

WHY RESEARCH

CHAPTER OVERVIEW

This book is meant to be useful for students in the healthcare professions and for healthcare professionals beginning a research agenda. The goal of this book is to provide an introduction to research. At best, it is a beginner's guide. The contributors are experienced educators, practitioners, and researchers from many professions. Certainly, there are many ways to approach research beyond those in this book. Two things this book is not: (1) a complete research guide, and (2) a statistics book. Other references and resources will be needed. This book is designed to help the reader begin his or her research efforts and to advance his or her research skills and abilities. Each small piece of research that can add to the whole body of medical knowledge results in improvement in the healthcare professions and in the physical, mental, and social health of those for whom care is provided.

Introduction

J. Dennis Blessing, PhD, PA
J. Glenn Forister, MS, PA-C

"If we knew what it was we were doing, it would not be called research, would it?"

—Albert Einstein

INTRODUCTION

From my own retrospective viewpoint of a student in a healthcare profession and eventually as a healthcare practitioner, research has determined almost everything that is practiced now and in the future. The word "research" often evokes a panic reaction. Students often see research as a mysterious process that is difficult to understand and even more difficult to conduct. Often students cannot see the connection between a required research project and their healthcare careers. Similarly, many clinicians may not connect their job to research. However, the exact opposite is more likely to be true. Research is an opportunity to explore, understand, and explain. Mastery of research methods can expand opportunities for healthcare professionals and can lead to improved health care.

Many clinical practices are becoming involved with clinical trials and studies. This makes understanding the scientific process and research even more important. Beyond the possibility of being directly involved in research, every healthcare professional must understand research processes in order to interpret healthcare literature. The decision to incorporate a new treatment modality depends on the ability to evaluate and understand the research that led to that modality. Additionally, healthcare professionals must be able to evaluate the literature in terms of how it relates to patients and to evaluate the best treatment options.

RESEARCH AND STUDENTS IN HEALTHCARE PROFESSIONS

The word “research” conjures up images:

1. Egghead nerds hidden away in a lab doing something that seems to have little relationship to the everyday world.
2. Dr. Frankenstein.
3. Boring work forced on students.
4. Pursuit of information that has little application in the real world.
5. Not something a health professional does in clinical practice.

For many people, the research process is difficult to understand. Research requires manipulations of impossible-to-learn formulations that end up in language that only other researchers comprehend. Research sometimes produces contradictory results that often leave healthcare professionals wondering what to do. Research frightens clinicians and keeps educators from taking tenure-track positions. Research conjures up an image of boring, regimented work that may have little to do with the “real world.”

However frightening the concept of research is for students, faculty, and practitioners, it provides the basis for practice of the healthcare profession. Research is the key to the present and future, regardless of profession or position and function in health care. The practice of medicine, nursing, and other forms of health care is based in scientific research that is applied to every patient. The only way health care can advance is by research, that is, developing evidence of what works and applying the results. Practitioners who are not actively involved in research must possess a basic understanding of the process and what research results mean. This understanding allows practitioners to interpret results, to differentiate between conflicting results, and to discern what is useful AND best for patients. As evidence-based medicine becomes the basis for health care, understanding and conducting research also become more important. More and more practicing healthcare professionals are finding that research or some aspect of research has become part of their day-to-day job.

RESEARCH EQUALS CURIOSITY

Whether they realized it or not, everyone has done research in some manner. Seeking an answer to a question is a form of research. Even looking up a word in a dic-

tionary can be considered a form of research. Curiosity and the need for information create the drive to find answers in health care and in everyday life. Finding those answers is research. Certainly, much “research” is informal and without the systematic constraints required in formal research, but it occurs every day. A parent’s admonition to “Look it up!” sends children off on a research effort whether they realize it or not. Practitioners do research every day as they investigate the literature for solutions to patients’ problems. Students do research as part of their education and preparation to enter their profession. The very act of study is investigation in some ways, regardless of what it is called. Preparation for an examination is a form of research.

Research occurs in the laboratory, classroom, office, practice, and society at large. It is directly applicable to a problem or only a small piece of larger solutions. Research can help prepare for what will happen and understand what has happened. Individual and personal needs and desires direct how research is used and the part it plays in careers and lives. Research is a tool to be used. Learning to use this tool helps relieve anxieties and increases the ability to appreciate and to even enjoy the process.

Research that involves interests or needs for discovery is most important. In some ways research may be more important to the practitioner than to the student, but research skills are introduced during education. Similarly, what interests a healthcare practitioner or student may be mundane but necessary to the profession or livelihood. For example, an occupational therapist may have little interest in the differences in practice census flows by disability type, but that information may have a great impact on patient scheduling and clinical assignments. Research may provide answers that allow for the most efficient use of time and expertise in a practice. Many questions about one’s practice can be answered by research. It may or may not require great statistical analysis, but it requires the systematic gathering, analysis, and interpretation of information.

Another example of research application in practice is patient outcomes. What is the difference in outcomes in a practice if a disease is treated with regime A versus regime B? There may be a wealth of information in texts and the literature, but what about a specific practice? Personal research is needed to determine the answer, whether a formal or informal process is used. The values of informal versus formal research may be equal, but a formal investigation might lead to benefits beyond a single setting if the investigation yields significant information.

RESEARCH AND THE STUDENTS OF HEALTHCARE PROFESSIONS

For a student, research is part of the task of discovery and learning. Research provides the information needed to build a fund of knowledge that will determine what a student will do as a healthcare provider. Every student must learn to interpret the literature and be an informed consumer of medical research and healthcare literature. At a minimum, learning what research means and how to interpret research findings is useful in a professional career. These skills allow healthcare practitioners to deliver an acceptable level of care. In many ways, the research process is comparable to clinical reasoning and critical thinking skills. Much of the discipline needed to develop and conduct research is the same as the discipline needed to systematically assess and manage disease processes.

Education in the healthcare professions should be consistent with adult learning theory. All healthcare practitioners should be lifelong learners; the healthcare professional who stops building his or her knowledge base and abilities will soon be hopelessly behind. Experience is part of that knowledge base, but continuing to understand and interpret the literature is the foundation for maintaining, redefining, and increasing that base. Research can help meet future healthcare challenges. Research is one tool that helps practitioners to “learn how to learn.”

FEAR OF THE UNKNOWN

Research can be a monster. The unknowns and seemingly complex methods of systematic research and its processes frighten many people. Analysis, statistics, and interpretation can be daunting as well. Research as a discipline even has its own language. Research may be held in high regard by many and in low regard (almost thought of as a dirty word?) by others. Many healthcare professionals want to leave research to others. But as healthcare professionals become more involved in and invested with their careers and practices, they may find that their roles involve research and additional responsibilities in a research arena. Society expects healthcare professionals to understand healthcare research and to apply this to the needs of the individual patient.

RESEARCH TAKES MANY FORMS

Research takes many different forms (Table 1–1). Research can be categorized in several ways, including pure research, experimental research, clinical research,

Table 1–1 Types of Research*

Type	Description
Pure	Abstract and general, concerned with generating new theory and gaining new knowledge for the knowledge's sake. Example: theory development.
Experimental	Manipulation of one variable to see its effect on another variable, while controlling for as many other variables as possible and randomly assigning subjects to groups. Example: double-blind random assignment control groups, response to an intervention.
Clinical	Performed in the clinical setting where control over variables is quite difficult. Examples: drug trials, therapeutic outcomes.
Applied	Designed to answer a practical question, to help people do their jobs better. Examples: time use studies, evaluation of different types of interventions with the same purpose.
Descriptive	Describing a group, a situation, or an individual to gain knowledge that may be applied to further groups or situations, as in case studies or trend analyses. Examples: surveys, qualitative research, measurement of characteristics, response to phenomena.
Laboratory	Performed in laboratory surroundings that are tightly controlled. Example: basic science research.

*Adapted from Bailey,¹ p. xxii.

applied research, descriptive research, laboratory research,² and outcomes research. These forms depend on many factors.

The design of a research study is an important factor that confuses many beginning investigators.¹ Some research can be done without any special knowledge or skills, such as counting how many patients have a

particular diagnosis. Some research requires specialized skills and must follow an exact methodology, such as clinical drug trials. Research has a language of its own that must be learned and understood. The recording of experimental results and writing of research have special requirements that must be learned, practiced, and perfected. For most, research is about phenomena (something that can be perceived) that affects what is done and what is needed to know. It is about observation and interpretation of what is learned in order to answer the questions posed.

Research can be challenging and difficult. It also can be enjoyable and rewarding. At every level and in every format and design, it should add to knowledge. It is unlikely that any single piece of research will make headlines. However, answering questions and making small contributions to the larger body of medical knowledge is very satisfying. Health care at every level continually creates questions that need answering. Society has questions that need answering. When healthcare professionals accept the challenge of answering those questions, a basic understanding of research and how to apply it is necessary. Learning the research process offers the greatest likelihood of finding those answers. One does not have to be a genius to do research. One does not have to be mathematically gifted. One must only have the interest. Research and its results can be used in the classroom, laboratory, or clinic. It is a process to be learned and used to help healthcare practitioners, patients, students, and others.

OUR GOAL

This book is just one tool in developing research expertise. The student should use this book as an introductory tool, a starting point, and add to it from other resources. Learning the process of research is as important as understanding the research results. Students should use many books and resources. The goal of this text is to help students in healthcare professions and healthcare professionals develop research skills to acquire and contribute knowledge that benefits their patients.

DEVELOPING A RESEARCH PROJECT

If a research project is part of education and training, it may take many forms. Choosing a project and developing its design depends on a number of factors. The first is to understand exactly what is expected. Schools or

institutions may have specific guidelines. These parameters must be known before beginning any project. Many programs and institutions prescribe a scientific writing format. Student investigators must know which style and style manual is required and should, of course, buy a copy or acquire an electronic copy.

Schools or institutions may assign research topics and/or a specific design to follow. Development of a research project depends on many factors. Some introspection and consideration are required with regard to time, effort, cost, resources, and ability needed for any project. This introspection must include an assessment of personal attributes, interests, resources, and expectations of self.³ Part of this assessment must consider strengths as a researcher and abilities to accomplish a project. One cannot do quantum physics without the education and skills necessary, no matter how interested one may be in quantum physics. Students and inexperienced investigators must be able to concentrate their research efforts to develop or use their expertise to the maximum benefit. It is better to be an expert in one small, specific area, than somewhat of an expert in several. Every beginning researcher needs mentors and collaborators. Students and beginning investigators should seek out people who have skills in their area of interest and ask for their help. They should explore the possibilities of collaborating with someone on their research as a learning activity. Another key element to a successful research effort is the allotment of adequate time for investigations. For students, time may be very limited by schedules, class obligations, planned graduation date, etc. A timeline for a research project and should be created and followed.

The first step of developing a research project is brainstorming. This activity should be as expansive as possible by making a list (by hand or on the computer) of everything of interest in any way. Once these ideas are recorded, a short break of a few minutes or a few days should be taken (the key is NOT to think about the project for a short while). Then the list can be refined; new items can be added, and those that do not seem important can be eliminated. This process can or may be repeated more than once before a project is defined. A student, for example, may have an assigned topic, which makes things a little easier, but with an assigned topic there may be many ways to approach the assigned project. Once a list of possibilities has been developed, then the defining process can be done in this way:

1. Make a list of everything of interest or questions that need to be answered.
2. Prioritize the list in the order of interests.

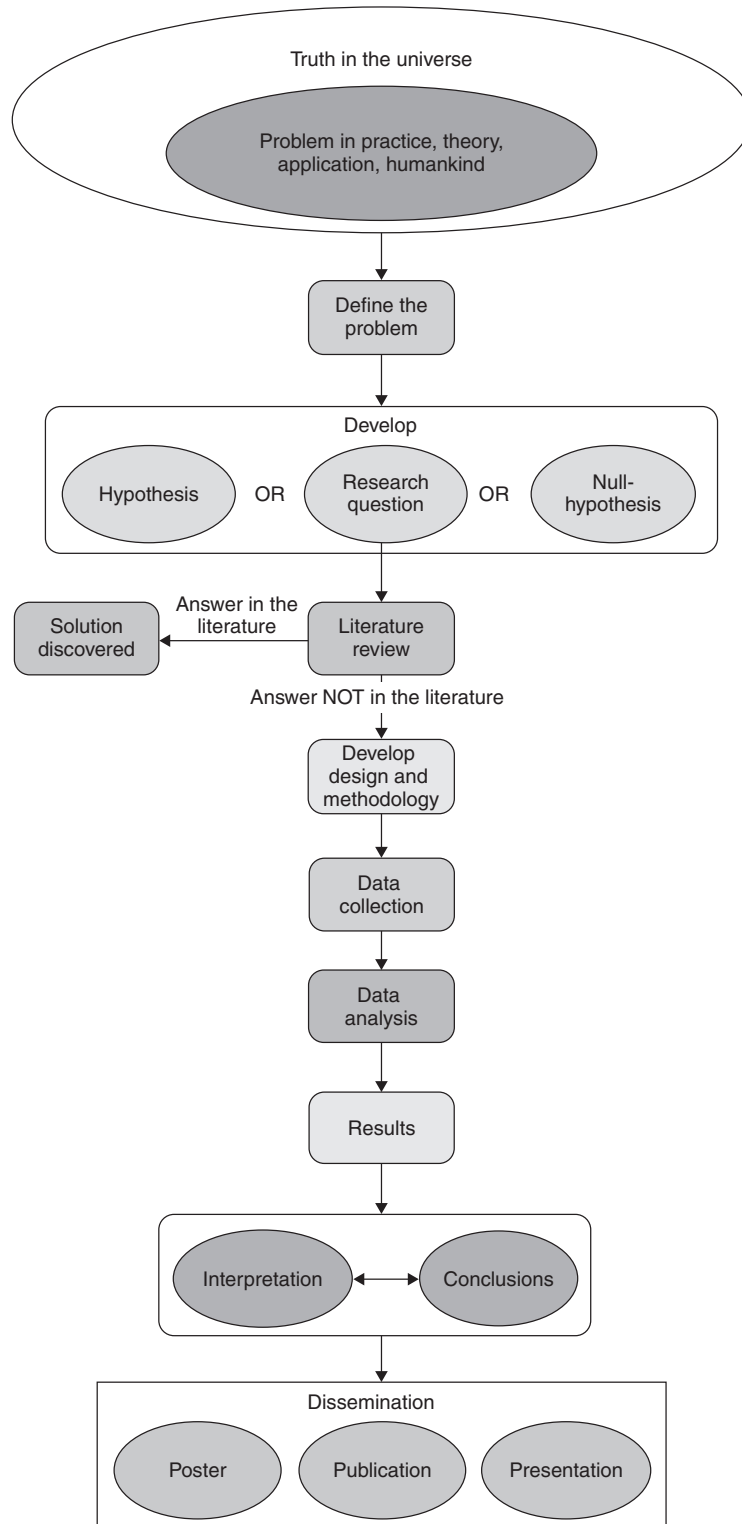


Figure 1-1 Outline of the scientific process.

3. Make a second ordered list (from the first) of the things that are within the capabilities of the investigator.
4. Make a third ordered list (from the first) of the things that are important to the effort.
5. Make a fourth ordered list (from the first) of the things that are important to society or health, or your particular profession.
6. Compare the lists. Items that appear at the top of all four lists should then be prioritized and merged into a single list.
7. Make the decisions about what can and cannot be done. Mark off the things that cannot be done. This includes financing the study. Financial support is just as important as time and expertise to the success of a project.
8. The topic that survives, becomes, or is central to the lists is the basis of the research project. This topic represents a process of summation that includes challenges that need to be researched; challenges to the capability of the researcher; challenges that are important to the individual, the program, and the topic of interest. What could be better?
9. Develop a timeline for the study; set aside research time and plan the step-by-step process and then . . .
10. GET STARTED. A respected educator said, "Time goes by regardless of what you do.

When it does, make sure you are not still waiting for the best time to begin."⁴ A student may have a defined end date (e.g., project due date, end of semester, graduation, etc.). Do not hesitate to get started.

SUMMARY

Whether one loves it, dislikes it, or would rather not think about it, research is a part of professional life in health care. Research will certainly be part of a health-care career. Research provides the basis for all that healthcare providers do. Individual research is unlikely to change the world or win a Nobel Prize; however, each small addition to our knowledge of the world and health care improves them both. Remember, research is not a dirty word, it is a powerful tool that every healthcare provider must learn to use. Research is a tool to be mastered in order to care for others.

REFERENCES

1. Bailey DM. *Research for the Health Professional: A Practical Guide*, 2nd ed. Philadelphia, PA: FA Davis; 1997, xxii.
2. Campbell DT, Stanley JC. *Experimental and Quasi-Experimental Designs for Research*. Boston, MA: Houghton Mifflin; 1963:1.
3. Jones PE. Personal communication; 2004.
4. Rahr RR. Personal communication; 2004.