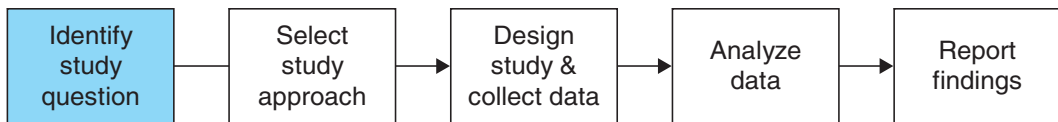


Identifying a Study Question



The first step in the research process is selecting the topic to be the focus of the study. This section describes how to select a general topic, review the literature, focus the scope of the project, and assemble a research support team.

- Selecting a general topic
- Reviewing the literature
- Focusing the research question
- Assembling a support team

Selecting a General Topic

Identifying one workable study topic is perhaps the most challenging part of a research project. Each of the countless possible study topics has its own set of virtues and shortcomings. Topic selection is one of the few steps in research in which creativity is not just allowed but required. Although study design, data collection, and data analysis must all follow a restrictive set of accepted methods, picking a study topic calls for the expression of personal interests.

■ 2.1 Brainstorming and Topic Mapping

A brainstorming session can be a good starting point for identifying a research topic. Use the categories in [FIGURE 2-1](#) to identify areas of personal interest. Spend a day, several days, or even weeks jotting down possible research areas. Check with friends and colleagues about their ideas. Search abstract databases, and skim journals and books for ideas about potential research themes.

The goal is to create a list of possible research topics and to make it as long as possible. This is not the stage for eliminating ideas because they do not appear feasible. Think big! The ideas do not need to be well formed. Begin by simply listing several diseases or population groups that might be interesting to study. Do some research areas show up several times on the list and appear to be a central theme? Can those topics be grouped or mapped? (It may be helpful to use circles and arrows to visibly group related topics to clarify the connections.) Which broad areas might be enjoyable to explore?

Area	Questions
Values	<ul style="list-style-type: none"> • What are my interests and personal values? • What research topics are personally meaningful? • Have some understudied conditions that I could explore significantly affected me, my family, or my friends? • Have certain health issues sparked my passion because they reflect what I consider to be an injustice?
Skills	<ul style="list-style-type: none"> • What knowledge and skills do I already have?
Personal growth	<ul style="list-style-type: none"> • What new skills do I want to develop?
Connections	<ul style="list-style-type: none"> • What source populations and/or data sources might be available to me through professors, supervisors, colleagues, and other personal and professional contacts?
Job and/or course requirements	<ul style="list-style-type: none"> • What does my supervisor or professor want me to study?
Gaps in the literature	<ul style="list-style-type: none"> • What information is not currently available that would make a contribution to the discipline and/or to improving health practices or policies? (See Chapter 3 for information about how to conduct a literature search.)

FIGURE 2-1 Brainstorming Questions

■ 2.2 Key Words

The next step is to refine the areas of interest that were identified through brainstorming. A helpful approach is to compile a list of related keywords. Jot down a long list of words that may help focus the research question. For example, a person who identifies an interest in child health in Africa during brainstorming might then list words like “malaria . . . children . . . Africa . . . bednets . . . Uganda . . . measles . . . vaccination . . . preschool children . . . malnutrition . . . vitamin A deficiency.” A person who identifies an interest in aging might list words like “osteoporosis . . . falls . . . bedsores . . . physical therapy . . . calcium . . . bone density . . . making homes safe . . . rehabilitation . . . prevention.” The goal is to identify a wide range of specific potential study themes within the major area of interest.

The MeSH (*Medical Subject Headings*) database, developed by the U.S. National Library of Medicine, can be helpful in narrowing the scope of a research area and in identifying the full extent of a research area. Suppose, for example, that a potential area of interest is infection. The MeSH database suggests a variety of narrower topics related to infection, such as cardiovascular infections, sepsis, infectious skin diseases, and wound infection. Within the category of skin diseases, the MeSH database lists a

variety of narrower topics, such as cellulitis, dermatomycoses (fungal skin infections), and bacterial skin diseases. Within the category of dermatomycoses, the MeSH database lists yet narrower topics, such as blastomycosis, cutaneous candidiasis, and tinea. Within these categories, MeSH offers even more refined points and still more refined points within successive subcategories.

Searching through the MeSH database can help a researcher in several ways. The researcher can move from a vague interest in infections or skin infections to a more focused interest in, say, fungal skin infections or, even more specifically, ringworm infections. Alternatively, the MeSH database can be used to search for broader or related study ideas. A search for pre-eclampsia, for example, shows that pre-eclampsia is a type of pregnancy complication. It is related to other forms of pregnancy-induced hypertension, such as HELLP syndrome, which may be an equally interesting study topic.

Once a list of keywords has been compiled, the researcher looks for the themes that emerge from them. Can any topics be easily eliminated because they do not fit the researcher's personal interests (Figure 2-1)? Are some keywords particularly interesting?

■ 2.3 Exposure, Disease, Population

Once several possible themes have been identified, each should be refined. Most topics in population health research can be expressed in terms of the following formula: [exposure] and [disease/outcome] in [population]. *Exposures* (FIGURE 2-2) and *diseases* (FIGURE 2-3) can encompass a wide variety of characteristics, some of which are:

- Social and environmental indicators
- Nutritional status
- Infections

Socioeconomic Status	Health-Related Behaviors	Health Status	Environmental Exposures
<ul style="list-style-type: none"> • Income • Wealth • Educational level • Occupation • Age • Sex/gender • Race/ethnicity • Nationality • Immigration status • Marital status 	<ul style="list-style-type: none"> • Dietary practices • Exercise habits • Alcohol use • Tobacco use • Sexual practices • Contraceptive use • Hygiene practices • Religious practices • Use of health-care services 	<ul style="list-style-type: none"> • Nutritional status • Immune status • Genetics • Stress • Anatomy and anatomical defects • Reproductive history • Comorbidities (existing health problems) 	<ul style="list-style-type: none"> • Drinking water • Pollution • Radiation • Noise • Altitude • Humidity • Season • Natural disasters • Population density • Travel

FIGURE 2-2 Examples of Types of Exposures

Injuries	Communicable/ Infectious Diseases	Noncommunicable/ Chronic Diseases	Neuropsychiatric Disorders
<ul style="list-style-type: none"> • Bone fractures • Burns • Crush injuries • Frostbite • Gunshot wounds • Near drownings • Poisonings 	<ul style="list-style-type: none"> • Candidiasis • Cholera • <i>E. coli</i> • Hookworm • Malaria • Syphilis • Tuberculosis 	<ul style="list-style-type: none"> • Asthma • Cancers • Cataracts • Diabetes • Hypertension • Osteoporosis • Stroke 	<ul style="list-style-type: none"> • Alzheimer's and other dementias • Autism • Depressive disorders • Post-traumatic stress disorder • Schizophrenia

FIGURE 2-3 Examples of Types of Diseases

- Chronic diseases
- Mental health status
- Quality-of-life measures
- Health service use

The *population* is the group of individuals, communities, or organizations to be examined (FIGURE 2-4). The keywords compiled in the previous step often fit into these exposure, disease, and population categories.

The researcher should divide these keywords into three separate lists:

- One for exposures or categories of exposure
- One for diseases or outcomes
- One for specific populations

These exposures, diseases/outcomes, and populations can then be combined to form study questions. For example:

- Are exercise habits [exposure] related to the risk of bone fractures [disease] in adults with diabetes [population]?

- Australian children younger than 5 years old
- Women living in rural Ontario
- Adults with diabetes
- Teachers with at least 10 years of classroom experience
- Individuals newly diagnosed with influenza at St. Mary's Hospital in Newcastle
- Nongovernmental organizations working on issues related to HIV/AIDS in Uganda

FIGURE 2-4 Examples of Types of Populations

- Is reproductive history [exposure] related to the risk of stroke [disease] among women living in rural Ontario [population]?
- Is household wealth [exposure] related to the risk of hospitalization for asthma [disease] in Australian children younger than 5 years old [population]?

The next step is to conduct a review of the existing literature related to a limited number of potential research questions. The list might consist of perhaps 3 to 5 statements in the standard format: [exposure] and [disease/outcome] in [population]. The aim is to identify what is already known about the topic and to determine what new information a new study could contribute.

