*P4HE Workshop Sprint: Research Synthesis for Evidence-Based Health Policy*
What is Evidence Synthesis?
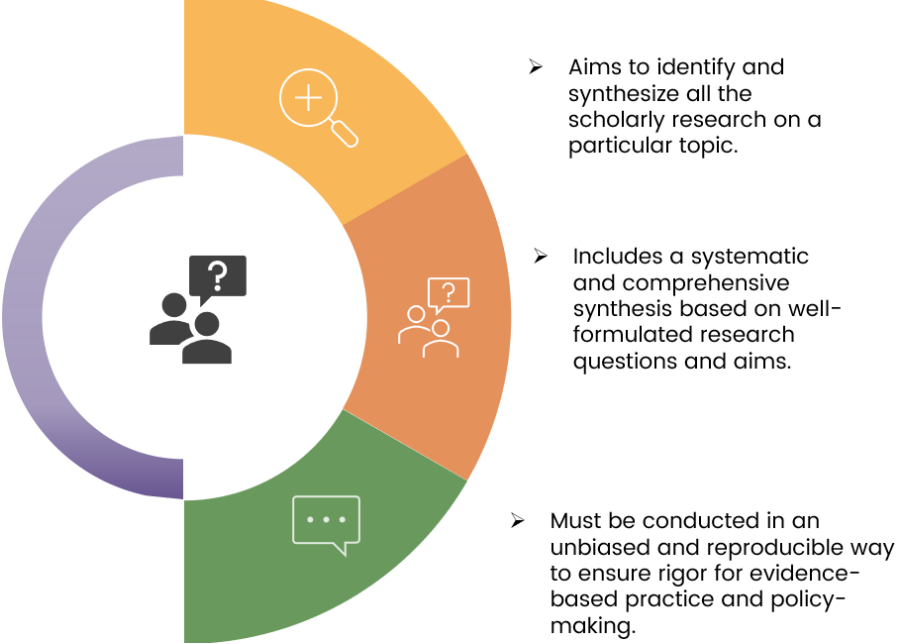
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The Partners for Advancing Health Equity Collaborative hosted a three-series workshop sprint on how to conduct research synthesis for evidence-based health policy. This brief outlines the foundational concepts on how to conduct evidence syntheses.

## What is Evidence Synthesis?

Evidence synthesis is the scientific process of bringing together diverse literature across a range of sources and disciplines to inform debates and decisions on specific issues. Synthesized evidence is the main piece of scientific evidence that policymakers look to inform their decision-making given that it synthesizes the entire body of scientific literature and focuses on the most recent and relevant work.

**Evidence Synthesis**

The scientific study of bringing together information from a range of sources and disciplines to inform debates and decisions on specific issues.

➢ Aims to identify and synthesize all the scholarly research on a particular topic.

➢ Includes a systematic and comprehensive synthesis based on well-formulated research questions and aims.

➢ Must be conducted in an unbiased and reproducible way to ensure rigor for evidence-based practice and policy-making.

## What are the Steps to Conducting Evidence Synthesis?

A systematic review follows an eight-step process beginning with defining a clear research or policy oriented question. It also involves searching for existing reviews and conducting a comprehensive search using specific terms and databases and developing criteria for what should be included and excluded from the review. After determining these criteria, titles and abstracts are screened for eligibility. The full text of the articles that make it through the first round of screening are screened a second time for inclusion in the synthesis. Once all relevant articles are identified, data extraction

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and quality assessment occur followed by data analysis involving either meta-analysis or narrative analysis, depending on the included study types. Lastly, results are synthesized, and a detailed report is written, including the protocol, search strategy, screening details, and data extraction templates, ensuring transparency and rigor in the review process. Below we share a checklist to support conducting reviews.

| Steps | Complete? |
|---|---|
| **1. Write a Protocol to include the Research/Policy Question and Inclusion/Exclusion Criteria**<br>➢ Turn your topic into a **narrow and specific** question to guide the project.<br>➢ Identify key concepts & terms.<br>➢ Try using a question framework to develop your question, such as **PEO** (population, exposure, outcome).<br>➢ Check to see if there is a review published or in progress on your topic.<br>➢ Describe the rationale, hypothesis, and planned methods of the review.<br>➢ Consider registering your protocol to inform others of the work you are doing. This also helps reduce bias in your findings by having all of your planned steps written out and available ahead of time. | |
| **2. Search**<br>➢ Write a systematic, exhaustive search that attempts to identify all studies that meet the eligibility criteria.<br>➢ Include database vocabulary terms, title/abstract term searches, and use Boolean operators.<br>➢ Translate each search term to other databases. Use 2 or more scholarly databases. | |
| **3. Conduct Title and Abstract Screening**<br>➢ Based on titles & abstracts, remove irrelevant studies based upon inclusion & exclusion criteria as defined in the protocol. | |
| **4. Screen Full Text**<br>➢ For articles that meet inclusion criteria in the first round, get full text.<br>➢ Read full text of each article and sort studies based on same inclusion/exclusion criteria. | |
| **5. Extract Data and Assess Quality**<br>➢ Extract relevant pieces of information from the studies you include in your review. Includes organizing the information to help you synthesize the studies and draw conclusions.<br>➢ Data to extract will include study characteristics, information aligned with research & policy questions (e.g., intervention, outcomes, impacts, etc.).<br>➢ Create an Excel file or some other similar program. | |
| **6. Analyze Information**<br>➢ Review extracted data for all included studies.<br>➢ Determine the type of analysis: 1) Meta-analysis: quantitative — combines all the statistical results from all included studies. Best for reviews of only one study type. (i.e., randomized controlled trials only) or 2) Narrative: Recommended for heterogeneous groups of studies, or reviews including multiple study types. Analyze relationships within and between studies. Review quality assessment information to gauge overall evidence validity. | |

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| Steps | Complete? |
|---|---|
| **7. Synthesize Results**<br>➢ Communicate the results of the analysis in a way that is easy to understand.<br>➢ Use graphics, charts, or tables, if helpful.<br>➢ Keep synthesis concise and focused on the research or policy questions. | |
| **8. Write Report**<br>➢ Include the following with your manuscript or report: Protocol checklist; Search strategy for 1 database; Information on screening and statistical software packages; Data extraction form (template); and any kind of data you are willing to share.<br>➢ Brevity of information will depend on audience | |

**1**

Evidence synthesis follows a systematic process to reduce bias and capture all available evidence on a given topic.

**2**

Searching for resources requires a strategic method to yield the highest quality results.

**3**

The completion of a systematic synthesis can result in the most relevant information on a topic.

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## What are Best Practices for Conducting Searches and Screening Research?

Using best practices when conducting [literature searches](#) paves the way for an effective systematic review. These include staying organized, translating terms across databases, the creation of clearly defined inclusion and exclusion criteria, and a two-staged screening process. For syntheses in the health equity space, adopt a public health perspective, focus on policy-related questions, and conclude with actionable information.

| Best Practices |
| --- |
| **1.  Document Exhaustive Search Strategies** |
| ➢  Stay organized and increase reproducibility. |
| ➢  Keep an excel, text file, or document to track searches, number of results, and dates. |
| ➢  The goal is to systematically identify all studies that would meet the eligibility criteria. |
| ➢  Use two or more scholarly databases (Will introduce bias if only using one). |
| **2.  Identify Search Term Synonyms** |
| ➢  Check database suggestions. |
| ➢  Use Google to search for natural language terms. |
| ➢  Think about field-specific jargon. |
| **3.  Putting it all Together with Boolean Operators** |
| ➢  Utilizing the terms: 'and,' 'or,' 'not' when searching. |
| ➢  How to specify search results when using these terms. |
| **4.  Develop Inclusion/Exclusion Criteria** |
| ➢  Must be decided before the start of the review; should be part of protocol. |
| ➢  Keep on hand for reference when screening articles. |
| ➢  Consider the following: |
|       o  Type of studies |
|       o  Participants |
|       o  Interventions |
|       o  Outcome measures |
|       o  Location |
|       o  Setting |
| **5.  Screen Titles & Abstracts** |
| ➢  Read title & abstracts. |
| ➢  Use inclusion/exclusion criteria. |
| ➢  Evidence synthesis article screening software can help you stay organized. |
| **6.  Screen Full Text** |
| ➢  Examine all articles that made it through title & abstract screening in full detail. |
| ➢  Identify specific inclusion/exclusion criteria for each article. |
| ➢  2 reviewers recommended for this process. |
| **7.  Tips for Staying Organized** |
| ➢  Create an excel file of search queries and results and/or keep track of citation numbers. |
| ➢  Use citation manager to keep all references (Zotero, Mendeley, & EndNote are a few examples). |

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## How can Syntheses be used to Advance Health Equity?

Data extraction in systematic reviews involves reading selected articles, deciding what information to collect, and using tools like custom data extraction forms. Quality assessment relies on recognized criteria, while synthesis can be quantitative (meta-analysis) or qualitative (narrative). Focus on policy relevance, economics, and addressing counterarguments. When writing for policy, be specific, present arguments, and engage decision-makers effectively.

| Steps | Tools |
|---|---|
| **1. Extract Data** <br> ➢ Read each article to be included in the review. <br> ➢ Decide which pieces of information need to be collected. <br> ➢ Choose a data collection method. <br> ➢ Create a data extraction form. <br>     o Use a standardized form or create your own. <br>     o Systematic reviews software can help create custom data extraction forms. <br> ➢ Extract the data: <br>     o 2 or more people should complete this step independently. <br>     o Review results to ensure consistency and reduce bias. | Screening Software <br> ➢ Rayyan <br> ➢ Abstrackr <br> ➢ CADIMAP <br> ➢ Covidence <br> ➢ EPPI-Reviewer <br> ➢ JBI SUMARI <br> ➢ DistillerSR |
| **2. Assess Quality** <br> ➢ Also known as risk of bias assessment, or quality reporting. <br> ➢ Read other reviews written by/for subject matter experts in your discipline/field/profession. <br> ➢ Use a grading criterion recognized and used by your peers. <br> ➢ Report the quality/risk of bias scale you used in your Methods section. <br> ➢ Report the grade/level of quality you assign to each study either summarized in the results section or as an extra column in your study characteristics table. | Appraisal Tools <br> ➢ Joanna Briggs Institute Critical Appraisal Tools <br> ➢ Scottish Intercollegiate Guidelines Network (SIGN) Critical Appraisal Checklists <br> ➢ GRADE approach <br> ➢ The Systematic Review Toolbox |
| **3. Describe the Results** <br> ➢ This step can be referred to synthesizing, describing, or mapping. <br> ➢ Similar studies: <br>     o **Meta-analysis** - As the name suggests, a meta-analysis uses a quantitative statistical approach to bring together results from multiple studies. <br>     o **Multiple research designs** – narrative or descriptive qualitative synthesis. | Qualitative and Quantitative Reporting Diagram <br> ➢ PRISMA flow diagram <br> ➢ EPPI-Mapper <br> ➢ RevMan |

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| Steps | Tools |
|---|---|
| **4. Write for Policy**<br>➢ Focus your synthesis on the policy relevant question.<br>➢ Use alternative ways of describing the findings with storytelling or infographics.<br>➢ Include your arguments for the desired policy.<br>➢ Synthesize findings that might be used against your recommendations.<br>➢ Mitigate arguments against your policy position.<br>➢ Make it actionable and specific. | Infographic Tools<br>➢ Canva<br>➢ Piktochart<br>➢ Kumu.io<br><br>Policy Tools<br>➢ Broad Research Communication Lab |

### Tips for Maintaining an Action-Oriented Public Health Practitioner Perspective

➢ Focus searching and screening on the policy related question.

➢ Develop learning needs that are actionable and specific.

➢ Consider using meta-analyses to measure the overall impact across studies that are significant.

➢ Bring in the economic argument through cost-effective analyses.

➢ Don't present on everything that you've learned. Stay focused on the policy relevant material.

## Key Resources

**Evidence-Synthesis Examples**

1. Advocacy for Health Equity: A Synthesis Review – The aim of this review is to synthesize the evidence in the academic and gray literature and to provide a body of knowledge for advocates to draw on to inform their efforts.
2. Social Determinants of Pregnancy-Related Mortality and Morbidity in the United States: A Systematic Review – This review synthesizes the literature on associations between social determinants of health and pregnancy-related mortality and morbidity in the US and to highlight opportunities for intervention and future research.
3. Impact of COVID-19 Mitigations on Anxiety and Depression amongst University Students: A Systematic Review and Meta-Analysis – This review synthesizes evidence on changes in anxiety and depression among university students before and after the implementation of COVID-19 mitigation measures.

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4. [Spiraling risk: Visualizing the multilevel factors that socially pattern HIV risk among gay, bisexual & other men who have sex with men using Complex Systems Theory](#) - Authors use Complex Systems Theory and the PRISMA guidelines to conduct a systematic review of 63 global reviews to understand how HIV is socially patterned among gay, bisexual, and other men who have sex with men.

**Evidence synthesis Resources**

1. [Introduction to Systematic Reviews & Meta-Analyses](#) – A short tutorial on what a systematic review is, why and when to do a systematic review, and what a meta-analysis is.
2. [Evidence Synthesis: Functions, Types, and Methods](#) - This presentation outlines some functions of literature reviews, and then make some points about how the function or purpose of your review should inform the type that you choose to do, and the methods that you employ.
3. [Evidence Synthesis: Which Databases to Use, and How to Find Them?](#) - This presentation summarizes ways of identifying which literature databases to use for your topic, and how to access databases via the Library subscriptions.
4. [Evidence Synthesis: Structuring Topic Searches and Other Tips](#) - This presentation introduces searching for literature using keywords and a few ways of managing your literature-based work so that things are a bit easier.
5. [Evidence Synthesis: Quality Assessments and Risk of Bias](#) - This presentation discusses conducting quality and risk of bias assessments in review studies.

**Evidence-Synthesis Project Guidance**

1. [Joanna Briggs' Institute (JBI) Manual for Evidence Synthesis](#) - JBI is one of the leaders in evidence synthesis methodology. Use this guide to develop more in-depth understandings of different types of evidence synthesis projects.
2. [Cochrane Handbook for Systematic Reviews of Interventions](#) - Cochrane is the leader in evidence synthesis studies on interventions (randomized controlled trials.)
3. [Campbell Collaboration](#) - Campbell Collaboration is a major player in evidence synthesis studies that focus on the effectiveness of social interventions (a great resource for policy makers and influencers!)

**Interested in learning more?** Resources related to this session are available [here](#). For more Partners for Health Equity content including summit sessions, past webinars, and a resource library, visit the P4HE [website](#).

## About P4HE

The P4HE Collaborative harmonizes goals, advances learning, and facilitates collaboration to improve health equity. It is led by the Tulane University School of Public Health and Tropical Medicine and is part of the Tulane Institute for Innovations in Health Equity. Support for this program is provided by ICF. Funding is provided by a grant from the Robert Wood Johnson Foundation.

**Foster**
the co-creation and spread of knowledge.

**Sharpen**
our research tools to focus on solutions; facts and stories.

**Disrupt**
traditional research approaches.

**Harmonize**
our voices.

**Challenge**
the status quo.

**Shine**
light on practices that are indefensible, irrationional and inconsistent.

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