CHAPTER

1

Reviewing the Literature

Why? For Whom? How?

A Reader's Guide

Purpose of This Chapter

This chapter gives an overview of the process of doing research reviews and illustrates how they are used. A main objective is to demonstrate how to do online searches of the research literature using major bibliographic or article databases. The chapter provides guidelines on how to ask specific questions of these databases and how to search for information using key words, thesauruses, and Boolean logic. The chapter also discusses methods for supplementing online searches with manual or hand searches of references lists and guidance from experts. Finally, the chapter concludes with a discussion of how to organize and store literature using bibliographic or reference software.

Research literature reviews have many uses. You find them in proposals for funding and for academic degrees, in research articles, in guidelines for

Figure 1.1 Steps Involved in Conducting a Research Literature Review

Select Research Questions

Select Bibliographic Databases and Websites

Choose Search Terms

Ask Experts to Review Databases and Search Terms

Apply Practical Screen
Content covered; years searched; language; setting, sample, interventions, and outcomes studied; research design

Apply Methodological Quality Screen
Research design; sampling; data collection; interventions; data analysis; results; conclusions

Train Reviewers (if more than one)

Pilot Test the Reviewing Process

Do the Review
Add hand searches of references to online searches

Monitor Quality
Ensure reliability and accuracy of review

Synthesize the Results
Report on current knowledge; justify the need for research; explain research findings; describe quality of research

Produce Descriptive Review
Primarily qualitative synthesis of results

Perform Meta-Analysis
Statistical combination of results

professional and evidence-based practice, and in reports to satisfy personal curiosity. Research reviews, unlike subjective reviews, are comprehensive and easily reproducible.

Research reviewers are explicit about their research questions, search strategy, inclusion and exclusion criteria, data extraction methods, standards for evaluating study quality, and techniques for synthesizing and analyzing their findings. Subjective reviewers choose articles without justifying their search strategy, and they may give equal credence to good and poor studies. The results of subjective reviews are often based on a partial examination of the available literature, and the findings may be inaccurate or even false.

Figure 1.1 shows the steps involved in conducting a research literature review. This chapter covers the shaded portions of the figure: selecting research questions and bibliographic databases and websites, choosing search terms, and asking experts to review your methods.

What Is a Research Literature Review? Why Do One?

A **research literature review** is a systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners.

The scholarship and research on which you base the review comes from individuals in diverse professions, including health, education, psychology, business, finance, law, and social services. A research review bases its conclusions on the original work of scholars and researchers. Focusing on high-quality original research rather than on interpretations of the findings is the only guarantee you have that the results of the review will be under your supervision and accurate.

A research literature review can be divided into seven tasks:

1. Selecting research questions. A **research question** is a precisely stated question that guides the review.

2. Selecting bibliographic or article databases, websites, and other sources. A bibliographic database is a collection of articles, books, and reports that can provide data to answer research questions. The database is usually accessed online. The bibliographic

databases of interest in research reviews often contain full reports of original studies. Other sources for literature reviews include experts in the field of interest, the web, and the reference lists contained in articles.

3. Choosing search terms. Search terms are the words and phrases that you use to get appropriate articles, books, and reports. You base them on the words and concepts that frame the research questions and you use a particular grammar and logic to conduct the search.

4. Applying practical screening criteria. Preliminary literature searches always yield many articles, but only a few are relevant. You screen the literature to get at the relevant articles by setting criteria for inclusion into and exclusion from the review. Practical screening criteria include factors such as the language in which the article is printed, type of article (journal article, clinical trial), date of publication, and funding source.

5. Applying methodological screening criteria. Methodological criteria include criteria for evaluating scientific quality.

6. Doing the review. Reliable and valid reviews involve using a standardized form for **abstracting** data from articles, training reviewers (if more than one) to do the abstraction, monitoring the quality of the review, and **pilot testing** the process.

7. Synthesizing the results. Literature review results may be synthesized descriptively. Descriptive syntheses are interpretations of the review's findings based on the reviewers' experience and the quality and content of the available literature. A special type of synthesis—a **meta-analysis**—involves the use of statistical methods to combine the results of two or more studies.

Why should you do a literature review? You may do one for personal or intellectual reasons or because you need to understand what is currently known about a topic and cannot or do not want to do a study of your own. Practical reasons also exist for doing reviews. You will be asked to include one in an honor's or a master's thesis, a dissertation proposal or dissertation, and to get funding for **program** planning, development, and evaluation. Consider the following examples.

Write Proposals for Funding

Example. The Fund for Consumer Education is interested in health promotion and disease prevention. One of its current funding priorities is preventing drug and alcohol abuse in older adults. The Community Health Plan decides to apply for a grant from the fund to develop educational materials for the elderly. The fund has specified that all grant proposals include a literature review that proves that the proposed research or education is innovative and evidence based.

The Community Health Plan grant writers do a comprehensive literature review. They first search for evidence to support their **hypothesis** that the risks of alcohol use are different in older and younger people. Numerous research studies provide them with the compelling confirmatory evidence they need. The grant writers also find that currently available educational programs do not make this distinction adequately. Using this information, the Community Health Plan establishes a basis for its proposal to develop, implement, and evaluate an alcohol use consumer education program specifically for people who are 65 years of age and older. The program will use educational methods that the literature suggests are particularly effective in this population. That is, the program will rely on **evidence-based** educational methods.

The fund reviewers agree that the grant writers have done a good job of reviewing the literature but ask for more information about the specific educational methods that are being proposed. The grant writers expand their literature review to identify methods of learning and instruction that are particularly appropriate for older persons.

When writing proposals for funding, you are almost always asked to use the literature to justify the need for your study. You must either prove that nothing or very little can be found in the literature that effectively addresses your study's topic or that the studies that can be identified do not address the topic as well as you will in your proposed research. In intervention studies, you will need to provide evidence that the methods you propose to use are likely to be effective.

In the preceding example, the proposal writers use the literature to justify their consumer education program by demonstrating that existing materials do not adequately distinguish between the risks of alcohol use in older and younger people. They also use the literature to support their hypothesis that the risks are different and to identify methods of learning and instruction that are specifically pertinent to older people.

Literature reviews are also used in proposals for academic degrees.

Write Proposals for Academic Degrees

Example. A student in a doctoral program in education plans to write a proposal to prepare a high school curriculum aiming to modify AIDS-related knowledge, beliefs, and self-efficacy related to AIDS preventive actions and involvement in AIDS risk behaviors. The student is told that the proposal will be accepted only if a literature review is conducted that answers these questions:

1. What curricula are currently available? Are they meeting the current needs of high school students for AIDS education? Have they been formally evaluated, and if so, are they effective?

2. What measures of knowledge, beliefs, self-efficacy, and behaviors related to AIDS are available? Are they reliable? Are they valid?

The student performs the review and concludes that currently available curricula do not focus on prevention, although some have brief prevention units. The student also finds that valid measures of knowledge, beliefs, and behaviors related to AIDS are available in the literature. Good measures of self-efficacy, however, are not. The student concludes that developing a detailed AIDS prevention curriculum is worthwhile. He plans to use available measures of knowledge, beliefs, and behaviors and will validate a measure of self-efficacy in relation to AIDS preventive actions.

The student's adviser remains unconvinced by the review. How effective are current curricula in meeting the needs of today's students? Are behaviors more or less risky than a previous generation's? What does the literature say about the prevalence of AIDS among adolescents? The student expands his review of the literature to answer these questions.

Literature reviews are also used to guide current professional practices, as is illustrated in the next example.

Describe and Explain Current Knowledge to Guide Professional Practice

Example. A group of physicians reviews the literature to provide a basis for a set of guidelines or recommended practices for treating depressed patients. First, they use the literature to help define depression and the different forms it takes (e.g., major depressive disorder and dysthymic disorder). Next, the physicians rely on the literature for data on effective treatments. They find that the literature supports distinguishing among

treatments for different populations of depressed patients (such as children and the elderly), types of depression, gender, and methods of treatment (including medication and psychotherapy).

Using the literature review's results, the physicians divide the guidelines into separate categories for each different population of concern and base their recommendations for treatment on gender and type of depression. For example, the recommendations suggest that the treatment for elderly patients with major depressive disorder may be different from the treatment for major depressive disorder in younger patients; treatment for each type of depression, regardless of age, may differ for males and females.

Increasingly, practitioners in occupations such as health and medicine, education, psychology, and social welfare are required to base their activities and programs on demonstrably effective practices. For example, suppose a school district wanted to implement a new reading program. Before it could do so, the district would have to provide proof that the new program "worked." If resources are available, the district can conduct a research study to demonstrate the reading program's effectiveness among its students. Another option is for the district to find evidence of effectiveness in the literature. Practices, interventions, programs, and policies that have proof of effectiveness are said to be *evidence based.* In the preceding example, the literature review is used in selecting definitions, organizing the guidelines for depression, and linking treatment to type of depression, gender, and age.

The literature also can be used to identify methods of doing research or developing and implementing programs, as shown in this example.

Identify Effective Research and Development Methods

Example. A review of the literature reveals a validated web-based assessment of alcohol use. The assessment has been used with people 65 years of age and older and measures alcohol consumption alone and also in combination with diminished health, medical conditions, and functional status. The writers of a proposal to develop and evaluate an alcohol use curriculum plan to purchase the computer assessment instrument for their study because the cost of purchasing the instrument is less than the costs of developing and validating a new one. Identifying and using an existing instrument will make the proposal more competitive.

Why reinvent the wheel? A great deal of work has gone into producing methods and **instruments** that can be adapted to meet your specific needs. For instance, if you are interested in assessing customer or patient

satisfaction; health status; or educational knowledge, attitudes, or behavior, the literature is filled with examples for you to copy.

A literature review may produce conflicting or ambiguous results or may not adequately cover a topic. Experts—persons who are knowledgeable and prominent—are often called in to help resolve the uncertainty that arises when data are inconclusive or missing, as illustrated next.

Identify Experts to Help Interpret Existing Literature and Identify Unpublished Sources of Information

Example. After reviewing the literature, three people were found who had published five or more studies on the topic and who also worked in our city. Two agreed to consult with our project and helped us identify other publications of interest.

Example. A review of the literature on depression left many questions unanswered. For example, the long-term effects of certain medications were not investigated adequately in the literature, nor was the effectiveness of certain types of "talking therapy." A panel of physicians, nurses, and psychiatric social workers was convened. The panel was asked to supplement the review of the literature with their clinical and other expertise. A major criterion in selecting members of the panel was their publication record as revealed in the literature review.

The literature can also be used to help you find out where to get support for your research. You can also learn about the type of studies being done at the present time. Following is an example of these uses.

Identify Funding Sources and Works in Progress

Example. We found 100 relevant studies through our literature search. The Office of Education funded about half of them. We contacted the office to ask if we could place our name on their list for future studies. We contacted the project managers of current projects for as-yet unpublished information to supplement our literature review.

As consumers of health care, education, and social services, we want to make certain that we receive the best services and treatment. The literature can help in this regard by providing access to evaluated programs and helping us to select criteria to do our own assessments. Also, sometimes we are simply curious about an issue, and knowing how to do a literature review can help satisfy our curiosity.

Satisfy Personal Curiosity

Example. Voters are being asked to make decisions on the merits of school vouchers. These vouchers are given to parents who can use them to enroll their children in any school of their choosing. The idea is that schools whose performance is currently relatively low will have to do better to "sell" themselves to students. Do school vouchers encourage competition? How do increased choices affect children's intellectual and social well-being? A literature review can be useful in answering questions like these.

Example. Some parents have observed that their children appear restless or even agitated after eating very sugary foods. Does eating "too much" sugar induce aggressive behavior in children? A literature review will help you answer this question.

Look at these three case studies. Select the literature review(s).

Three Case Studies: Literature Review or Not?

Case 1: Policy Making and Program Planning—State-of-the-Art Knowledge. The Department of Human Services is considering the adoption of a program of family preservation services. These programs aim to prevent children who are at risk for abuse and neglect from being taken from their families. Program participants—families and children—receive emotional, educational, and financial support. Family preservation programs are considered by many practitioners to be worthwhile. Others are not so sure and ask, "Are all equally effective, or are some programs more effective than others?" "If some are more effective, which of their activities makes them more effective?" "Would such activities be appropriate for implementation by the department?" "If the department decides to adopt or adapt an existing family preservation program, what methods and criteria should be used subsequently to evaluate its outcomes and effectiveness?" "Who are the experts in the family preservation field who might be consulted to help with the evaluation?" The department asks for a literature review to get the answers to these questions.

The Research Division goes online using three bibliographic databases dealing with social and psychological studies. Researchers identify 200 studies regarding family preservation programs. After evaluating the relevance of the investigators' findings to the needs of the community, they answer the department's questions.

Case 2: Preparing Guidelines for Treating Infections and Fever in Nursing Homes. Infections are a major cause of morbidity and mortality and a leading cause of hospitalization for nursing home residents. Each year,

more than 1.5 million infections occur in the institutional long-term care setting. Among elderly nursing home residents, the overwhelming majority of fever episodes are caused by serious infection, which, if inappropriately treated, may result in unnecessary morbidity, mortality, and expenditures.

Despite the magnitude of this problem, guidelines for detecting and treating fever in nursing homes are not readily available. To remedy this deficiency, Atlantic Health Care convened a panel of experts, each of whom had published extensively on the subjects of fever, infectious disease, the elderly, and nursing home care. The panelists were asked to distribute their published and unpublished research studies before the meeting to facilitate discussion and consensus. Nurses and physicians used a validated "expert panel group process method" to develop practice guidelines for the detection and treatment of fever. The panel also helped to set standards for evaluating quality of care. Both the guidelines and the quality-of-care methods were based on the findings of the panelists' research and their own experience in detecting and treating elderly people with fever.

Case 3: What Is Known and Not Known—Justifying the Need for New Studies to Fill in the Gaps. Alcohol use in people 65 years of age and older is a growing public health problem. Even if the rate stays the same, doctors and other health professionals can count on seeing an increase in the number of alcoholics, simply because the number of older people in the population will increase. Traditional surveys of alcohol use focus on issues pertaining to young people, such as work and family matters. Very few surveys are available that take into account the concerns of older adults.

Alcohol use in older people can impair function, cause or exacerbate illness, or increase the difficulty of treatment. Alcohol also interacts with more than 100 of the medications most commonly used by older persons. Finally, older people metabolize alcohol differently from younger people and may suffer adverse effects with relatively few drinks.

To address the special needs of older adults, public health workers conducted a literature review to find methods for physicians and other health workers to use in identifying older persons who are at risk for alcohol-related problems or who already have them. The reviewers first went to experts in the field of geriatric medicine and alcohol abuse research and asked for a list of studies they considered to be important. The reviewers examined those studies the experts recommended as well as the references contained within them. Finally, they did an online search of two major medical bibliographic databases to make certain they included all relevant data in their review.

The review revealed that comparatively little research has focused specifically on older people and that no validated method of measuring alcohol consumption is available for their use in health settings. A main finding of the review was that more research is needed to identify methods for detecting risks for alcohol misuse in this growing segment of society.

Cases 1 and 3 use formal literature reviews. In Case 1, the Department of Health and Human Services is planning to depend on the literature to answer all its questions. Consultants will be called in later to help with the evaluation, but they will be identified by studying the literature to determine who they are. In Case 3, the literature review is done to justify research into methods for detecting risks for alcohol misuse in the elderly; no experts are consulted. In Case 2, experts select any studies they consider pertinent. Although literature is certainly used in this scenario, how it is used and its characteristics are not discussed. Are the study results synthesized? Are opinions (e.g., editorials and tutorials) included? Do the studies represent all or a meaningful sample of the available literature? Without answers to questions such as these, we cannot really call Case 2 a true literature review.

Gaining Control: Experiments and Observations

Reviewing the research literature means identifying and interpreting what is known about a topic. High-quality literature reviews base their findings on the evidence from **controlled experimentation** and **observation**. They rely on the researchers' original studies for information rather than on other people's interpretations of the results. Editorials and testimonials are usually excluded from the review itself because they are subjective and prone to bias. They are not ignored, however. Expert views—when they come from credible sources—may be used to help interpret findings and answer questions such as these: What references should I include in the review? Have I included all the important references? Why do the findings of some studies contradict the findings of others?

To evaluate the research literature, you must learn some basic criteria for evaluating the quality of research. Not all research is equally good, and the reviewer must be able to distinguish high- from low-quality research. The objective of high-quality research is to produce accurate information. If your review is based on research that is less than high quality, the results will be less than accurate.

High-quality experimental and observational studies, the "gold standards" for systematic reviews, are characterized by study designs that have clearly formulated research objectives and questions, rigorous research plans, valid data collection, and exacting data analysis and interpretation. In an **experimental study**, the investigator actively intervenes and examines effects. In an observational study, the investigator takes a relatively passive role in observing events. Following are examples of experiments and observations.

An Experimental Study

Research Question. How effective is a school-based intervention for reducing children's symptoms of depression and posttraumatic stress disorder (PTSD) resulting from witnessing or being personally exposed to violence?

Some children who witness violence develop symptoms of depression or PTSD. Trained school-based mental health researchers used validated measures of depression and PTSD to assess sixth-grade students at two large schools. Sixty-one of 126 students with these symptoms who reported witnessing violence were randomly assigned to a standardized therapy program, and 65 were assigned to a waiting list. Students in the therapy program were tested before their participation and 3 months after it. The researchers found that when compared with the waiting list students, after 3 months of intervention, students who were in the program had significantly lower depression and PTSD scores. But at 6 months, after both groups had received the program, the differences disappeared. The researchers concluded that the program was effective and could be delivered on school campuses by trained school-based mental health personnel.

An Observational Study

Research Question. Who is at greatest risk for melanoma, the deadliest form of skin cancer?

To answer this question, researchers conducted a study in which 452 women who had melanoma were compared with 900 women from the general population who did not. The women lived in five counties that make up a major American city. All women were interviewed using a standardized interview schedule and highly trained interviewers. The interviewers asked about the women's history of exposure to the sun,

medical history, and demographics (such as age). A statistical expert from the local university analyzed the data from the interviews. The researchers found that risk of melanoma increased with increasing tendency to get sunburned, with increased severity and/or frequency of sunburns up to age 12, and with lack of use of sunscreen.

The first study is an experimental study because the researchers are relatively in charge of the main events. In their study, they administer therapy to reduce symptoms of depression and PTSD in children. The researchers also evaluate the effects of the therapy by creating an experimental group and a waiting list from the same sample, selecting the methods for assigning students to groups, and choosing measures to record changes over time. In contrast, the researchers in the second study do not provide treatment, have no role in assigning people to the group being observed (people with melanoma), and are dependent on people's recall of their past sun exposure and use of sunscreen.

Because of the greater methodological control over events that experimenters have compared with observers, experimental studies are generally preferred to **observational research**. Only well-done studies belong in a literature review. Evaluating the rigor of a study's design is an essential feature of any valid literature review. Only good study designs produce good data.

Systematic, Explicit, Comprehensive, and *Reproducible*: Four Key Words

Research literature reviews can be contrasted with more subjective examinations of recorded information. When doing a research review, you systematically examine all sources and describe and justify what you have done. This enables someone else to reproduce your methods and to determine objectively whether to accept the results of the review.

In contrast, subjective reviews tend to be idiosyncratic. Subjective reviewers choose articles without justifying why they are selected, and they may give equal credence to good and poor studies. The results of subjective reviews are often based on a partial examination of the available literature, and their findings may be inaccurate or even false. Subjective reviews should be distinguished from **narrative reviews**. Narratives may be appropriate for describing the history or development of a problem and its solution.

How can you produce a systematic, explicit, comprehensive, and reproducible review? You need to identify precisely what you need to know and decide on the best sources of information. You must also evaluate the

quality of the information you find and synthesize the results. This chapter discusses where to go for information and how to ask for it. The next chapters tell you how to justify your choice of studies to review, **abstract** information from the studies, and analyze and synthesize the results.

Choosing an Online Bibliographic Database

Reviews of the literature depend on data from **online bibliographic or article databases** such as PubMed or specialized databases such as the Cochrane database of systematic reviews, government reports, and collections maintained by professionals in law, business, and the environment.

Public and Private Online Bibliographic Databases

One of the most important (some would emphasize *most* important) assembly of articles can be found in online **databases**. Everyone with an internet connection has free access to the world's scientific, social scientific, technological, artistic, and medical literature, thanks to the U.S. government that supports it, the scientific community that produces it, and the schools and public and private libraries that purchase access to bibliographic databases and other sources of information. The U.S. National Library of Medicine at the National Institutes of Health, for example, maintains the best site for published medical and health research. This site is called PubMed, and access is free from any computer with an internet connection (http://www.ncbi.nlm.nih.gov/pubmed). Although PubMed's focus is on the life and health sciences, you can find many articles in the database that deal with topics related to education, psychology, and other types of social and political science.

University and other libraries, including public libraries, usually provide free access to hundreds of government and nongovernment, private bibliographic databases.

A short list of available databases is provided to give you an idea of the range available.

Online Bibliographic Databases: A Sample

African Journals Online. Contains scholarly articles published in Africa. Abstracts are provided free, but a subscription is necessary for full texts.

AGRIS. An agricultural database produced by the Food and Agricultural Organization of the World Health Organization U.S. Department of Agriculture. It is free and has information from over 100 countries about agriculture, forestry, animal husbandry, aquatic sciences and fisheries, and human nutrition.

Arts & Humanities Citation Index. A multidisciplinary database covering the journal literature of the arts and humanities. It is only available by subscription and is part of the Web of Science.

BioOne. A full-text aggregation of more than 180 scientific journals publishing current research in biodiversity conservation, biology, ecology, environmental science, entomology, ornithology, plant science, and zoology. Abstracts and references are free.

EconLit. The American Economic Association's electronic database, the world's foremost source of references to economic literature. It is only available by subscription.

ERIC (Educational Resource Information Center). Created and maintained by the U.S. Department of Education. The database is free and provides access to over 1.3 million records dating back to 1966.

Google Scholar. Google Scholar is a freely accessible web search engine that indexes the full text or metadata of scholarly literature across an array of publishing formats and disciplines. This database is estimated to include over 150 million peer-reviewed online academic journals and books, conference papers, theses and dissertations, preprints, abstracts, technical reports, court opinions, and patents.

Mendeley. The Mendeley research catalog is a crowdsourced database of research documents. Researchers have uploaded nearly 100 jillion documents into the catalog with additional contributions coming directly from subject repositories like Pubmed Central and web crawls. It is free.

National Criminal Justice Reference Service. This database is free and provided by the U.S. Department of Justice. It contains abstracts of scholarly journal articles, agency and NGO reports, and conference proceedings

POPLINE® (via Johns Hopkins). Worldwide coverage of population, family planning, and related health issues, including family planning technology and programs, fertility, and population law and policy.

PsycINFO. Produced by the American Psychological Association, this database is the largest resource devoted to peer-reviewed literature in behavioral science and mental health. It contains over 3.7 million records with bibliographic information and extensive indexing, more than 60 million cited references, and has comprehensive coverage dating back to the mid-19th century, with sporadic coverage going back as far as the 16th century. Access is by subscription.

PubMed. This system is the most important in the world for literature pertaining to the biomedical sciences and medicine. It is maintained by the U.S. Library of Medicine. It provides access to the PubMed database of bibliographic information.

Science.gov. This system provides access to 45 scientific databases and 200 million pages of science information with just one query, and it is a gateway to over 2000 scientific websites. It is provided by the Science.gov Alliance, consisting of 18 scientific and technical organizations from 14 U.S. agencies. The U.S. Department of Energy serves as the operating agent for Science.gov.

Social Sciences Citation Index. A multidisciplinary database covering the journal literature of the social sciences. It is part of the Web of Science and only available by subscription.

Web of Science. A multidisciplinary database, with searchable author abstracts, covering the journal literature of the sciences, social sciences, and arts and humanities. The database includes other products, such as Social Science Citation Index, Science Citation Index, Biological Abstracts, and the Zoological Record. It is available by subscription only.

WorldWideScience. A global gateway that comprises national and international scientific databases and portals. You can search in several languages, and access is free. The site is run by the U.S. Department of Energy.

How does the reviewer determine which online databases may be relevant in reviewing a particular research topic? Some, such as PsycINFO or PubMed, have names that describe their content's orientation (psychology and medicine, respectively). Each library usually has a list of databases by subject areas, such as psychology or medicine. If you are unsure about the contents of a specific database, ask a librarian for information or go directly to the site to find out what topics and resources it includes.

How do you select among bibliographic databases? It all depends on the topic and research questions. For example, if you are interested in finding out what the literature has to say about the best way to teach reading to young children, then the literature in education is clearly an appropriate place to start. However, if you are interested in finding out about interactive reading programs, then a computer and information technology database may also be relevant. It helps to be precise about what you want and need to know so you can choose all relevant databases.

What Exactly Do You Need to Find?

We have almost instantaneous and worldwide access to research on practically any topic one can think of. Most literature reviews are limited in purpose and time, however. To ensure that you get the literature that you need and not just an unlimited number of somewhat related (and sometimes unrelated) articles, you must be precise about your research needs.

Systematic literature reviews start with very specific needs for knowledge or research questions. Examine these examples of three relatively nonspecific and specific questions:

Examples of Nonspecific and Specific Research Questions

Topic 1: Family Preservation

Less Specific

Research Question A. Which programs successfully keep families together?

More Specific

Research Question B. Which family preservation programs effectively prevent children from being placed out of home?

Comment

Question B is more specific because it describes what it means by the term *programs*—family preservation programs. Question B also defines what the questioner means by "successfully keeping families together"—keeping children from being placed out of home.

Topic 2: Curing the Common Cold

Less Specific

Research Question A. What can people do to cure a cold?

Research Question B. Can antibiotics cure the common cold?

Comment

Question B is more specific than A because the vague word *do* is defined in B as meaning a definite action—taking antibiotics. This clarification may spare you from getting articles about antibiotics and temperature changes, if you use *antibiotics* AND *cold* as key words in your search. (See below for an explanation of the concept of key words.)

Topic 3: Alcohol, Women, and Breast Cancer

Less Specific

Research Question A. How does alcohol use affect breast cancer?

More Specific

Research Question B. What is the relationship between drinking two or more alcoholic beverages daily in women 65 years of age and older and breast cancer?

Comment

Question B is more specific because "alcohol use" is clarified to mean "two or more alcoholic beverages daily," and the targeted population of interest is specified to be women who are 65 years of age and older.

How Do You Search for What You Want to Find? Key Words, Descriptors, Identifiers, and the Thesaurus

Research Questions and Key Words

A precisely stated research question has the benefit of containing the words the reviewer needs to search online for applicable studies. These words or search terms are often referred to as **key words, descriptors,** or **identifiers.**

Consider this question (Research Question 1B): Which family preservation programs effectively prevent children from being placed out of home? From the question, you can see that the important words—key words—include *family preservation programs, children,* and *out-of-home placement.*

What are the key words for Question 2B: Can antibiotics cure the common cold?

Answer: antibiotics, common cold, cure

What are the key words for Question 3B: What is the relationship between drinking two or more alcoholic beverages daily in women 65 years of age and older and breast cancer?

Answer: women 65 years of age and older, breast cancer, alcoholic beverages

Just knowing the key words is not always enough, unfortunately. For instance, suppose you are reviewing family preservation studies to find out which programs work best to prevent out-of-home placement.

You decide to use PsycINFO for your review because it is an online bibliographic database dealing with subjects in psychology. You also search the database using the exact phrase *out-of-home placement* and are given a list of 195 articles. You find that the articles contain data on out-of-home placement, but not all pertain to family preservation programs. To narrow your search and reduce the number of irrelevant studies, you decide to combine *out-of-home placement* with *family preservation* and find that your reviewing task is reduced to 31 articles. However, on further investigation, you find that not all the 31 articles include data on effectiveness. You get data on effectiveness from evaluation studies. So you decide to further narrow the search by adding the term *evaluation* and find that the reviewing task is reduced to a mere seven articles. This seems like a manageable number of articles to review.

Are fewer articles always better? Not necessarily. If your search is very narrow, you may miss out on some important ideas. However, if your search is very wide, then you can be faced with thousands of potentially irrelevant citations. Suppose you are interested in reviewing medical knowledge of the common cold. If on May 29, 2018, you entered the words *common cold* into a PubMed search field, you would be given a list of 11,967 citations! If, however, you asked for *antibiotics* AND *common cold,* you would get 636 citations. If you refined this search further by asking for *oral antibiotics* AND *common cold,* you would be referred to 47 citations. If you were just interested in spray antibiotics, your search would yield just two citations. The moral of the story is that to get the information you need from the literature, you must balance very specific research questions with justifiable limits or restrictions, or you will be flooded with thousands of irrelevant citations.

Suppose a researcher wants to find out what is known about the use of antibiotics in treating the common cold. The researcher speaks English and is interested in articles published in the last 5 years. Figure 1.2 illustrates the results of the researcher's effort. As you can see, the researcher uncovers 94 articles.

Figure 1.2　Results of a PubMed Search for Meta-Analytic Studies on the Common Cold and Antibiotics
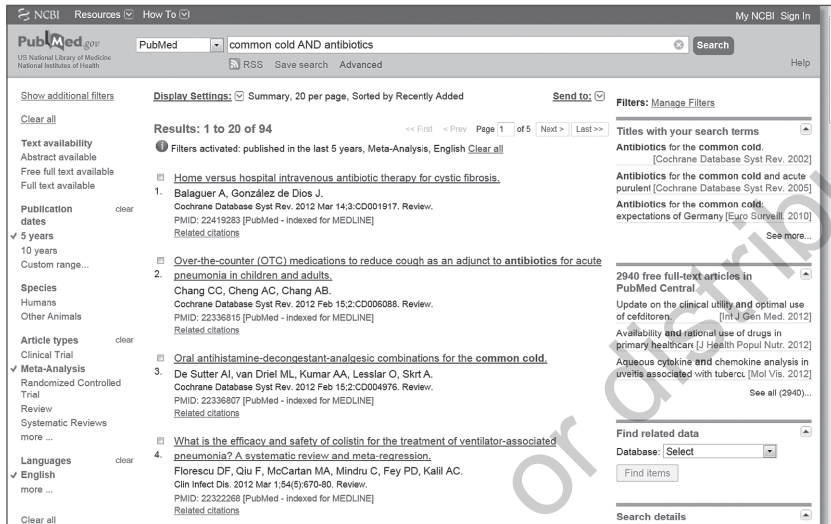
Source: U.S. National Library of Medicine, Pubmed.gov

One way to achieve a balance between specificity and restriction is to check your planned search terms with those used by authors of articles you trust. Did you include all the terms in your search that they included? All online citations include additional search terms. Figure 1.3 gives an example of a citation for an article on family preservation from a search of PsycINFO. The citation includes descriptors, which are terms used by PsycINFO as part of its bibliographic indexing system or thesaurus.
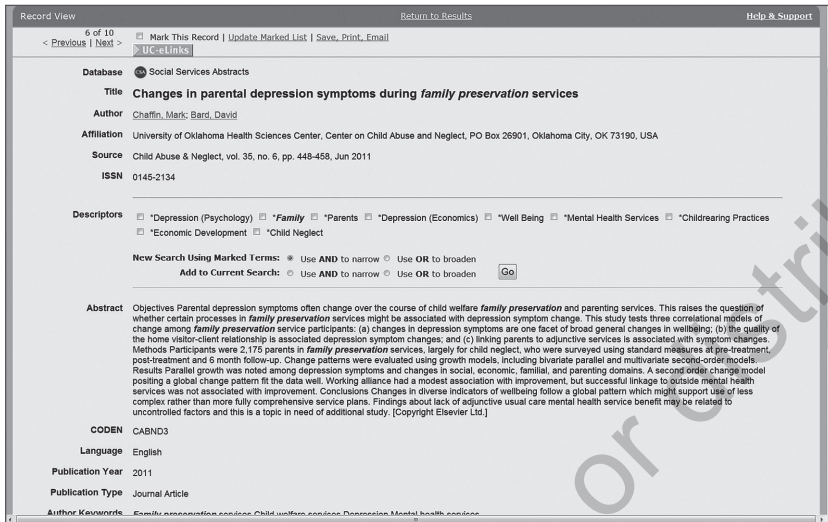
Just going to the citation for one reference can help you greatly in your search because it provides additional descriptors to help you expand or narrow your search.

The Thesaurus as a Source: When Is Enough Really Enough?

One major source of search terms is a database's thesaurus or dictionary for indexing articles. In the case of PsycINFO, the indexing system is through *descriptors.* In PubMed, it is defined by the Medical Subjects Headings, or *MeSH,* database.

The thesaurus is a controlled vocabulary that provides a consistent way to retrieve information across fields that may use different terms for the

Source: U.S. National Library of Medicine, Pubmed.gov

same concept. For instance, in studies of alcohol, investigators may refer to alcohol abuse as alcoholism, problem drinking, alcohol misuse, substance abuse, and so on. Each database's librarian assigns articles to categories that meet the system's requirements regardless of the investigator's preferences.

Suppose you are interested in finding out about workplace literacy, but you want to be certain that you get all articles about workplace literacy, no matter what the investigators call it. Suppose also that you decide to start your search with the database ERIC (Education Resources Information Center) (Figure 1.4). As with most databases, ERIC gives you the opportunity to search other descriptors (as well as other options like author or date of publication to help you focus your search).

Remember! Thesauruses vary from database to database, so check out each one.

Key Words or Thesaurus: Chicken or Egg?

A comprehensive search strategy probably requires combining key words and thesaurus terms. If you are certain of your research questions and the variables of interest, a key word search usually produces a relatively narrow range of articles.

Figure 1.4 Workplace Literacy Search Results Using ERIC
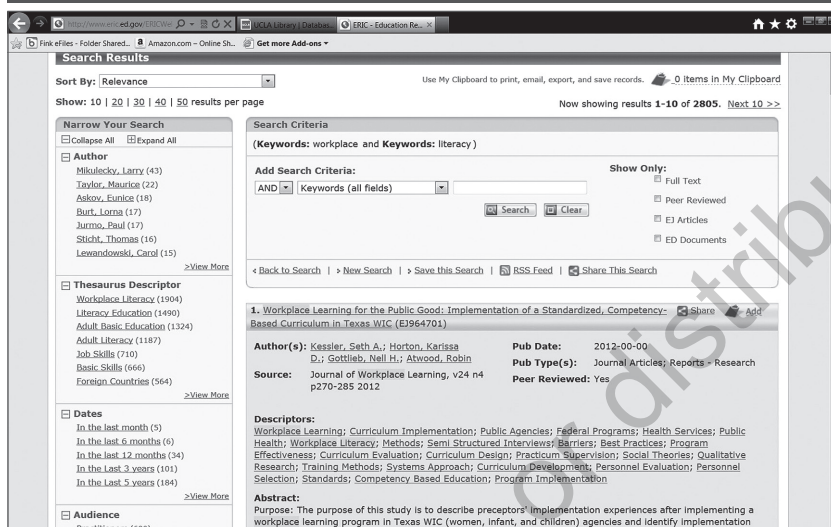
Source: U.S. National Library of Medicine, Pubmed.gov

A search that begins with official thesaurus terms will produce a wide range of articles, but breadth is important if you want your review to be comprehensive. In some fields, such as medicine, evidence exists that using thesaurus terms produces more of the available citations than does reliance on key words. For example, if a reviewer performs a PubMed search using the word *hyperlipidemia,* but an author has used the narrower term *hypercholesterolemia,* then many relevant citations may be missed because only those articles with the word *hyperlipidemia* in their title or abstract will be retrieved. Using the appropriate subject heading will enable the reviewer to find all citations regardless of how the author uses the term.

Even More Search Terms: Authors, Titles, Title Words, and Journals and Then Some—Limiting the Search

You can search for studies by asking for specific authors, titles of articles, words that you expect to be in the title (perhaps you forgot the exact title), and **online journals**. Sometimes this is a useful way to identify key words and thesaurus terms. For instance, suppose you want to find out about programs to prevent child abuse. Asking for the thesaurus headings or key words from an article by any leading researcher in the field will

enable you to conduct your search knowing that you are using commonly accepted terms.

Searching by specifics—authors, titles—also limits or narrows your search. This can be especially useful if you are not doing an inclusive review. Other methods of narrowing the search include type of publication (e.g., clinical trials, randomized trials), age groups (e.g., infants, adolescents, adults), language, date of publication, and whether the subjects of the study are male or female.

How Do You Ask for Information? Searching With Boolean Operators

Literature review searches often mean combining key words and other terms with words such as *and*, *or*, and *not*. These three words are called **Boolean operators**.

Look at these three examples of the use of Boolean logic:

Three Examples of Boolean Logic

Example 1: AND

common cold AND *antibiotics:* Use AND to retrieve a set of citations in which each citation contains all search terms. The terms can appear in any order—*antibiotics* may appear before *common cold.*

Example 2: OR

zinc OR *vitamin C:* Use OR to retrieve citations that contain one of the specified terms.

Example 3: NOT

antibiotics NOT *children:* Use NOT to exclude terms from your search.

Be careful when using NOT because you may inadvertently eliminate important articles. In Example 3, articles about children and antibiotics are eliminated, but so are studies that include children as part of a discussion of antibiotics and all age groups.

In addition to AND, OR, and NOT, an individual concept can be enclosed in parentheses, and the terms inside the parentheses will be processed as a unit. Figure 1.5 presents an efficient method of searching called *nesting.* The program will search for any articles on common cold AND zinc

Figure 1.5 Nesting in Pub Med
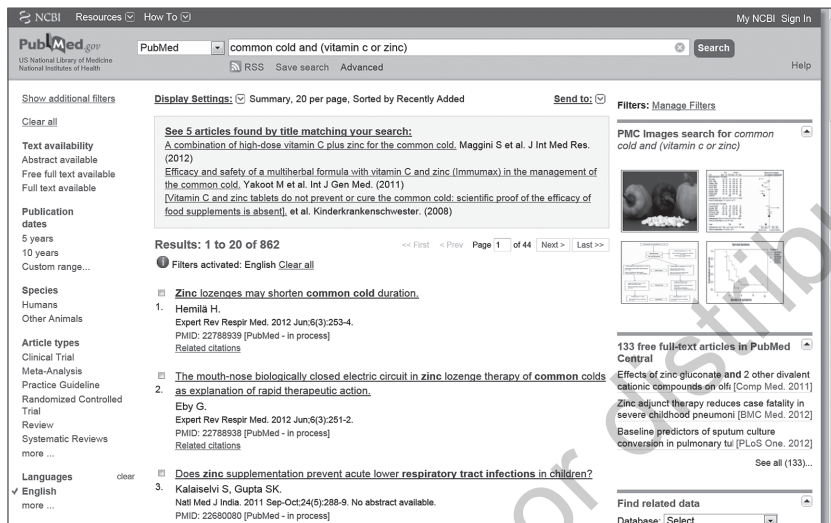
Source: U.S. National Library of Medicine, Pubmed.gov

or common cold AND vitamin C. If both vitamin C and zinc are studied in a single article, the program will be able identify it, but the computer will not limit its search to just common cold and vitamin C and also zinc.

Pausing During the Search

When your search is no longer fruitful, and you are not getting any new or relevant studies, review your collection of literature. Check the entire list for quality and comprehensiveness. Get assistance from someone who is interested in the topic or has worked in the field. Ask: Are all important investigators or writers included on the list? Have any major studies been excluded?

Changing the Course of the Search

You change course by considering new key words, subject headings, authors, and so on. A change in course may expand the scope of your review. Consider this example:

Changing the Course of a Literature Review Search: Expanding the Scope

Example. A psychologist reviewed the literature to find out how possible exposure to radiation affects people's psychological well-being. The review focused on catastrophes such as the Russian nuclear power plant disaster at Chernobyl in 1990. As part of the review, the psychologist discovered that the Chernobyl disaster subsequently affected more than 1 million immigrants to the United States and Israel. The psychologist expanded the review to consider the implications for policy makers of having to consider the needs of substantial numbers of immigrants who may have special life-long mental health problems resulting from participation in the disaster. This topic appeared especially pertinent given the number of immigrants throughout the world who have participated or witnessed wars and other disasters.

Supplementing the Online Search

Is the following statement true or false?

An experienced literature reviewer needs only access to the internet to do a comprehensive literature review.

The answer is false. Experienced literature reviewers must know how to locate databases and use the correct language and syntax to identify key words, subjects, titles, and so on to identify pertinent studies. However, search processes are far from uniform or perfect, the databases and study authors may not use search terms uniformly (especially true with new topics), and even the most proficient reviewers may neglect to find one or more studies regardless of how careful they are. In addition, a reviewer may in actuality have access to just a few databases. Also, some studies may be in progress and not yet ready for publication. Finally, some potentially important studies may never get published.

The following summarizes the main reasons for supplementing computer searches of the literature with other data sources:

Reasons to Supplement Electronic Searches

The topic is new, and its associated concepts have not yet been incorporated into official subject headings.

- Search terms are used inconsistently because definitions in the field are not uniform.

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- There is reason to believe that many important studies are in progress or complete but not published.

Where do you go when being online is insufficient? Consider the following supplemental sources:

What to Do When an Online Search Is Insufficient

- Review the reference lists in high-quality studies.

- Talk to colleagues and other experts.

- Review major government, university, and foundation websites.

Reviewing References in High-Quality Studies

Believe it or not, after many, many hours of searching, you may fail to uncover all there is to know about a topic. This can easily happen if you rely on just one or two databases. For instance, if you are interested in the relationship between alcohol use and breast cancer in older women and rely on PubMed alone for information, you will get a great deal of clinical information, but you may not retrieve some of the available research on the psychosocial factors associated with alcohol drinking and breast cancer. If, however, you rely on a database that deals with research on psychosocial variables such as PsycINFO, you may not obtain some medical or health information. Even if you use both databases, you may fail to uncover some clinical and psychosocial articles. It is unclear why this happens, but it may happen.

One way to avoid missing out on important studies is to review the references in high-quality articles. You do not necessarily need to retrieve the article to do this because some databases (such as PsycINFO and Sociological Abstracts) provide a list of searchable references as part of the citation (if you ask for it).

Listen in on this conversation between a frustrated reviewer and a more experienced colleague to get a feeling for how references in articles can help provide coverage for a literature review.

Searching the References: A Conversation Between an Experienced and a Frustrated Reviewer

Experienced

Reviewer (ER): I have been reviewing your list of references and notice that you do not include Monashe's experiment to find out how to teach young adults how to be better consumers.

Frustrated

Reviewer (FR): I did a search of 10 databases and asked specifically for Monashe. How did I miss that study?

ER: Very simple. Monashe hasn't published it yet.

FR: If Monashe hasn't published it, how could I find it?

ER: If you had reviewed the references in my study of education and young adults, you would have found it. I knew that Monashe was working on the study, and I asked her to tell me about it. She is currently working on the paper but was able to give me a monograph. She wrote the monograph to fulfill the obligations of the government contract that sponsored the study. The government insists that the monograph be made available at a nominal cost to other researchers. You can download the monograph from (hypothetical site) http://www.nixx.cdd.gov.

FR: I wonder how many other studies I may have missed because I didn't study the references.

ER: I wonder, too.

Is Everything Worthwhile Published?

Unpublished literature has two basic formats. The first consists of documents (final reports required by funding agencies, for example) that are written and available in print or online—with some detective work—from governments and foundations. Monashe's monograph, discussed in the preceding conversation between the experienced and frustrated reviewers, is an example. But some studies do not get published at all.

Although some unpublished studies are most certainly terrible or are the products of lazy researchers, some important ones are neither. These studies are not published because their conclusions are unremarkable or even negative, and journals tend to publish research with positive and interesting findings.

Much has been written about the effects of failing to publish studies with negative findings. The fear is that because only exciting studies (i.e., those that find that a treatment works, for example) are published, invalid conclusions inevitably result because less provocative studies with negative or contrary findings are not published. That is, if Reading Program A has one positive

study and two negative ones, but we only get to know about the positive one, then Program A will look more effective than it may be in actuality. This phenomenon—publication of positive findings only—is called *publication bias.*

The general rule in estimating the extent of publication bias is to consider that if the available data uncovered by the review are from high-quality studies and reasonably consistent in direction, then the number of opposite findings will have to be extremely large to overturn the results.

Bring in the Experts

Experts are individuals who are knowledgeable about the main topic addressed in the literature search. You can find experts by examining the literature to determine who has published extensively on the topic and who is cited often. You can also ask one set of experts to nominate another. Experts can help guide you to unpublished studies and work in progress.

They may also help interpret and expand on your review's findings. They help answer questions such as these: Do my literature review findings apply to everyone or to only a particular group of people? How confident can I be in the strength of the evidence? What are the practical or clinical implications of the findings?

Following are abstracts of two literature reviews that illustrate the use of experts. The first review is concerned with the risks associated with the treatment of depression in pregnant women. In that review, experts are called in to discuss references identified by reviewers. In the second review, experts are asked for references and books regarding the optimal treatment of urinary tract infections in older women. Their recommendations are supplemented by online searches.

Cautiously Approach the Web

The internet contains a vast amount of information on just about any topic under the sun. As a source of credible, experimentally derived infor-mation, however, it is a mixed blessing. Its greatest advantage is that the world's literature is available to anyone who knows how to get to it. But even experienced reviewers can find themselves confronted with a mass of information of dubious quality, and quality controls for internet sites are practically impossible to oversee.

The Geneva-based Health on the Net Foundation's voluntary set of ethical standards for health websites can help consumers discern the verac-ity of online information, but some say the standards are not always the best way to find reliable health information online.

Expert Guidance
How to Use It

Literature Review 1: Pharmacologic Treatment of Depression During Pregnancy[1]

Background

Depression is common among women of childbearing age. Even so, not much information is available that can help patients and physicians decide on treatment during pregnancy.

Objective

This study aimed to identify risks associated with treating major depression during pregnancy. Having this information can help physicians come up with plans for treatment.

Data Sources

The researchers searched MEDLINE and HealthSTAR for 1989 through 1999 using the search terms *antidepressant during pregnancy* and *depression during pregnancy*. They also manually searched the references in review articles and had discussions with investigators. To be included, a study had to be reported in English and a prospective controlled trial.

Literature Review 2: Antibiotics for Urinary Tract Infections[2]

Background

Urinary tract infections are common in elderly patients. Authors of non-systematic literature reviews often recommend longer treatment durations (7–14 days) for older patients than for younger women, but the researchers in this review start with the premise that the scientific evidence for such recommendations is not clear.

Objectives

The researchers aimed to determine the optimal duration of antibiotic treatment for uncomplicated symptomatic lower urinary tract infections in elderly women.

Data Sources

The researchers relied on PubMed, EMBASE, CINAHL, HealthSTAR, POPLINE, Gerolit, BioethicsLine, the Cochrane Library, Dissertation Abstracts International, and Index to Scientific & Technical Proceedings. They also contacted known investigators and pharmaceutical companies that sell antibiotics used to treat urinary tract infections. The researchers screened the reference list of identified articles, reviews, and books.

The HONcode, created in 1995 (https://www.hon.ch/HONcode/Patients/Visitor/visitor.html), is the oldest and most widely used internet information code, covering more than thousands of internationally hosted websites. The group accredits sites that abide by a set of eight principles; these sites are then allowed to display the HON code logo. The standards require that information providers reveal potential conflicts of interest, list credentials for authors relaying medical information, and reference their information sources.

Administrators of HON say they have trouble keeping up with information on complementary and alternative medicine (CAM) on websites, some of which display the HON code seal but are not accredited.

Remember that in using the internet, unless you have a specific address that you know will get you the data you need (e.g., http://findlit.com.nih.xxx.edu), you must be prepared to spend time performing detective work. If you just rely on the first page of results from a search engine, you may miss out on the information you really need. Even if your search is precise, you may find hundreds of pages to sort through before you get where you want to go. To add insult to injury, even if you do locate a great site, saving it for future review may be useless because unless the site is stable, it may change its address or disappear without warning. Many sites simply vanish.

Thus, the internet is not an efficient source for a comprehensive review of the literature. It is extremely time consuming to use because all sites and publications must be evaluated carefully.

If you do decide to search the web for literature, make sure you get a satisfactory answer to EACH of the following questions.

Standards for Believing Websites

- Who supports or funds the site? Does the funder have any financial interest in the outcomes of the study?

- When was the site last updated? Are the findings still relevant?

- What authority do the authors/investigators have to do the study? Interpret the findings?

- Do the investigators give sufficient information so that you can evaluate their qualifications?

- Are the investigators likely to profit from the outcomes of the study?

(*Continued*)

Organizing the Research Literature: Building a Virtual Filing Cabinet

Articles and abstracts can be stored in several places. You can print out hard copies and file them in a cabinet. The fact is that after most reviews are completed, large numbers of stored paper articles are usually left to disintegrate.

An additional storage method focuses on creating reference lists by hand entering titles, authors, and so on in word-processing programs, spreadsheets, database manager programs (such as Access), and statistical programs. Hand entry is tedious, however, and prone to error due to typing. Moreover, unless the reference list is short, it is costly to spend time manually entering supplementary information for each article such as the key words or descriptors, abstract, and authors' affiliations.

Fortunately, you do not have to hand enter references or store them in steel or wooden file cabinets. Software exists that enables you to store the results of your search in a virtual file cabinet. These programs enable you to download references (including the abstract and URL) from hundreds of online databases. For instance, suppose you ask the software for PubMed. You will be automatically connected to that database and asked for titles, or authors, or key words, and so on. Once you supply this information, the computer will generate a list of references. You click on each reference that you want, and the full citation is inserted into a library that you create on your computer. The citation includes the

Figure 1.6 Download to Citation Manager in PubMed
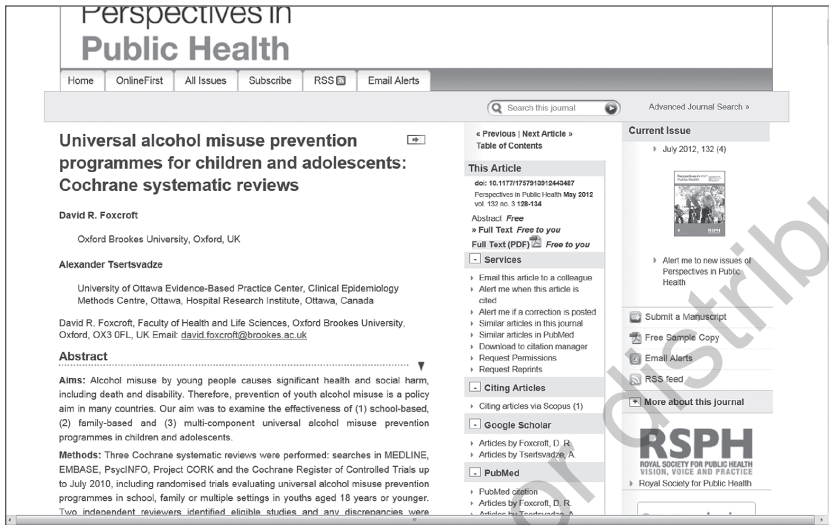
abstract and the URL or other links so that you can access the full article (if it is available to you, and you are online).

You can also hand enter references into the library and download references directly from journals. Suppose you are searching PubMed and find an interesting article. You can download the reference into the virtual file cabinet in your computer by clicking on an instruction such as "download to reference manager" as can be seen in Figure 1.6.

Some databases (Figure 1.7) place the "download to citation manager" function next to the article itself. Look at the right-hand column.

Bibliographic software is essential. Programs, such as EndNote, ProCite, BibTex, Bookeeper, Zotero, and Mendeley, have many features beyond serving as a virtual file cabinet. They provide the means for you to save your search strategy (so that you can continue your search over time and others can use it), insert references from your library directly into reports and scholarly articles, and analyze the references by thematic content.

An important reason to use bibliographic software management programs is because they help ensure accuracy and reproducibility. You can easily update a library, e-mail it, and post it on the web.
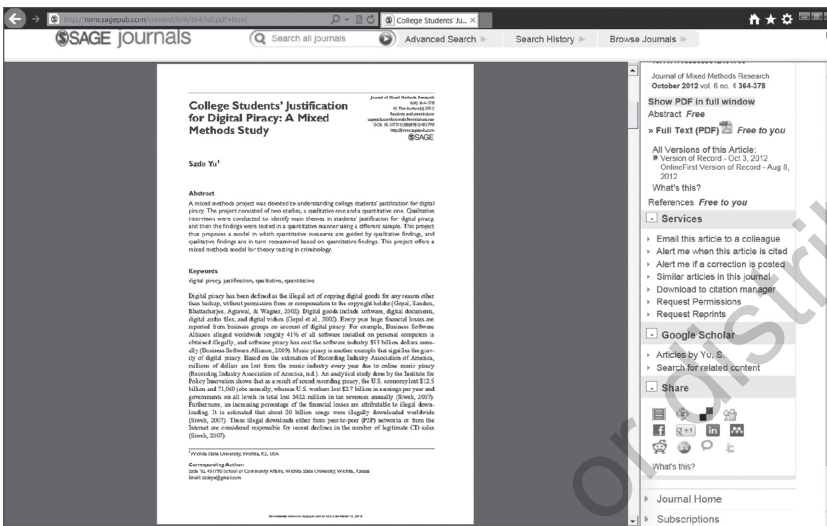
SUMMARY OF KEY POINTS

- A literature review is a systematic, explicit, comprehensive, and reproducible method for identifying, evaluating, and interpreting the existing body of original work produced by researchers and scholars.

- Literature reviews are used for the following reasons:

  To write proposals for funding

  To write proposals for degrees

  To describe and explain current knowledge to guide professional practice

  To identify effective research and development methods

  To identify experts to help interpret existing literature and identify unpublished sources of information

  To identify funding sources and works in progress

  To satisfy personal curiosity

- High-quality literature reviews base their findings on evidence from experiments or controlled observations.

- High-quality literature reviews are systematic, explicit, comprehensive, and reproducible.

- Online searches usually are the most efficient. To use them effectively, you must have specific questions, key words, identifiers, and/or descriptors; learn to use Boolean logic; and be prepared to take tutorials.

- Comprehensive literature reviews mean supplementing the electronic search with reviews of the references in the identified literature, manual searches of references and journals, and consultation with experts to learn about unpublished and published studies and reports.

- Be wary of the web as a source of credible research unless you have evidence that a site of interest is stable and unbiased.

- Reference management programs provide you with the means to set up virtual file cabinets, and they help ensure accuracy and reproducibility. You can easily update a library and e-mail it to other people who are interested in the same topic.

EXERCISES

1. You have been asked to design an educational and counseling program for people who are fearful of heights. Your research question is this: What are the determinants of and treatments for adults and older people who have a fear of heights? Before you begin to develop the program, you decide to do a literature review to ensure that the content of the proposed program will be up to date. You decide to use PubMed and PsycINFO (or similar databases) for your search. List at least 10 other key words or subject or thesaurus terms that you can use to find out what is currently known about the determinants and treatments for adults who are afraid of heights.

2. You are writing a proposal to do research into the prevention of common colds or rhinoviruses. Use a medical or health database to do your search. You propose to review only clinical studies in English, and you want abstracts of the articles. Which search terms do you use? How many citations result?

3. The following are sample abstracts retrieved from the PubMed and PsycINFO databases for your study of the prevention and spread of common colds. You decide to review the abstracts first and then, based on the abstracts, you will review only those studies that sound promising. Select the abstracts that are potentially appropriate for your review and justify your selection.

Prevention and Control of the Common Cold
Selected Abstracts

Abstract 1

Author: Smith AP

Title: Respiratory virus infections and performance

Source: In Broadbent DE, Reason JT, Baddeley AD, eds. *Human Factors in Hazardous Situations.* Oxford, UK: Clarendon/ Oxford University Press; 1990. 71–80 of vii, 147 pp.

In this chapter, the author maintains that minor illnesses, such as colds and influenza, are frequent, widespread, and a major cause of absenteeism from work and education. Because of this, it is important to determine whether these viral infections alter the efficiency with which people perform certain tasks. To find out, the author reviewed studies from the Medical Research Centre Common Cold Unit and found that colds and influenza have selective effects on performance. In fact, the studies that the author reviewed showed that even subclinical infections can produce performance impairments, performance may be impaired during the incubation period of the illness, and performance impairments may still be observed after the clinical symptoms have gone. The author concludes that the findings from these studies have strong implications for occupational safety and efficiency.

Abstract 2

Author: Hemila H
Address: Department of Public Health, University of Helsinki, Finland
Title: Does vitamin C alleviate the symptoms of the common cold? A review of current evidence.
Journal: *Scandinavian Journal of Infectious Diseases.* 1994;26(1): 1–6

In this article, the author reviews 21 placebo-controlled studies that have been done to find out if vitamin C at a dosage of 1 g/day affects the common cold. According to the author, the 21 studies did not provide consistent evidence that vitamin C supplementation reduces the incidence of the common cold in the general population. However, the author also points out that in each of the 21 studies, vitamin C reduced the duration of episodes and the severity of the symptoms of the common cold by an average of 23%. Because there have been large variations in the benefits observed, the author notes that clinical significance cannot be clearly inferred from the results.

Abstract 3

Author: Sattar SA, Jacobsen H, Springthorpe VS, Cusack TM, Rubino JR
Title: Chemical disinfection to interrupt transfer of rhinovirus type from environmental surfaces to hands
Journal: *Applied and Environmental Microbiology*. 1993;59(5): 1579–1585

The researchers in this study point out that rhinoviruses [which cause colds] can survive on environmental surfaces for several hours under ambient conditions. Hands can readily become contaminated after contact with such surfaces, and self-inoculation may lead to infection. Whereas washing your hands is crucial in preventing the spread of rhinovirus colds, proper disinfection of environmental surfaces may further reduce rhinovirus transmission. In this study, the authors compared the capacities of Lysol Disinfectant Spray, a bleach, a quaternary ammonium-based product, and a phenol-based product in interrupting the transfer of a type of rhinovirus from stainless steel disks to the finger pads of human volunteers. Among the findings were that the Lysol spray was able to reduce virus infectivity by > 99.99% after a contact of either 1 or 10 min, and no detectable virus was transferred to finger pads from Lysol-treated disks. The bleach reduced the virus titer by 99.7% after a contact time of 10 min, and again no virus was transferred from the disks treated with it.

Abstract 4

Author: Audera C, Patulny RV, Sander BH, Douglas RM
Title: Mega-dose vitamin C in treatment of the common cold: A randomised controlled trial
Journal: *Medical Journal of Australia*. 2001;175(7): 359–362

(*Continued*)

(Continued)

The investigators were interested in studying the effect of large doses of vitamin C on the treatment of the common cold. They enlisted 400 volunteers to participate in an 18-month double-blind, randomized clinical trial with four intervention arms: vitamin C at daily doses of 0.03 g ("placebo"), 1 g, 3 g, or 3 g with additives ("Bio-C") taken at onset of a cold and for the following 2 days. They found no significant differences in any measure of cold duration or severity among the four medication groups. The investigators concluded that doses of vitamin C in excess of 1 g daily taken shortly after onset of a cold did not reduce the duration or severity of cold symptoms in adult volunteers when compared with a vitamin C dose less than the minimum recommended daily intake.

Abstract 5

The two researchers hypothesized that the increase in fibrinogen concentration and respiratory infections in winter is related to seasonal variations in vitamin C status (assessed with serum ascorbate concentration). To test the hypothesis, they studied 96 people ages 65 to 74 years at intervals of 2 months over 1 year. The investigators found that average dietary intake of vitamin C varied from winter to summer. They also found that an increase in dietary vitamin C of 60 mg daily (about one orange) was associated with a decrease in fibrinogen concentrations of 0.15 g/1, equivalent (according to prospective studies) to a decline of approximately 10% in risk of ischemic heart disease. Based on this and other of their statistical results, the researchers concluded that the study findings support the hypothesis that vitamin C may protect against cardiovascular disease through an effect on hemostatic factors at least partly through the response to infection.

4. You are thinking of studying how to prevent school bullying. You go to ERIC to find out what is already known about the topic. You use these refining criteria: Published in 2017 and 2018; found in journals; focused on prevention; population is high school students. How many articles are available?

ANSWERS

1. Key words and other terms that can be used to find out about adults who are afraid of heights are acrophobia, agoraphobia, altitude, anxiety, anxiety neuroses, arousal, awareness, behavior therapy, benzodiazepines, defense mechanism, desensitization, fear, fear of heights, internal-external control, neuropathy, panic, panic disorder, phobia, phobic disorders (diagnosis), phobic disorders (psychology), physiological correlates, set (psychology), threat, and vestibular apparatus.

2. Using PubMed, your search will result in nine citations and look something like this (as of July 2012).

Example 1.1

Source: U.S. National Library of Medicine, Pubmed.gov

3. Abstracts 3, 4, and 5 are experiments and may be useful in the review. Abstract 1's information can be used to help interpret the review's findings. Because it collects no new information, it is not eligible for inclusion into the database that comprises a literature review. Abstract 2 is a review of the literature; it may be a useful check on your review's content and conclusions.

4. Your preventing school bullying search of ERIC results in seven articles (as of June 2018) that meet your criteria: published in journals since 2017, focused on prevention among high school students.

work may not be reproduced or distributed in any form or by any means without express written permission of the publ

Example 1.2

ERIC

Collection \ Thesaurus

school bullying   [Search]   Advanced Search Tips

Notes FAQ Contact Us

☑ Peer reviewed only   ☐ Full text available on ERIC

Since 2017 › Prevention › Journal Articles › High Schools ›

Did you mean *school building* ?

PUBLICATION DATE
In 2018 2
Since 2017 5

DESCRIPTOR
Bullying 5
Prevention 5
High School Students 4
Case Studies 2
Drama 2
Teaching Methods 2
Adolescent Attitudes 1
Adolescents 1
African American Students . 1
Aggression 1
Alumni 1
More ▼

SOURCE
Journal of School Health 2
Journal of Curriculum and... . 1
Journal of Early Adolescence . 1
Journal of Language and... .. 1

AUTHOR
Borowsky, Iris W. 1
Cousin, Molly 1
Gilman, Sharlene Elinor 1
Gower, Amy L. 1
Lightfoot, Alexandra 1
Shelton, Stephanie Anne ... 1
Sidibe, Turquoise 1
Sparks, Alicia 1

Showing all 5 results Save | Export

A Multilevel, Statewide Investigation of School District Anti-Bullying Policy Quality and Student Bullying Involvement
Gower, Amy L.; Cousin, Molly; Borowsky, Iris W. – Journal of School Health, 2017
Background: Although nearly all states in the United States require school districts to adopt anti-bullying policies, little research examines the effect of these policies on student bullying and health. Using a statewide sample, we investigated associations between the quality of school district anti-bullying policies and student bullying...
Descriptors: Bullying, Board of Education Policy, School Districts, Student Behavior

☐ Peer reviewed
☐ Direct link

The Impact of State Legislation and Model Policies on Bullying in Schools
Terry, Amanda – Journal of School Health, 2018
Background: The purpose of this study was to determine the impact of the coverage of state legislation and the expansiveness ratings of state model policies on the state-level prevalence of bullying in schools. Methods: The state-level prevalence of bullying in schools was based on cross-sectional data from the 2013 High School Youth Risk Behavior...
Descriptors: State Legislation, Bullying, Predictor Variables, Incidence

☐ Peer reviewed
☐ Direct link

A Narrative Reflection on Examining Text and World for Social Justice: Combating Bullying and Harassment with Shakespeare
Shelton, Stephanie Anne – Journal of Language and Literacy Education, 2017
Based on classroom readings and discussions of William Shakespeare's "The Merchant of Venice," this Voices from the Field article examines the ways that teachers might use traditional canonized texts to encourage students to both critique and react against bullying behaviors. The author's experiences detail the narratives that students...
Descriptors: Bullying, Social Justice, Literature, Criticism

☐ Peer reviewed
☐ Download full text

Sacred Shock: Student Actors on Anti-Bullying Improvisation and Impact of Self-Rehearsal
Gilman, Sharlene Elinor – Journal of Curriculum and Pedagogy, 2017
This article describes responses of a group of adolescent student actors and actor alumni involved in anti-bullying skits arising from a critical case study of the Tolerance Theater Troupe, a bullying prevention...

☐ Peer reviewed
☐ Direct link

Example 1.3

ERIC Education Resources Information Center

Submit Content | Contact Us | ❓ Help

Home | Search ERIC | Our Collection | Thesaurus | About Us | My ERIC

ⓘ Alert:
Limited Availability of Full-Text Documents. Click here for more information, or here to request the return of a PDF online.

Your search found 10 results.   ❓ Help With This Page

Search Results

Sort By: [Relevance ▾]   Use My Clipboard to print, email, export, and save records.   0 items in My Clipboard

Show: 10 results per page   Now showing results 1-10 of 10.

Narrow Your Search
⊟Collapse All ⊞Expand All
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1. "Making Kind Cool": Parents' Suggestions for Preventing Cyber Bullying and Fostering Cyber Kindness (EJ978824)   Share Add

   Author(s): Cassidy, Wanda; Brown, Karen; Jackson, Margaret   **Pub Date:** 2012-00-00
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ONLINE LITERATURE REVIEWS ————————

For outstanding examples of stand-alone literature reviews, go to the Cochrane Collaboration's website: www.cochrane.org.

The Cochrane Collaboration is an international nonprofit and independent organization, dedicated to making up-to-date, accurate information about the effects of health care readily available worldwide. It produces and disseminates systematic reviews of health care interventions and promotes the search for evidence in the form of **clinical trials** and other studies of interventions.

The major product of the collaboration is the *Cochrane Database of Systematic Reviews,* published quarterly as part of the Cochrane Library. Volunteer health care professionals do the reviews. They work in one of the many collaborative review groups with editorial teams overseeing the preparation and maintenance of the reviews, as well as application of the rigorous quality standards for which Cochrane Reviews have become known.

The following is a list of literature reviews available in their entirety online (as of May 2018). They have been selected to illustrate the range of topics, research questions, and research methods used to review the literature using a variety of bibliographic databases and other techniques. Some but not all reviews meet rigorous standards for high-quality information (see Chapters 2 and 3). Note that some of the reviews contain the word *meta-analysis* in their title. A meta-analysis (see Chapter 5) is a literature review that uses formal statistical techniques to sum up the results of similar but separate studies.

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Ayerbe, L., Forgnone, I., Addo, J., Siguero, A., Gelati, S., & Ayis, S. (2018). Hypertension risk and clinical care in patients with bipolar disorder or schizophrenia; a systematic review and meta-analysis. *Journal of Affective Disorders*, *225*, 665–670.

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SUGGESTED READINGS

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Also:

Five Steps to Conducting a Literature Review

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC539417

NOTES

1. Wisner, K. L., Gelenberg, A. J., Leonard, H., Zarin, D., & Frank, E. (1999). Pharmacologic treatment of depression during pregnancy [Review]. *Journal of the American Medical Association, 282,* 1264–1269.

2. Lutters, M., & Vogt, N. (2003). Antibiotic duration for treating uncomplicated, symptomatic lower urinary tract infections in elderly women (Cochrane Review). In *The Cochrane Library,* Issue 4. (see www.cochrane.org)