the rules of evidence to factors such as internal validity, adherence to reporting standards, conclusions and generalizability.

Critical Appraisal: Three preliminary questions

- **Why** was the study done and what hypothesis was being tested?
- **What** type of study was done?
- **Was** the study **design appropriate**?

Why was the study done?

i.e. what was the key research question/ what hypotheses were the author testing?

"**null hypothesis**"

Study designs:

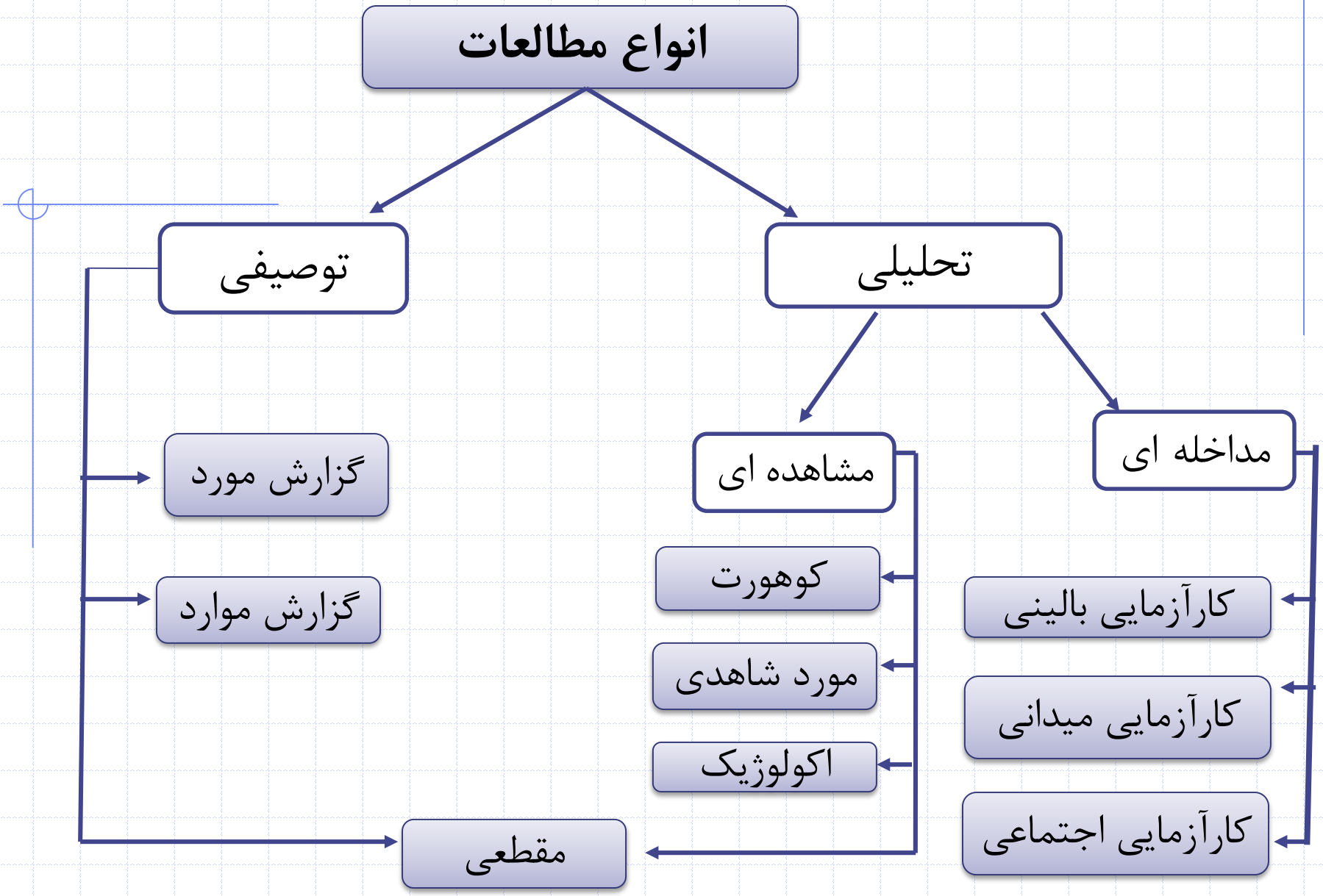
What type of study?

- **Qualitative**
- **Quantitative**

- **Primary** – these report research first hand.
- **Secondary** – summarise and draw conclusions from primary studies.

The Hierarchy of Evidence

7. Systematic reviews & meta-analyses
6. Randomised controlled trials
5. Cohort studies
4. Case-control studies
3. Cross sectional surveys
2. Case reports
1. Expert opinion
…


انواع مطالعات
توصیفی
تحلیلی
گزارش مورد
گزارش موارد
مشاهده ای
مداخله ای
کوهورت
مورد شاهدی
اکولوژیک
کارآزمایی بالینی
کارآزمایی میدانی
کارآزمایی اجتماعی
مقطعی

Special considerations in this study:

- **Choosing a representative sample** (Sampling strategy)
- **Sample size (precision)**
- **Data collection**
- **Potential bias in cross-sectional studies**

Non-response is a particular problem affecting cross-sectional studies and can result in bias of the measures of outcome. This is a particular problem when the characteristics of non-responders differ from responders.

Temporality Bias

- ✓ رابطه بین وضعیت اقتصادی ـاجتماعی و افسردگی
- ✓ ارتباط استفاده از رسانه‌های اجتماعی بر احساس تنهایی
- ✓ رابطه بین مصرف الکل و رفتارهای پرخطر
- ✓ رابطه بین فرسودگی شغلی و کیفیت زندگی

special considerations in RCTs:

- Method of Randomization
- Allocation concealment
- Blinding (Masking)
- Ethical issues
- RCT registration
- Analysis method (ITT, per Protocol or as treated)

Measures of Association

- **Ratios:**
  - ✓ Risk Ratio (**Relative Risk**)
  - ✓ Rate Ratio (Relative Rate)
  - ✓ **Odds Ratio** (Relative Odds)
- **Differences:**
  - ✓ Risk difference (Attributable Risk)

Errors in Research

Associations may be due to

- **Chance (random error)**
  - statistics are used to reduce it by appropriate design of the study
  - statistics are used to estimate the probability that the observed results are due to chance
- **Bias (Systematic error)**
  - must be considered in the design of the study
- **Confounding**
  - can be dealt with during both the design and the analysis of the study
- **True association**

CHECK-LISTS AND TOOLS

What is critical appraisal?

- **Critical appraisal** is the use of explicit, transparent methods to assess the data in published research, applying the rules of evidence to factors such as internal validity, adherence to reporting standards, conclusions and generalizability

Key Steps To Effective Critical Appraisal

1. What are the results?
2. Are the Results valid?
3. How will these results help me/my colleagues do their job?

Critical Appraisal Tools

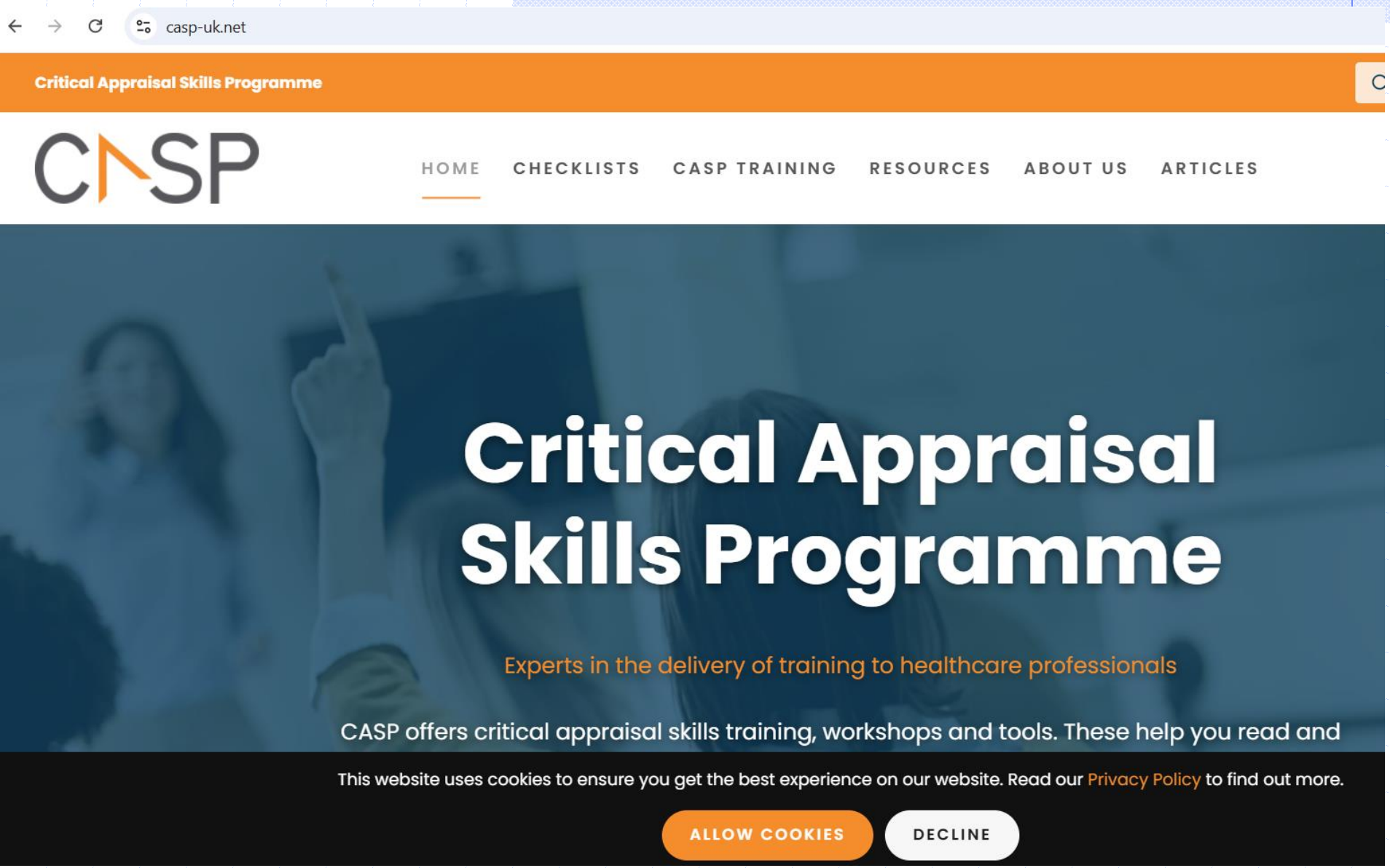
- Why do we need them?
- Where we can find them?

Tools

- Critical Appraisal Tools
- Enhancing the Quality of Reporting

Critical Appraisal Skills Programme (CASP)

http://www.casp-uk.net/


casp-uk.net
Critical Appraisal Skills Programme
CASP
HOME
CHECKLISTS
CASP TRAINING
RESOURCES
ABOUT US
ARTICLES
Critical Appraisal Skills Programme
Experts in the delivery of training to healthcare professionals
CASP offers critical appraisal skills training, workshops and tools. These help you read and
This website uses cookies to ensure you get the best experience on our website. Read our Privacy Policy to find out more.
ALLOW COOKIES
DECLINE

- Critical Appraisal skills enable you to systematically assess the
- trustworthiness
- relevance
- results
- The Critical Appraisal Skills Programme (CASP) has over 28 years of significant and unrivalled expertise in the delivery of training to healthcare professionals.

Critical Appraisal Checklists

- Systematic Reviews with Meta-Analysis of Observational Studies
- Systematic Reviews with Meta-Analysis of Randomised Controlled Trials (RCTs)
- Randomised Controlled Trial (RCT) Checklist
- Systematic Review Checklist
- Qualitative Studies Checklist

Critical Appraisal Checklists

- Cohort Study Checklist
- Diagnostic Study Checklist
- Case Control Study Checklist
- Economic Evaluation Checklist
- Clinical Prediction Rule Checklist
- Cross-Sectional Studies Checklist

How to use a CASP checklist

- **Valid?**

  Is the methodology appropriate to answer the question.

  Is it carried out in a sound way, eliminating bias and confounding?

- **Result?**
- What are the result?
- **Applicable?**

  Will the results help locally?

Section A Is the basic study design valid for a randomised controlled trial?	
1. Did the study address a clearly formulated research question?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: *Was the study designed to assess the outcomes of an intervention?* *Is the research question 'formulated' in terms of:* • *Population studied* • *Intervention given* • *Comparator chosen* • *Outcomes measured?*	
2. Was the assignment of participants to interventions randomised?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *How was randomisation carried out? Was the method appropriate?* • *Was randomisation sufficient to eliminate systematic bias?* • *Was the allocation sequence concealed from investigators and participants?*	
3. Were all participants who entered the study accounted for at its conclusion?	☐ Yes ☐ No ☐ Can't Tell

Section B Was the study methodologically sound?

4. (a) Were the participants 'blind' to intervention they were given?	☐ Yes ☐ No ☐ Can't Tell
(b) Were the investigators 'blind' to the intervention they were giving to participants?	☐ Yes ☐ No ☐ Can't Tell
(c) Were the people assessing/analysing outcome/s 'blinded'?	☐ Yes ☐ No ☐ Can't Tell

Section C: What are the results?

7. Were the effects of intervention reported comprehensively?	☐ Yes ☐ No ☐ Can't Tell

CONSIDER:
- *Was a power calculation undertaken?*
- *What outcomes were measured, and were they clearly specified?*

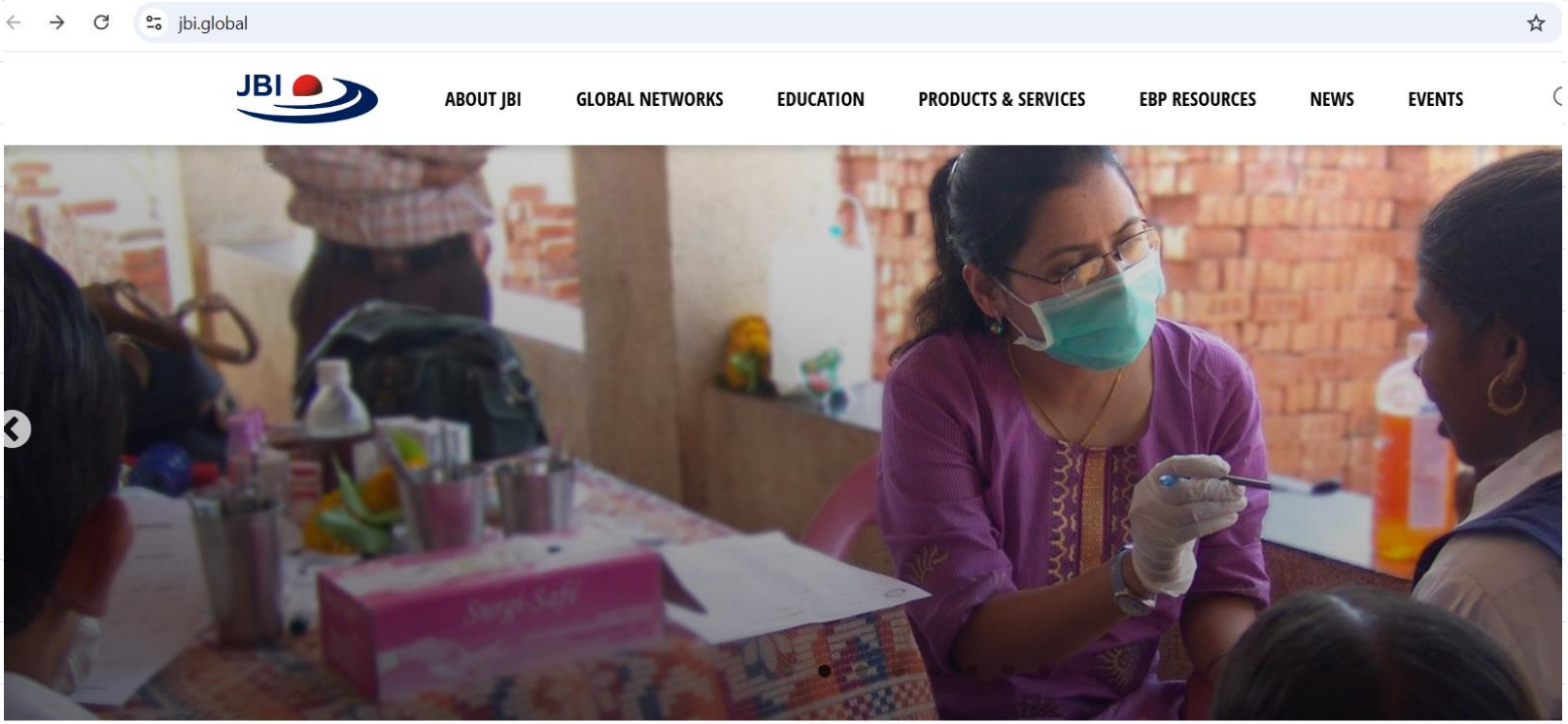
3

- *How were the results expressed? For binary outcomes, were relative and absolute effects reported?*
- *Were the results reported for each outcome in each study group at each follow-up interval?*
- *Was there any missing or incomplete data?*
- *Was there differential drop-out between the study groups that could affect the results?*
- *Were potential sources of bias identified?*
- *Which statistical tests were used?*
- *Were p values reported?*

8. Was the precision of the estimate of the intervention or treatment effect reported?	☐ Yes ☐ No ☐ Can't Tell

Section D: Will the results help locally?

10. Can the results be applied to your local population/in your context?	☐ Yes ☐ No ☐ Can't Tell



https://jbi.global/

JBI is a global organization promoting and supporting evidence-based decisions that improve health and health service delivery.

JBI offers a unique range of solutions to **access**, **appraise** and **apply** the best available evidence.

JBI MODEL OF EBHC

The JBI Model of EBHC is explained in short videos

JBI LIVE WEBINARS

JBI's free webinar series features guest experts in EBHC

SYSTEMATIC REVIEWS PLAYLIST

A collection of videos relating to systematic reviews, including methodology, approaches and tips

JBI MANUAL FOR EVIDENCE SYNTHESIS

JBI Methodology for conducting systematic reviews and evidence syntheses.

JBI SCOPING REVIEW NETWORK

The Network is supported by the JBI Scoping Review

JBI MANUAL FOR EVIDENCE IMPLEMENTATION

Guidance for health

CRITICAL APPRAISAL TOOLS

JBI's toolkit for assessing the trustworthiness, relevance

- Analytical Cross Sectional Studies +
- Case Control Studies +
- Case Reports +
- Case Series +
- Cohort Studies +
- Diagnostic Test Accuracy Studies +
- Economic Evaluations +
- Prevalence Studies +
- Qualitative Research +
- Quasi-Experimental Studies +
- Randomized Controlled Trials +
- Systematic Reviews +
- Textual Evidence: Expert Opinion +
- Textual Evidence: Narrative +
- Textual Evidence: Policy +

JBI CRITICAL APPRAISAL CHECKLIST FOR STUDIES REPORTING PREVALENCE DATA

Reviewer_____Date_____

Author_____Year_____Record Number_____

		Yes	No	Unclear	Not applicable
1.	Was the sample frame appropriate to address the target population?	☐	☐	☐	☐
2.	Were study participants sampled in an appropriate way?	☐	☐	☐	☐
3.	Was the sample size adequate?	☐	☐	☐	☐
4.	Were the study subjects and the setting described in detail?	☐	☐	☐	☐
5.	Was the data analysis conducted with sufficient coverage of the identified sample?	☐	☐	☐	☐
6.	Were valid methods used for the identification of the condition?	☐	☐	☐	☐
7.	Was the condition measured in a standard, reliable way for all participants?	☐	☐	☐	☐
8.	Was there appropriate statistical analysis?	☐	☐	☐	☐
9.	Was the response rate adequate, and if not, was the low response rate managed appropriately?	☐	☐	☐	☐

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

Comments (Including reason for exclusion)

JBI CRITICAL APPRAISAL CHECKLIST FOR STUDIES REPORTING PREVALENCE DATA

How to cite: Munn Z, Moola S, Lisy K, Riitano D, Tufanaru C. Methodological guidance for systematic rev of observational epidemiological studies reporting prevalence and incidence data. Int J Evid Based Healt 2015;13(3):147–153.

Answers: Yes, No, Unclear or Not/Applicable

1. **Was the sample frame appropriate to address the target population?**

   This question relies upon knowledge of the broader characteristics of the population of interest and the geographical area. If the study is of women with breast cancer, knowledge at least the characteristics, demographics and medical history is needed. The term "target population" should not be taken to infer every individual from everywhere or with similar disease or exposure characteristics. Instead, give consideration to specific population characteristics in the study, including age range, gender, morbidities, medications, and oth potentially influential factors. For example, a sample frame may not be appropriate to add the target population if a certain group has been used (such as those working for one organisation, or one profession) and the results then inferred to the target population (i.e. working adults). A sample frame may be appropriate when it includes almost all the memb of the target population (i.e. a census, or a complete list of participants or complete registr data).

2. **Were study participants recruited in an appropriate way?**

   Studies may report random sampling from a population, and the methods section should report how sampling was performed. Random probabilistic sampling from a defined subset the population (sample frame) should be employed in most cases, however, random probabilistic sampling is not needed when everyone in the sampling frame will be included analysed. For example, reporting on all the data from a good census is appropriate as a go census will identify everybody. When using cluster sampling, such as a random sample of villages within a region, the methods need to be clearly stated as the precision of the final prevalence estimate incorporates the clustering effect. Convenience samples, such as a str survey or interviewing lots of people at a public gatherings are not considered to provide a representative sample of the base population.

Assessor:	Date of Appraisal:	Record Number:
Study Author:	Study Title:	Study Year:

Internal Validity		Choice - Comments/Justification	Yes	No	Unclear	N/A
Bias related to selection and allocation						
1	Was true randomization used for assignment of participants to treatment groups?		☐	☐	☐	☐
2	Was allocation to treatment groups concealed?		☐	☐	☐	☐
3	Were treatment groups similar at the baseline?		☐	☐	☐	☐
Bias related to administration of intervention/exposure						
4	Were participants blind to treatment assignment?		☐	☐	☐	☐
5	Were those delivering the treatment blind to treatment assignment?		☐	☐	☐	☐
6	Were treatment groups treated identically other than the intervention of interest?		☐	☐	☐	☐
Bias related to assessment, detection and measurement of the outcome						
7	Were outcome assessors blind to treatment assignment?		Yes	No	Unclear	N/A
	Outcome 1		☐	☐	☐	☐
	Outcome 2		☐	☐	☐	☐
	Outcome 3		☐	☐	☐	☐

Enhancing the QUAlity and Transparency Of health Research

Website translation help

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Your one-stop-shop for writing and publishing high-impact health research

find reporting guidelines | improve your writing | join our courses | run your own training course | enhance your peer review | implement guidelines

Library for health research reporting

The Library contains a comprehensive searchable database of reporting guidelines and also links to other resources relevant to research reporting.

- Search for reporting guidelines
- Not sure which reporting guideline to use?
- Reporting guidelines under development
- Visit the library for more resources

Reporting guidelines for main study types

Randomised trials	CONSORT	Extensions
Observational studies	STROBE	Extensions
Systematic reviews	PRISMA	Extensions
Study protocols	SPIRIT	PRISMA-P
Diagnostic/prognostic studies	STARD	TRIPOD
Case reports	CARE	Extensions
Clinical practice guidelines	AGREE	RIGHT
Qualitative research	SRQR	COREQ
Animal pre-clinical studies	ARRIVE	
Quality improvement studies	SQUIRE	Extensions
Economic evaluations	CHEERS	Extensions

AGREE

- **Appraisal of Guidelines Research and Evaluation**
- The AGREE Instrument for the assessment of clinical practice guidelines is available on-line in several languages

http://www.agreecollaboration.org

SCOPE AND PURPOSE

1. The overall objective(s) of the guideline is (are) specifically described.

1 Strongly Disagree	2	3	4	5	6	7 Strongly Agree

Comments

STROBE Statement

- **STrengthening the Reporting** of **OBservational studies in Epidemiology**
- STROBE stands for an international, collaborative initiative of epidemiologists, methodologists, statisticians, researchers and journal editors involved in the conduct and dissemination of observational studies, with the common aim of STrengthening the Reporting of OBservational studies in Epidemiology.

- **www.strobe-statement.org**

What is STROBE?

STROBE stands for an international, collaborative initiative of epidemiologists, methodologists, statisticians, researchers and journal editors involved in the conduct and dissemination of observational studies, with the common aim of **STrengthening the Reporting of OBservational studies in Epidemiology**.

For STROBE-related entries in PubMed click here.

Aims and use of STROBE

Incomplete and inadequate reporting of research hampers the assessment of the strengths and weaknesses of the studies reported in the medical literature. Readers need to know what was planned (and what was not), what was done, what was found, and what the results mean. Recommendations on the reporting of studies that are endorsed by leading medical journals can improve the quality of reporting.

Observational research comprises several study designs and many topic areas. We aimed to establish a checklist of items that should be included in articles reporting such research – the STROBE Statement. We considered it reasonable to initially restrict the recommendations to the three main analytical designs that are used in observational research: cohort, case-control, and cross-sectional studies. We want to provide guidance on how to report observational research well. Our recommendations are not prescriptions for designing or conducting studies. Also, the checklist is not an instrument to evaluate the quality of observational research.

Further use

Documents

- ✓ STROBE Checklist: cohort, case-control, and cross-sectional studies (combined)
  Download PDF | Word
- ✓ STROBE Checklist (wide): cohort, case-control, and cross-sectional studies (combined)
  Download PDF | Word
- ✓ STROBE Checklist: cohort studies
  Download PDF | Word
- ✓ STROBE Checklist: case-control studies
  Download PDF | Word
- ✓ STROBE Checklist: cross-sectional studies
  Download PDF | Word
- ✓ STROBE Checklist: conference abstracts
  Download PDF

For other languages, see the Translations page

Appraisal Tools for

RANDOMIZED CONTROLLED TRIALS

CONSORT

- Consolidated Standards of Reporting Trials
- 25 items
- Last version 2010

The CONSORT statement comprises:

a 25-item checklist **pertain to the content of**

the Title,

Abstract,

Introduction,

Methods,

Results,

discussion

Other information

a flow diagram **depicts information from 4 stages of a trial**

enrollment,

intervention allocation,

follow-up,

analysis

The SPIRIT Statement

- The SPIRIT 2013 Statement provides evidence-based recommendations for the minimum content of a clinical trial protocol.
- SPIRIT is widely endorsed as an international standard for trial protocols.
- The recommendations are outlined in a 33-item checklist and figure.

SPIRIT

STANDARD PROTOCOL ITEMS: RECOMMENDATIONS FOR INTERVENTIONAL TRIALS

SPIRIT 2013 Checklist: Recommended items to address in a clinical trial protocol and related documents*

Section/item	Item No	Description
Administrative information		
Title	1	Descriptive title identifying the study design, population, interventions, and, if applicable, trial acronym
Trial registration	2a	Trial identifier and registry name. If not yet registered, name of intended registry
	2b	All items from the World Health Organization Trial Registration Data Set
Protocol version	3	Date and version identifier
Funding	4	Sources and types of financial, material, and other support
Roles and responsibilities	5a	Names, affiliations, and roles of protocol contributors
	5b	Name and contact information for the trial sponsor
	5c	Role of study sponsor and funders, if any, in study design; collection, management, analysis, and interpretation of data; writing of the report; and the decision to submit the report for publication, including whether they will have ultimate authority over any of these activities
	5d	Composition, roles, and responsibilities of the coordinating centre, steering committee, endpoint adjudication committee, data management team, and other individuals or groups overseeing the trial, if applicable (see Item 21a for data monitoring committee)

Methods: Participants, interventions, and outcomes

Study setting	9	Description of study settings (eg, community clinic, academic hospital) and list of countries where data will be collected. Reference to where list of study sites can be obtained
Eligibility criteria	10	Inclusion and exclusion criteria for participants. If applicable, eligibility criteria for study centres and individuals who will perform the interventions (eg, surgeons, psychotherapists)
Interventions	11a	Interventions for each group with sufficient detail to allow replication, including how and when they will be administered
	11b	Criteria for discontinuing or modifying allocated interventions for a given trial participant (eg, drug dose change in response to harms, participant request, or improving/worsening disease)
	11c	Strategies to improve adherence to intervention protocols, and any procedures for monitoring adherence (eg, drug tablet return, laboratory tests)
	11d	Relevant concomitant care and interventions that are permitted or prohibited during the trial
Outcomes	12	Primary, secondary, and other outcomes, including the specific measurement variable (eg, systolic blood pressure), analysis metric (eg, change from baseline, final value, time to event), method of aggregation (eg, median, proportion), and time point for each outcome. Explanation of the clinical relevance of chosen efficacy and harm outcomes is strongly recommended
Participant timeline	13	Time schedule of enrolment, interventions (including any run-ins and washouts), assessments, and visits for participants. A schematic diagram is highly recommended (see Figure)
Sample size	14	Estimated number of participants needed to achieve study objectives and how it was determined, including clinical and statistical assumptions supporting any sample size calculations
Recruitment	15	Strategies for achieving adequate participant enrolment to reach

Appraisal Tools for

DIAGNOSTIC TESTS SCREENING TOOLS

Diagnostic tests

- When looking at a paper about a diagnostic test we ask ourselves three questions.

Diagnostic tests

- Is this test useful?

Diagnostic tests

- Is this test useful?
- Is it reliable?

Diagnostic tests

- Is this test useful?
- Is it reliable?
- Is it valid?

Standards for Reporting of Diagnostic Accuracy (STARD)

Improve the *accuracy* and completeness of research reporting and allow readers to assess the "potential for *bias*" in the study reported.

Always use:

- **FLOW CHART or Diagram**
- **CHECKLIST**

STARD checklist

Section & Topic	No	Item
TITLE OR ABSTRACT		
	1	Identification as a study of diagnostic accuracy using at least one measure of accuracy (such as sensitivity, specificity, predictive values, or AUC)
ABSTRACT		
	2	Structured summary of study design, methods, results, and conclusions (for specific guidance, see STARD for Abstracts)

Section & Topic	No	Item
INTRODUCTION		
	3	Scientific and clinical background, including the intended use and clinical role of the index test
	4	Study objectives and hypotheses

Section & Topic	No	Item
METHODS		
Study design	**5**	Whether data collection was planned before the index test and reference standard were performed (prospective study) or after (retrospective study)
Participants	**6**	Eligibility criteria
	7	On what basis potentially eligible participants were identified (such as symptoms, results from previous tests, inclusion in registry)
	8	Where and when potentially eligible participants were identified (setting, location and dates)
	9	Whether participants formed a consecutive, random or convenience series
Test methods	**10a**	Index test, in sufficient detail to allow replication
	10b	Reference standard, in sufficient detail to allow replication
	11	Rationale for choosing the reference standard (if alternatives exist)
	12a	Definition of and rationale for test positivity cut-offs or result categories of the index test, distinguishing pre-specified from exploratory
	12b	Definition of and rationale for test positivity cut-offs or result categories of the reference standard, distinguishing pre-specified from exploratory
	13a	Whether clinical information and reference standard results were available to the performers/readers of the index test
	13b	Whether clinical information and index test results were available to the assessors of the reference standard
Analysis	**14**	Methods for estimating or comparing measures of diagnostic accuracy
	15	How indeterminate index test or reference standard results were handled
	16	How missing data on the index test and reference standard were handled
	17	Any analyses of variability in diagnostic accuracy, distinguishing pre-specified from exploratory
	18	Intended sample size and how it was determined

Section & Topic	No	Item
RESULTS		
Participants	**19**	Flow of participants, using a diagram
	20	Baseline demographic and clinical characteristics of participants
	21a	Distribution of severity of disease in those with the target condition
	21b	Distribution of alternative diagnoses in those without the target condition
	22	Time interval and any clinical interventions between index test and reference standard
Test results	**23**	Cross tabulation of the index test results (or their distribution) by the results of the reference standard
	24	Estimates of diagnostic accuracy and their precision (such as 95% confidence intervals)
	25	Any adverse events from performing the index test or the reference standard
DISCUSSION		
	26	Study limitations, including sources of potential bias, statistical uncertainty, and generalisability
	27	Implications for practice, including the intended use and clinical role of the index test
OTHER INFORMATION		
	28	Registration number and name of registry
	29	Where the full study protocol can be accessed
	30	Sources of funding and other support; role of funders

COSMIN Checklists

چارچوب طراحی، گزارش و ارزیابی کیفیت روشناسی مطالعات روانسنجی:
چک لیست های تجدیدنظرشده کاسمین

جدول ۱. تعاریف ابعاد، ویژگی‌ها و جنبه‌های اندازه‌گیری براساس طبقه‌بندی کاسمین

عبارت			تعریف
بعد	ویژگی اندازه‌گیری	جنبه موردنظر	
پایایی (Reliability)			درجه‌ای که در آن، اندازه‌گیری عاری از خطای اندازه‌گیری است.
	همسانی درونی (Internal Consistency)		درجه‌ای از همبستگی متقابل بین گویه‌های ابزار را نشان می‌دهد.
	پایایی		نسبت واریانس کل اندازه‌گیری‌ها که به تفاوت بین نمرات اشاره دارد.
	خطای اندازه‌گیری (Measurement Error)		خطای سیستماتیک و تصادفی نمرات یک ابزار که به تغییرات واقعی در سازه موردنظر نسبت داده نمی‌شود.
روایی (Validity)			درجه‌ای که یک ابزار مرتبط با سلامت، بتواند سازه مورد نظر را بسنجد.
	روایی محتوا (Content Validity)		درجه‌ای که محتوای یک ابزار، بتواند بازتاب مناسبی از سازه مورد اندازه‌گیری را ارائه دهد.
		روایی صوری (Face Validity)	درجه‌ای که ظاهر گویه‌های یک ابزار، انعکاس کافی از ساختار موردسنجش را ارائه دهد.
	روایی سازه (Construct Validity)		درجه‌ای که نمرات یک ابزار بتواند سازگاری سازه موردانداز‌ه‌گیری را با فرضیه‌های پژوهش (روابط داخلی، روابط با نمرات سایر ابزارها یا تفاوت بین گروه‌ها) نشان دهد.
		روایی ساختاری (Structural Validity)	درجه‌ای از نمرات یک ابزار که بتواند بازتاب مناسبی از ابعاد ساختاری سازه موردسنجش را ارائه دهد.
		آزمون فرضیه (Hypothesis Testing)	مشابه روایی سازه
		روایی بین‌فرهنگی (Cross-cultural Validity)	درجه‌ای از عملکرد گویه‌ها در یک ابزار ترجمه‌شده یا اقتباس‌شده که بازتاب مناسبی از عملکرد گویه‌های نسخه اصلی را ارائه دهد.
	روایی ملاکی (Criterion Validity)		درجه‌ای از نمرات یک ابزار که بازتاب مطلوبی از استاندارد طلایی سازه ارائه دهد.
قابلیت پاسخ‌گویی (Responsiveness)			توانایی یک ابزار در تشخیص تغییرات ایجادشده در طول زمان در سازه‌ای که مورد اندازه‌گیری قرار می‌گیرد.
	قابلیت پاسخ‌گویی		مشابه قابلیت پاسخ‌گویی
تفسیرپذیری (Interpretability)			درجه‌ای از توانایی ابزار که قادر باشد امتیازات کمی را به معنای کیفی و قابل‌درک (نظیر اهمیت بالینی) سازه نسبت دهد.

Critical appraisal of

SECONDARY STUDIES

Some of the Appraising tools

Appraising systematic reviews

- Critical Appraisal Skills Program (CASP): Systematic Reviews
- Systematic Review (of therapy) Worksheet
- ARIF (Aggressive Research Intelligence Facility)

Appraising meta-analyses

- QUOROM Statement Checklist

PRISMA Checklist

- The 27 checklist items pertain to the content of a systematic review and meta-analysis, which include the title, abstract, methods, results, discussion and funding.

THANK YOU