



Title: Understanding Evidence-Based Research in Healthcare (a tutorial)

Introduction: The Significance of Evidence-Based Research in Healthcare

In the ever-evolving field of healthcare, staying informed about the latest research is not only beneficial but often lifesaving. Evidence-based research is the cornerstone of informed decision-making for healthcare professionals, researchers, and policymakers. It ensures that healthcare practices and policies are grounded in the most reliable and up-to-date evidence, leading to improved patient outcomes, better-informed clinical decisions, and more effective healthcare systems.

The objective of this tutorial is to equip you with the skills and knowledge needed to navigate the vast world of healthcare research effectively. We will explore the fundamental concepts of identifying scholarly research, mastering electronic database searches, and critically evaluating sources. By the end of this tutorial, you will have a comprehensive understanding of the tools and techniques essential for evidence-based healthcare research.

The key objectives of this tutorial include:

1. Recognizing the importance of scholarly research in healthcare.
2. Learning how to conduct efficient electronic database searches.

3. Understanding the use of limiters to refine search results.
4. Mastering the art of constructing effective keyword searches.
5. Developing the ability to evaluate sources using established criteria.
6. Realizing the benefits of using library databases, Google/Google Scholar and Bing in tandem.
7. Exploring methods for interviewing scholars and librarians to enhance your research skills.

Scholarly research plays a pivotal role in healthcare for several compelling reasons. When healthcare professionals, researchers, and policymakers rely on evidence-based research, it significantly enhances the quality of patient care and the overall healthcare system. Here's why scholarly research is of paramount importance:

- **Reliability and Accuracy:** Scholarly research undergoes rigorous evaluation by experts in the field, ensuring the highest levels of accuracy and reliability. This means that healthcare professionals can trust the information they find in scholarly sources, making more informed clinical decisions.
- **Evidence-Based Practice:** Healthcare is an ever-evolving field. By consulting scholarly research, healthcare professionals stay current with the latest developments, treatment modalities, and medical discoveries. Evidence-based practice ensures that patients receive the most effective and up-to-date care.
- **Peer Review:** One of the hallmark features of scholarly research is the peer review process. Before being published, scholarly articles are reviewed by experts in the field. This review process helps to eliminate errors, bias, and ensures the validity of the research findings.
- **Credibility:** Scholarly sources, especially those published in peer-reviewed academic journals, carry a high degree of credibility. Healthcare institutions and organizations frequently rely on these sources when formulating policies and guidelines.

Examples: Scholarly vs. Non-Scholarly Sources

- *Scholarly Source*: "A randomized controlled trial published in the Journal of Clinical Oncology that examines the effectiveness of a new chemotherapy regimen for breast cancer patients."
- *Non-Scholarly Source*: "A blog post on a commercial health website discussing various 'miracle' cancer treatments with no citations or scientific backing."
- *Scholarly Source*: "A research paper in the New England Journal of Medicine detailing a large-scale clinical trial on the safety and efficacy of a new COVID-19 vaccine."
- *Non-Scholarly Source*: "A Wikipedia article about COVID-19 vaccines that can be edited by anyone and may not cite reputable sources."

Understanding these differences is essential as it enables healthcare professionals to rely on information that has been rigorously evaluated, peer-reviewed, and deemed credible, ultimately ensuring the best possible care for patients.

The Holistic Approach to Searching

Conducting electronic database searches should be part of a holistic approach to information retrieval. In addition to specialized databases like CINAHL, LIRN and PubMed, it's beneficial to utilize general search engines like Google or Bing. These search engines can provide a broader perspective and uncover resources that might not be present in dedicated databases. The holistic approach involves cross-referencing information from multiple sources to ensure a comprehensive and well-informed understanding of the topic at hand. Remember, the combination of specialized databases and general search engines can enhance the breadth and depth of your research.

Introduction to Popular Healthcare Databases

Three popular healthcare databases are CINAHL, LIRN and PubMed:

- **CINAHL (Cumulative Index to Nursing and Allied Health Literature):** CINAHL is a specialized database for nursing and allied health literature. It is particularly relevant for nursing students and professionals. CINAHL offers access to an extensive collection of nursing-related resources, including journal articles, research studies, and clinical guidelines.
- **LIRN (ProQuest Central Database):** LIRN, a subset of ProQuest Central, is a multisubject database that includes healthcare-specific resources. It offers a wide range of content from various disciplines, including healthcare, medicine, and allied health fields. LIRN is a valuable resource for conducting comprehensive research.
- **PubMed:** PubMed is a well-known database maintained by the National Center for Biotechnology Information (NCBI). It covers a broad spectrum of healthcare topics, making it valuable for healthcare professionals and researchers. PubMed is a vast repository of biomedical literature, including articles from various medical and healthcare fields.

Key Characteristics of Scholarly Sources

Scholarly sources exhibit specific characteristics that distinguish them from non-scholarly ones:

- **Peer Review:** As mentioned, scholarly sources undergo a peer review process where experts in the field evaluate the research before publication. This rigorous review ensures that the research is credible and accurate.
- **Academic Journals:** Scholarly sources are often published in academic journals. These journals are recognized for their adherence to high editorial and publication standards.

- **Citations and References:** Scholarly articles include extensive citations and references to other scholarly works. These citations help you trace the origins of ideas, confirm the accuracy of information, and explore related research.
- **Abstracts and Methodology:** Scholarly articles typically include abstracts summarizing the research and detailed methodologies explaining how the study was conducted. This transparency is crucial for evaluating the validity of the research.

How to Use Limiters and Their Role in Refining Search Results

In the world of electronic databases, "limiters" are powerful tools that allow you to precisely tailor your search results. These features help refine your search by applying specific criteria to narrow down results. Limiters are particularly valuable in healthcare databases, as they can assist in finding the most relevant and high-quality information for your research.

Step-by-Step Guide: Setting Limiters in (Healthcare) Databases

Here's a step-by-step guide on how to set limiters in healthcare databases:

Step 1: Select Your Database

- Begin by selecting the healthcare database you intend to search, such as CINAHL, PubMed, or LIRN. Access the database through your institution's library website or directly if you have a subscription.

Step 2: Define Your Search Query

- Before applying limiters, formulate a clear search query that outlines your research topic. Having a well-structured query is crucial for the effectiveness of your search.

Step 3: Access Advanced Search Options

- Once you're within the database, navigate to the advanced search options. This is where you'll find the tools to set your limiters.

Identify Available Limiters

- In the advanced search menu, locate the section where limiters are available. The types of limiters may vary depending on the database, but common ones include:
- **Publication Date:** Specify a date range for the publications you want to retrieve. This can help you access the most recent or historically significant research.
- **Peer-Reviewed:** Choose the option to retrieve only peer-reviewed articles. This ensures that your results meet high-quality academic standards.
- **Study Type:** Select the types of studies you're interested in, such as clinical trials, systematic reviews, or observational studies.
- **Language:** Filter results by language to ensure you receive publications in a language you understand.
- **Age Group:** If your research involves a specific age group, like pediatrics or geriatrics, you can narrow down your results accordingly.
- **Full Text Available:** Opt for results that provide full-text access, which can be essential for an in-depth review.
- **Publication Type:** Specify the types of publications you're looking for, such as journal articles, books, or conference papers.

Set Your Limiters

- After identifying the available limiters, select the ones that best match your research requirements. You can often activate these limiters with checkboxes or dropdown menus.

Here are some examples to demonstrate how limiters can be utilized to refine search results:

Example 1: Peer-Reviewed Articles

- If you're conducting research that demands peer-reviewed sources for academic credibility, apply the "Peer-Reviewed" limiter to receive results exclusively from peer-reviewed journals.

Example 2: Recent Research

- If your research relies on the latest advancements in the field, set a "Publication Date" limiter to retrieve articles published within the past five years.

Example 3: Specific Age Group

- Suppose you're working on a project concerning pediatric healthcare. Use the "Age Group" limiter to restrict your results to articles that focus on children.

Example 4: Full-Text Availability

- When it's vital to access complete articles, activate the "Full Text Available" limiter to ensure that your search results contain articles with full-text access.

Using Limiters Wisely

While limiters can significantly enhance the precision of your searches, it's essential to use them wisely. Applying too many limiters can sometimes lead to overly narrow search results,

potentially excluding valuable resources. Therefore, it's advisable to strike a balance by selecting the most relevant limiters that align with your research objectives.

Limiters are valuable allies in the quest for targeted and evidence-based research. Whether you're conducting a literature review or investigating a specific topic, understanding how to effectively utilize limiters in healthcare databases is a skill that can save you time and improve the quality of your research.

Tips for Effective Keyword Searches

Crafting Effective Search Queries with Keywords

Effective keyword searches are the cornerstone of successful database research. In healthcare, where precision is paramount, constructing well-thought-out search queries can make all the difference in finding relevant information. Here are some key tips to guide you through this process:

The Art of Crafting Search Queries

- **Start with a Clear Focus:** Begin your search by identifying the main elements of your research question or topic. What are the key concepts or aspects you need to explore?
- **Identify Keywords:** For each concept or aspect, generate a list of relevant keywords. These are the words or phrases that best represent the elements of your research. Be specific and think about synonyms or related terms.

- **Boolean Operators:** Utilize Boolean operators like "AND," "OR," and "NOT" to connect your keywords logically. "AND" narrows your search by requiring all terms to appear, "OR" broadens it by including any of the terms, and "NOT" excludes specific terms.

The Power of Synonyms and Related Terms

In the realm of healthcare research, synonyms and related terms are your allies. Different authors and sources may use varying terminology to describe the same concepts. Incorporating synonyms and related terms in your search queries broadens your search and ensures you don't miss valuable articles.

- **Example 1:** If you're researching heart attacks, also include terms like "myocardial infarction" or "acute coronary syndrome."
- **Example 2:** For studies related to mental health, include synonyms like "psychological well-being," "emotional health," or "mental wellness."

Speaking the Language of Databases

Every database has its unique language. Understanding this language, often hidden in subject headings or controlled vocabularies, can significantly enhance your searches. When using specific databases like CINAHL, PubMed, or LIRN, it's essential to become familiar with their preferred terms and the way they organize information.

- **Tip 1:** Explore Subject Headings (MeSH Terms): In databases like PubMed, investigate their Medical Subject Headings (MeSH) to find the standardized terms used for specific medical concepts. This ensures your query aligns with the database's terminology.
- **Tip 2:** Database Thesaurus: Many databases have a thesaurus or vocabulary guide. Refer to it to discover approved terms and the hierarchical structure of the database's language.

Practical Examples of Search Queries

To illustrate the process of constructing effective search queries, here are examples for various healthcare topics:

Example 1: Diabetes Management in Adolescents

- Start with the core concepts: "diabetes," "management," "adolescents."
- Identify synonyms and related terms: "type 1 diabetes," "adolescent health," "diabetes care."
- Construct your query: "(diabetes OR 'type 1 diabetes') AND (management OR care) AND (adolescents OR 'adolescent health')."

Example 2: Cardiovascular Risk Factors and Obesity

- Core concepts: "cardiovascular risk," "obesity."
- Synonyms and related terms: "heart disease risk," "overweight," "body mass index."
- The query: "(cardiovascular risk OR 'heart disease risk') AND (obesity OR overweight OR 'body mass index')."

Effective keyword searches are not only about creativity but also about precision. By understanding the language of databases and incorporating synonyms, you'll improve your ability to locate the most relevant and valuable sources in the world of healthcare research.

Evaluating Sources of Evidence

The Vital Role of Critical Evaluation

In the realm of healthcare, where the accuracy and reliability of information are of utmost importance, the ability to critically evaluate sources is a fundamental skill. Every piece of information you encounter should be assessed for its quality and trustworthiness. Here's why it's crucial:

- **Patient Care and Well-being:** In healthcare, the stakes are high. Incorrect or unreliable information can impact patient care and well-being. As a healthcare practitioner or researcher, your decisions are only as good as the information on which they are based.
- **Scientific Advancement:** Valid and credible research forms the foundation of scientific advancement in healthcare. Failing to critically evaluate sources can lead to the perpetuation of flawed or outdated practices.
- **Evidence-Based Practice:** Healthcare professionals are expected to embrace evidence-based practice. This means using the best available evidence from quality sources to inform decisions. Evaluating sources is a key part of this process.

Evaluation Criteria: CRAAP Method

One of the most effective ways to critically assess sources is by employing an evaluation framework. The CRAAP method is a widely recognized framework that includes five essential criteria: Currency, Relevance, Authority, Accuracy, and Purpose. Here's what each of these criteria entails:

- **Currency:** Assess how up to date the information is. In healthcare, timeliness is often paramount. Ask yourself, is the publication date recent enough to be relevant to your topic?
- **Relevance:** Determine if the information directly relates to your research question or topic. Irrelevant information can lead you astray.
- **Authority:** Investigate the qualifications and expertise of the author or source. In healthcare, credibility is crucial. Ask, is the author an expert in the field, and is the source reputable?
- **Accuracy:** Scrutinize the reliability and correctness of the information. In healthcare, accuracy is non-negotiable. Is the information supported by credible references or evidence?
- **Purpose:** Uncover the intentions behind the source. In healthcare, hidden biases can be detrimental. Is the source impartial, or is there an underlying agenda?

Putting CRAAP into Action

Example: Let's say you come across a healthcare blog post claiming a new miracle cure for a common condition. To apply the CRAAP method, you would:

- **Currency:** Check the publication date. If the blog post is from a few years ago, it may not represent the most recent research or medical advances.
- **Relevance:** Examine if the blog post addresses your specific healthcare topic. A post about a miracle cure may not be relevant to in-depth research on treatment options.

- **Authority:** Investigate the author's credentials. If the blog post is written by a renowned medical professional or supported by credible institutions, it might be more authoritative.
- **Accuracy:** Scrutinize the post for citations or references to scientific studies. A lack of supporting evidence can be a red flag for accuracy.
- **Purpose:** Consider the blog's objectives. Is it trying to sell a product, or does it aim to provide accurate medical information?

Benefits of Library Databases

The Power of Library Databases

Library databases are invaluable tools in the world of healthcare research. Here's why you should make them your go-to source:

- **Credibility:** Library databases offer access to peer-reviewed, scholarly resources. This means the sources have undergone rigorous evaluation by experts in the field, ensuring their credibility.
- **Verified Information:** Unlike the vast, unfiltered expanse of the internet, library databases contain verified information. These resources are carefully curated, saving you the time and effort required to separate fact from fiction.
- **Access to Scholarly Resources:** Within library databases, you'll find a wealth of scholarly articles, academic journals, and research papers. These are the lifeblood of evidence-based healthcare research.
- **Advanced Search Features:** Library databases provide advanced search features that allow you to pinpoint exactly what you need, from precise publication dates to specific authors.

The Convenience of Preselected Sources

One of the most significant benefits of using library databases is the convenience of preselected and evaluated sources. Instead of embarking on a wild internet quest, you can trust that the sources you find in library databases are already reliable and pertinent to your research.

Combining Library Databases with Google, Google Scholar, Bing, etc.

Using the Best of Both Worlds (Ensure your search process remains adaptable, enabling smooth transitions between various sources and avoiding fixation on a single location.)

In healthcare research, the stakes are high, and you need access to the most accurate, up-to-date information. That's where the combination of library databases and Google Scholar comes into play.

- **The Library Database Advantage:** Library databases provide you with peer-reviewed, scholarly resources. They're like a highly curated collection of the best healthcare research available. When you're aiming for precision and reliability, start here.
- **The Google Scholar, Google, Bing:** Various online databases may uncover resources that are not in library databases but are still valuable. It's particularly useful when you need to cross-reference, explore emerging research, or find alternative perspectives.

Cross-Referencing and Expanding Your Options

The synergy between library databases and Google Scholar offers a comprehensive approach to research. Here's how you can benefit:

- **Cross-Referencing:** If you discover a source in a library database, consider cross-referencing it on Google Scholar. This can lead you to additional research that complements your findings.
- **Expanding Your Options:** Sometimes, you may hit a roadblock in your library database search. Turning to Google Scholar, Google, Bing, etc. can expand your options and provide fresh insights.

By combining the depth of library databases with the breadth of Google Scholar, Google, Bing, etc. you're equipped to conduct thorough and meticulous healthcare research that leaves no stone unturned.
