



EVIDENCE-BASED PRACTICE FOR NURSES

Appraisal and
Application of
Research



THE PEDAGOGY

Evidence-Based Practice for Nurses: Appraisal and Application of Research, Fourth Edition, drives comprehension through various strategies that meet the learning needs of students, while also generating enthusiasm about the topic. This interactive approach addresses different learning styles, making this the ideal text to ensure mastery of key concepts. The pedagogical aids that appear in most chapters include the following:

CHAPTER OBJECTIVES

At the end of this chapter, you will be able to:

- < Define evidence-based practice (EBP)
- < List sources of evidence for nursing practice
- < Identify barriers to the adoption of EBP and pinpoint strategies to overcome them
- < Explain how the process of diffusion facilitates moving evidence into nursing practice
- < Define research
- < Discuss the contribution of research to EBP
- < Categorize types of research
- < Distinguish between quantitative and qualitative research approaches
- < Describe the sections found in research articles
- < Describe the cycle of scientific development
- < Identify historical occurrences that shaped the development of nursing as a science
- < Identify factors that will continue to move nursing forward as a science
- < Discuss what future trends may influence how nurses use evidence to improve the quality of patient care
- < Identify five unethical studies involving the violation of the rights of human subjects

KEY TERMS

<ul style="list-style-type: none"> abstract applied research barriers basic research cycle of scientific development deductive reasoning descriptive research discussion section early adopters empirical evidence evidence-based practice (EBP) explanatory research 	<ul style="list-style-type: none"> inductive reasoning innovation introduction Jewish Chronic Disease Hospital study laggards list of references methods section model of diffusion of innovations Nazi experiments Nuremberg Code predictive research pyramid of evidence 	<ul style="list-style-type: none"> qualitative research quantitative research replication study research research utilization results section review of literature theoretical framework theory Tuskegee study Willowbrook studies
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Chapter Objectives

These objectives provide instructors and students with a snapshot of the key information they will encounter in each chapter. They serve as a checklist to help guide and focus study.

Key Terms

Found in a list at the beginning of each chapter and in bold within the chapter, these terms will create an expanded vocabulary in evidence-based practice.

Critical Thinking Exercises

As an integral part of the learning process, the authors present scenarios and questions to spark insight into situations you may face in practice and help you to think critically.



CRITICAL THINKING EXERCISE 5-2

A nurse on a surgical floor observes that several new approaches are being used to dress wounds. She observes that some methods appear to promote healing faster than others do. While reviewing the research literature, she is unable to locate any research about the dressings she is using. How might she go about testing her theory that some methods are better than others? Can this be done deductively, inductively, or using mixed methods? Are any theories presently available related to wound healing, and if so, where might she locate these? What concepts might be important in forming the question?

treatment of human response, and advocacy in the care of individuals, families, communities, and populations" (ANA, 2003, p. 6). From the early days of the profession, students have been taught that a scientific attitude and method of work combined with "experience, trained senses, a mind trained to think, and the necessary characteristics of patience, accuracy, open-mindedness, truthfulness, persistence, and industry" (Harmer, 1933, p. 47) are essential components of good practice. Harmer goes on to say, "Each time this habit of looking, listening, feeling, or thinking **FPO** it is strengthened until the habit of observation is firmly established" (p. 47). This still holds true today. Benner (1984) studied nurses in practice and concluded that to become an expert nurse one has to practice nursing a minimum of 5 years. There are no shortcuts to becoming an expert in one's field. The development of knowledge and skill takes time and work. As nurses encounter new situations, learning takes place. Nursing knowledge develops and is refined as nurses practice (Waterman, Webb, & Williams, 1995). In this way, nurses adapt theories to fit their practices. Unfortunately, much that is learned about theory during practice remains with the nurse because nurses rarely share their practice expertise through conference presentations and publications. The discipline will be enriched when nurses engage more formally in disseminating their knowledge about theory in practice.

The Relationships Among Theory, Research, and Practice

Practice relies on research and theory and also provides the questions that require more work by theorists and researchers. Each informs and supports the other in the application and development of nursing knowledge. When the relationships among theory, research, and practice are in harmony, the discipline is best served, ultimately resulting in better patient outcomes (Maas, 2006). The relationships are dynamic and flow in all directions.

FYI

After an outcome has been selected and measured, data are compiled and evaluated to draw conclusions. Evaluation is facilitated when appropriate outcomes and associated indicators are chosen—conversely, if the outcome is not clearly defined, then the measurements and subsequent evaluation will be flawed.

After an outcome has been selected and measured, data are compiled and evaluated to draw conclusions. Demonstrating the effectiveness of an innovation is a challenge, and conclusions must not extend beyond the scope of the data. Evaluation is facilitated when appropriate outcomes and associated indicators are chosen. If the outcome is not clearly defined, then the measurements and subsequent evaluation will be flawed. For example, suppose that you are a member of an interdisciplinary team that has developed a nursing protocol that reduces the amount of time the patient remains on bed rest after a cardiac catheterization procedure from 6 hours to 4 hours. The outcome selected is absence of bleeding from the femoral arterial puncture site. No other indicators are measured. The results obtained after implementing the protocol revealed that there was an increase in bleeding at the femoral arterial site in the 4-hour bed rest patients compared to the 6-hour bed rest patients. Before concluding that a shorter bed rest time leads to an increase in femoral bleeding, a few additional questions need to be considered. First, was absence of bleeding defined in a measurable way? Because bleeding might be interpreted in several different ways, a precise definition of bleeding should have been provided to ensure consistency in reporting. Second, when should patients be assessed for absence of bleeding? Is the absence of bleeding to be assessed when the patient first ambulates or at a later time? Input from the staff prior to changing the nursing protocol could have clarified these questions, resulting in more reliable results.

Another consideration in outcome evaluation is to obtain data relative to current practice for comparison purposes. To document the need for a practice change and to support a new protocol, baseline data might need to be collected.

TEST YOUR KNOWLEDGE 18-3

True/False

1. Baseline data are unimportant in outcome measurement.
2. Precise description of indicators is essential.
3. For complex analyses, the assistance of a statistician may be needed.
4. Input from staff can help clarify outcome measurement.

How did you do? 1. F, 2. T, 3. T, 4. T

FYI

Quick tidbits and facts are pulled out in chapter margins to highlight important aspects of the chapter topic.

Test Your Knowledge

These questions serve as benchmarks for the knowledge you are acquiring as you move throughout the chapter.

apparent. Organizing the review with a grid is a positive strategy to overcome the barrier of lack of time because it reduces the need to repeatedly sort through articles during future discussions. Also, within this text's digital resources, you will find a grid to use for this exercise. Two articles (Cohen & Shastay, 2008; Tomietto, Sartor, Mazzoccoli, & Palese, 2012) are summarized as an example.

Read Kliger, Blegen, Gootee, and O'Neil (2009). Enter information about this article into the first two columns. In column 1, use APA format, like in the example, because this is the most commonly used style for nursing publications.

RAPID REVIEW

- » Today's work environment requires that nurses be adept at gathering and appraising evidence for clinical practice and assisting patients with healthcare information needs.
- » Literature reviews provide syntheses of current research and scholarly literature. A well-done literature review can provide support for EBP.
- » An understanding of the scientific literature publication cycle provides a basis for making decisions about the most current information on a topic.
- » Primary sources are original sources of information presented by the people who created them. Secondary sources include consulting commentaries, summaries, reviews, or interpretations of primary sources.
- » Many research journals involve peer review.
- » There are many ways to categorize sources. Scholarly, trade, and popular literature is one way. Another categorizing system involves periodicals, journals, and magazines.
- » There are four types of review: narrative, integrative, meta-analysis, and systematic.
- » Understanding how sources are structured can simplify a search of the literature.
- » Sources can be identified through both print indexes and electronic databases. Topics, subject matter, and format may vary but all include citation information.
- » Helpful strategies to use when conducting a search include citation chasing, measurements of recall and precision, keyword and controlled vocabulary searches, Boolean operators, truncation,

Apply What You Have Learned

With this outstanding feature, you will be challenged to apply your newly acquired knowledge to specific evidence-based practice scenarios and research studies.

Rapid Review

This succinct list at the end of the chapter compiles the most pertinent and key information for quick review and later reference.



APPLY WHAT YOU HAVE LEARNED

Sign into a database for nursing literature (i.e., CINAHL, ProQuest, PubMed). For this chapter, you will need to obtain the following two articles:

Pipe, T. B., Kelly, A., LeBrun, G., Schmidt, D., Atherton, P., & Robinson, C. (2008). A prospective descriptive study exploring hope, spiritual well-being, and quality of life in hospitalized patients. *MEDSURG Nursing, 17*, 247–257.

Flanagan, J. M., Carroll, D. L., & Hamilton, G. A. (2010). The long-term lived experience of patients with implantable cardioverter defibrillators. *MEDSURG Nursing, 19*, 113–119.

One of these articles used qualitative methods, and the other used quantitative methods. Identify which is which. After you have done that, for each article identify the various sections that make up a research article. You may want to share these articles with nurses during your next clinical experience and consider ways the recommendations can be incorporated into practice.

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Case Examples

Found in select chapters, these vignettes illustrate research questions and studies in actual clinical settings and provide challenges for students to think critically.

Some researchers claim their work is nursing research because the researcher is a nurse or because the researcher studied nurses. But it is the focus on nursing practice that defines nursing research. The mere fact that the research was conducted by a nurse or that nurses were studied does not necessarily qualify the research as nursing research. Historically, and even today, approaches to practice are often based on “professional opinion” when research is absent. **Case Example 5-1** provides such a historical illustration. It also demonstrates the value of systematically studying the effects of interventions.

CASE EXAMPLE 5-1

Early Methods of Resuscitation: An Example of Practice Based on Untested Theory

Throughout the past century, nursing students have been taught how to resuscitate patients who stop breathing. As early as 1912, students were taught a variety of methods for providing artificial respiration. It was theorized that moving air in and out of the lungs would be effective. One of these techniques was designed for resuscitating infants. Byrd's Method of Infant Resuscitation (Goodnow, 1919) directed the nurse to hold the infant's legs in one hand, and the head and back in the other. The nurse would then double the child over by pressing the head and the knees against the chest. Then the nurse would extend the knees to undouble the child. This would be repeated, but “not too rapidly” (Goodnow, 1919, p. 305). At intervals, the nurse would dip the child into a mustard bath in the hope that this would also stimulate respiration. The nurse would continue this until help arrived.

Other methods of artificial respiration taught included Sylvester's method for adults (Goodnow, 1919). The patient was placed flat on his back. The nurse would grasp the patient's elbows and press them close to his sides, pushing in the ribs to expel air from the chest. The arms would then be slowly pulled over the head, allowing the chest to expand. The arms would be lowered to put pressure on the chest, and the cycle was then repeated. This was to be done at the rate of 18 to 20 cycles per minute.

By 1939, postmortem examinations after unsuccessful resuscitations showed veins to be engorged while the arteries were empty (Harmer & Henderson, 1942). Although this evidence indicated other factors needed to be considered, resuscitation techniques continued to focus only on the respiratory system. The same methods of resuscitation that were in use in 1919 were still being taught in 1942. Although students were still being taught the Sylvester method, they were also learning the new “Schäfer method” (Harmer & Henderson, 1942, p. 9401). This method involved placing the patient in a prone position. The nurse would straddle the thighs, facing the patient's head, and alternately apply and remove pressure to the thorax.

Eventually, it was noted that what was believed to be best practice was not effective. Results of postmortem examinations indicated that something was missing in the techniques, and therefore research was begun to determine best practice. Today, nursing students are taught cardiopulmonary resuscitation techniques based on updated research and theories.

fully operational in 1996. It aims to improve the effectiveness of nursing practice and healthcare outcomes. Some initiatives include conducting systematic reviews, collaborating with expert researchers to facilitate development of practice information sheets, and designing, promoting, and delivering short courses about EBP.

2.2 Keeping It Ethical

At the end of this section, you will be able to:

- < Discuss international and national initiatives designed to promote ethical conduct
- < Describe the rights that must be protected and the three ethical principles that must be upheld when conducting research
- < Explain the composition and functions of IRBs at the organizational level
- < Discuss the nurse's role as patient advocate in research situations

Ethical research exists because international, national, organizational, and individual factors are in place to protect the rights of individuals. Without these factors, scientific studies that violate human rights, such as the Nazi experiments, could proceed unchecked. Many factors of ethical research, which evolved in response to unethical scientific conduct, are aimed at protecting human rights. **Human rights** are freedoms to which all humans are entitled, often held to include the right to life and liberty, freedom of thought and expression, and equality before the law” (Houghton Mifflin, 2007). Rights cannot be claimed unless they are justified in the eyes of another individual or group of individuals (Haber, 2006). When individuals have rights, others have **obligations**, that is, they are required to act in particular ways. This means that when nursing research is being conducted, subjects participating in studies have rights, and all nurses are obligated to protect those rights.

KEY TERMS

human rights:
Freedoms to which all humans are entitled

obligations:
Requirements to act in particular ways

International and National Factors: Guidelines for Conducting Ethical Research

One of the earliest international responses to unethical scientific conduct was the Nuremberg Code. This code was contained in the written verdict at the trial of the German Nazi physicians accused of torturing prisoners during medical experiments. Writers of the Nuremberg Code (Table 2-3) identified that voluntary consent was absolutely necessary for participation in research. Research that avoided harm, produced results that benefited society, and allowed participants to withdraw at will was deemed ethical. The Nuremberg Code became the standard for other codes of conduct.

Keeping It Ethical

Relevant ethical content concludes each chapter to ensure that ethics are kept at the forefront of every step of the nursing process.

FOURTH EDITION

EVIDENCE-BASED PRACTICE FOR NURSES

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Research

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DEDICATION

For Mom, whose love and support are endless.

—N. A. S.

To my husband, my children, and my granddaughters and grandson, who enrich my life in every way.

—J. M. B.



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PREFACE

We are most pleased to offer the *Fourth Edition* of this text. For this revision, we have extensively altered the “Apply What You Have Learned” feature. The new topic is adherence with hand hygiene, changed from medication errors in the last edition. We selected this clinical problem because it involves all healthcare providers in all settings and significantly impacts patient outcomes. Additionally, nurse educators are well-positioned to help students gain an appreciation for hand hygiene guidelines and build good hand hygiene habits. This feature continues to unfold in a manner that integrates chapter content with each step of the EBP process. Concrete strategies, in the form of exemplars and checklists, allow readers to master competencies needed to perform these activities in the clinical setting.

A new feature of the textbook includes two diagrams that summarize statistical analyses (Chapter 13) and designs (back cover). In response to user feedback, we updated the “Hierarchy of Evidence” to include types of evidence for each level. In Chapter 12, we made edits to the 5 Ss to better distinguish this hierarchy from the Hierarchy of Evidence.

We are even more committed to the premise that baccalaureate-prepared nurses, given the emphasis on leadership, critical thinking, and communication in their curricula, are ideally positioned to advance best practices. Therefore, nursing faculty must teach students educational strategies that develop a lifelong commitment to examining nursing practice critically in light of scientific advances. Although many texts and references deal with the principles, methods, and appraisal of nursing research, few sources address the equally important aspect of integrating evidence into practice. Because there is a growing expectation by

accrediting bodies that patient outcomes are addressed through best practice, it is imperative that books be available to prepare nurses for implementing best practices. This edition of this textbook continues to provide substantive strategies to assist students with applying evidence at the point of care.

The American Association of Colleges of Nursing (AACN) charges nursing programs with preparing baccalaureate nurses with the basic understanding of the processes of nursing research. This book includes content related to methods, appraisal, and utilization, which is standard in many other texts. Furthermore, the AACN expects BSN-prepared nurses to apply research findings from nursing and other disciplines in their clinical practice. The framework for this text is the model of diffusion of innovations (Rogers, 2003), which gives readers a logical and useful means for creating an EBP. Readers are led step-by-step through the process of examining the nursing practice problem of hand hygiene using the innovation–decision process (IDP). It is recommended that faculty use this text with students to guide them through assignments that might effect actual change in patient care at a healthcare facility. Schmidt and Brown (2007) described this teaching strategy more fully. Because students typically express that research content is uninteresting and lacks application to real life, we have tried to create a textbook that is less foreboding and more enjoyable through the use of friendly language and assignments to make content more pertinent for students.

The primary audience for this textbook is baccalaureate undergraduate nursing students and their faculty in an introductory nursing research course. All baccalaureate nursing programs offer an introductory research course, for which this text would be useful. Because the readership has grown, we recognize that nursing graduate programs are also using this textbook.

This edition continues to follow the five steps of the IDP: knowledge, persuasion, decision, implementation, and confirmation. This organizational approach allows the research process to be linked with strategies that promote progression through the IDP. The chapters follow a consistent format: chapter objectives, key terms, major content, test your knowledge, case study, rapid review, and reference list. Critical thinking exercises and user-friendly tables and charts are interspersed throughout each chapter to allow readers to see essential information at a glance. Textbook users will be pleased to find more consistency between chapters in this edition. The Hierarchy of Evidence and questions to consider when appraising nursing studies are printed inside the back cover for easy reference.

The unique feature of integrating ethical content throughout the chapters remains. Organizing content in this manner helps students to integrate ethical principles into each step of the research process.

As a learning strategy, chapters are subdivided so that content is presented in manageable “bites.” Students commented that they liked this feature. As in the *Third Edition*, chapters begin with a complete list of all objectives addressed in the chapter. Objectives are repeated for each subsection and are followed by content, and each subsection ends with a section called “Test Your Knowledge.” Multiple-choice and true-or-false questions, with an answer key, reinforce the objectives and content. Chapters also include critical thinking exercises that challenge readers to make decisions based on the content. Users will find significant alterations to the digital resources available to readers.

New challenges arose while we wrote this *Fourth Edition*. Publishers are becoming less inclined to allow their materials to be reproduced. Therefore, we are disappointed that we can no longer offer the full-text reference articles within this text’s digital resources. In response to this challenge, we have significantly transformed the Apply What You Have Learned exercise for Chapter 4. Students are provided with directions so that they can search for the articles themselves, thereby reinforcing behaviors that will be required of baccalaureate-prepared nurses, who need to keep up with the ever-changing healthcare environment. We are pleased with the result because this alteration has actually strengthened the exercise. For readers’ convenience, following is a table containing the evidence used throughout the Apply What You Have Learned exercises.

We hope that the variety of strategies incorporated in this textbook meet your learning needs and generate enthusiasm about EBP. We wish you the best as you begin your professional career as an innovator who provides care based on best practices.

Citation	Chapter(s)	Search Terms (Limiters)
Articles to Search in CINAHL		
Al-Hussami, M., Darawad, M., & Almhairat, I. I. (2011). Predictors of compliance handwashing practice among healthcare professionals. <i>Healthcare Infection, 16</i> , 79–84.	4, 7	Al-Hussami (author) “handwashing practice” (all fields)
Al-Tawfiq, J. A., & Pittet, D. (2013). Improving hand hygiene compliance in healthcare settings using behavior change theories: Reflections. <i>Teaching and Learning in Medicine, 25</i> , 374–382. 52.	4, 5	Al-Tawfiq (author) Pittet (author) “reflections” (title)
Chhapola, V., & Brar, R. (2015). Impact of an educational intervention on hand hygiene compliance and infection rate in a developing country neonatal intensive care unit. <i>International of Nursing Practice, 21</i> , 486–492.	1, 4, 8	Chhapola (author)

Citation	Chapter(s)	Search Terms (Limiters)
Articles to Search in CINAHL		
Chun, H., Kim, K., & Park, H. (2015). Effects of hand hygiene education and individual feedback on hand hygiene behavior, MRSA, acquisition rate, and MRSA colonization pressure among intensive care unit nurses. <i>International Journal of Nursing Practice</i> , 21, 709-715.	4, 6, 7	Chun (author) "individual feedback" (all fields)
Dyson, J., Lawton, R., Jackson, C., & Cheater, F. (2013). Development of a theory-based instrument to identify barriers and louvers to best hand hygiene practice among healthcare practitioners. <i>Implementation Science</i> , 8(111), 1-9.	4, 10	Dyson (author) Lawton (author) "barriers" (all fields)
Fakhry, M., Hannah, G. B., Anderson, O., Holmes, A., & Nathwain, D. (2012). Effectiveness of an audible reminder on hand hygiene adherence. <i>American Journal of Infection Control</i> , 40, 320-323.	4, 6, 7	"audible reminder" (title) "hand hygiene" (title)
Huis, A., Schoonhoven, L., Grol, R., Donders, R., Hulscher, M., & van Achterber, T. (2014). Impact of a team and leaders-directed strategy to improve nurses' adherence to hand hygiene guidelines: A cluster randomized trial. <i>International Journal of Nursing Studies</i> , 50, 464-474.	4, 7	Huis (author) Donders (author)
Jackson, C., Lowton, K., & Griffiths, P. (2014). Infection prevention as "a show": A qualitative study of nurses' infection prevention behaviours. <i>International Journal of Nursing Studies</i> , 51, 400-408.	4, 9, 14	Jackson (author) Lowton (author) "International Journal of Nursing Studies" (publication name)
Johnson, L., Jrueber, S., Schlotzhauer, C., Phillips, E., Bullock, P., Basnett, J., & Hahn-Cover, K. (2014). A multifactorial action plan improves hand hygiene adherence and significantly reduces central line-associated bloodstream infections. <i>American Journal of Infection Control</i> , 42, 1146-1151.	4	Johnson (author) "multifactorial action plan" (all fields)
Kingston, L., O'Connell, N. H., & Dunne, C. P. (2016). Hand hygiene-related clinical trials reported since 2010: A systematic review. <i>Journal of Hospital Infection</i> , 92, 309-320.	4, 12	Kingston (author) "systematic review" 2016 (publication date)
Mortell, M. (2012). Hand hygiene compliance: Is there a theory-practice-ethics gap? <i>Infection Control</i> , 21, 1011-1014.	3	Mortell (author) 2012 (publication date)

Citation	Chapter(s)	Search Terms (Limiters)
Articles to Search in CINAHL		
Salmon, S., & McLaws, M. (2015). Qualitative findings from focus group discussion on hand hygiene compliance among health care workers in Vietnam. <i>American Journal of Infection Control</i> , 43, 1086-1091.	1, 4, 9	Salmon (author) McLaws (author)
Whitby, M., & McLaws, M. (2007). Methodological difficulties in hand hygiene research. <i>Journal of Hospital Infection</i> , 67, 194-195.	4, 10	Whitby (author) “methodological difficulties” (title)
Obtain From JBI		
Nguyen, P. (2016). Hand hygiene: Alcohol-based solutions. The Joanna Briggs Institute.	12	

Citation	Chapter(s)	Search Terms (Limiters)
Sources From the Web		
National Cancer Institute	2	http://phrp.nihtraining.com/users/login.php
Bromwich, J. E. (2016, April 20). You’ve been washing your hands wrong. <i>New York Times</i> .	12	https://www.nytimes.com/2016/04/21/health/washing-hands.html?_r=0
Emotional Intelligence (EQ) Assessment	17	http://www.ihhp.com/free-eq-quiz/
The New Enneagram Test	17	http://9types.com/
World Health Organization	3	http://www.who.int/gpsc/5may/Hand_Hygiene_Why_How_and_When_Brochure.pdf?ua=1

Available in the Digital Resources		
Resource	Chapter	
Grid	4	Visit this text’s accompanying digital resources to find links to these materials.
Poster guideline for making an EBP poster presentation	19	

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Schmidt, N. A., & Brown, J. M. (2007). Use of the innovation–decision process teaching strategy to promote evidence-based practice. *Journal of Professional Nursing*, 23, 150–156.



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